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Spectrum Management and Telecommunications

Spectrum Policy Framework for Canada

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Industry Canada

Radiocommunication Act

Notice No. DGTP-001-07 – New Spectrum Policy Framework for Canada

Intent

This Notice announces the publication of a new Spectrum Policy Framework for Canada (Framework). The new Framework is a timely updating and modernization of the existing document that communicates the underlying principles which the Department and the Minister will rely upon in exercising their authority under the *Radiocommunication Act*.

Discussion

The new Framework has been streamlined, shortened, updated, and reoriented to reflect current practices and current government policy. The update takes into account comments received during an extensive public process over the past year. Its effect will be to consolidate and clearly communicate to all spectrum stakeholders evolutionary changes in the Department's approach to spectrum stewardship, which have taken place over the past several years.

The Framework provides the policy and spectrum management direction for wireless applications, services and uses, which range from national defence, security and public safety through to commercial, consumer, scientific and private radio.

Obtaining Copies

Copies of the new *Spectrum Policy Framework for Canada* are available electronically on the [Spectrum Management and Telecommunications Web site](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/home) at: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/home>.

Official versions of *Canada Gazette* notices can be viewed on the [Canada Gazette website](http://www.gazette.gc.ca/rp-pr/p1/index-eng.html) at: <http://www.gazette.gc.ca/rp-pr/p1/index-eng.html>. Printed copies of notices can be ordered by calling the sales counter of Canadian Government Publishing at 613-941-5995 or 1-800-635-7943.

June 13, 2007

Leonard St-Aubin
Director General
Telecommunications Policy Branch

Executive Summary

On March 22, 2006, the Minister of Industry received the Telecommunications Policy Review Panel (TPRP) report. In acknowledging receipt of the report, the Minister stated that, “The telecommunications sector is of critical importance to Canada’s economy and our future well-being. I intend to work, along with my Cabinet colleagues, to ensure that Canada has a policy and regulatory framework that provides Canadians with access to telecommunications services that are, in every sense, world class.” On June 13, 2006, the Minister then tabled in Parliament a proposed policy direction to the Canadian Radio-television and Telecommunications Commission (CRTC) signalling the government’s intention to direct the CRTC to rely on market forces to the maximum extent feasible under the *Telecommunications Act* and to regulate where there is still a need to do so in a manner that interferes with market forces to the minimum extent necessary.

In this context, the Department has taken the opportunity, within the existing legislative authorities, to combine over eighteen months of public consultation and industry discussion with these new broad policy orientations, to create an even more progressive and renewed *Spectrum Policy Framework for Canada*.

The Department has been able to streamline the renewed *Spectrum Policy Framework for Canada* even more than initially proposed. The new Framework moves from the previous seven core policy objectives and fifteen guidelines, that over time had blurred the line between “ends and the means”, toward a single policy objective with a set of concise guidelines. During Consultation discussions with industry, the desire for such a progressive approach had been expressed. This document guides the reader through the changes to the Framework that the Department initially proposed, and the rationale upon which a more progressive and renewed *Spectrum Policy Framework for Canada* is established herein.

The proposed version of the renewed Framework also contained a second part that explored topical spectrum issues related to new radio technologies and approaches to spectrum management that the Department was considering. In this regard, this edition of the *Spectrum Policy Framework for Canada* will serve the Spectrum Management Program in dealing with these issues into the foreseeable future.

This renewed *Spectrum Policy Framework for Canada* is the third edition. The first was the 1992 benchmark edition that for the first time brought all the Spectrum Management Program radio policy, technical and licensing objectives and guidelines together in one document, to guide the wireless industry through a decade of rapid radiocommunication technology growth and challenges. The second edition, released in 2002, sought to update all of the ongoing advancements made to the Spectrum Management Program in the intervening time.

The rapid change in technology remains unabated. Like other similar administrations around the world, the Department is navigating constant change as it deals with spectrum stewardship challenges. The Department is now establishing this third renewed *Spectrum Policy Framework for Canada* to continue on its course to meet these challenges with effective spectrum policy and management that serves the social and economic interests of all Canadians.

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1. Introduction

This document is the renewed *Spectrum Policy Framework for Canada* (the Framework), which is the policy foundation for the Canadian Spectrum Management Program (the Program). This revised Framework provides a policy objective and enabling guidelines that will guide the Department in managing the radio frequency spectrum resource in Canada.

The radio frequency spectrum is a unique resource from which all aspects of society benefit. It provides access for Canadians to a range of private, commercial, consumer, defence, national security, scientific and public safety applications. The radio frequency spectrum is divided into different bands which are used by a variety of communications services including - broadcasting, cellular, satellite, public safety and two-way radio. It is the only resource that can support practical wireless communications in every day situations. The Department recognizes that there are a number of factors, such as rapidly evolving technology, changing market demands, globalization and an increased focus on public safety and security, which need to be taken into account in an effective spectrum management program.

The wireless telecommunications sector plays an important role in the Canadian economy, accounting for 25,000 jobs, over \$9.5 billion in revenue, and a \$4.1 billion investment in infrastructure. In recent years, the number of wireless subscribers has increased at a compound annual growth rate exceeding 17% to reach 14.9 million while revenue has grown at a rate of 14% to reach \$9.5 billion.

Over the past 15 years, Industry Canada has licensed considerable spectrum for Canadian use. The use of this spectrum by the wireless telecommunications industry has had a significant impact on the companies that manufacture cell phones and other devices designed to operate on wireless networks. Its use has created many opportunities for innovation by Canadian industry.

Effective management of the radio frequency spectrum is essential to the future growth of the communications in Canada. From phones, to broadcasting, to satellite services, to air traffic control, and to reaching out to remote communities, Canadians expect these services to be available, free of interference, and properly managed.

The Minister of Industry has the statutory responsibility for Canada's radio frequency spectrum. The radio frequency spectrum is managed on the Minister's behalf by staff in the Program who – under the umbrella of the International Telecommunication Union (ITU) – obtain, plan, and authorize its use, and use sophisticated equipment and automated systems to ensure that harmful radio signals do not hamper its use by licensed and essential communications services. Without clear radio channels, all communications services would experience difficulty in carrying out their operations. For safety services, the inability to communicate can lead to serious injury including loss of life.

The Program has been crucial to the orderly development of Canada's wireless and broadcasting services. By establishing the proper policy and regulatory environment, the government has enabled a very vibrant wireless sector that is growing at twice the rate of the Canadian economy and significantly contributing to Canadian jobs and prosperity.

The Program supports the effective management of the radio frequency spectrum including: securing Canada's access to it; the use of auctions to assign it; the development and implementation of Mutual Recognition Agreements for the approval of radio equipment; the determination of client needs and

improved services; and addressing emerging priorities in response to new applications of technology, client expectations and government objectives.

The pace of global economic growth in wireless technologies and services imposes increased pressure on the resources currently available to the Program. Each year more and more demand for radio frequency spectrum is placed on the Program by an expanding client base. In this context, managing the radio frequency spectrum is becoming more complex, driven by continuous improvements in technology that foster the marketing of new communications products and services for industrial and consumer applications that are increasingly spectrum dependant.

A more progressive Framework with enabling guidelines will enable the Department to meet these global and domestic challenges into the foreseeable future.

2. Background

First released in 1992, the Framework is based on the provisions of the *Radiocommunication Act*¹ and provides the fundamental policy basis for the planning and management of the radio frequency spectrum by Industry Canada. The Framework was revised in 2002 to reflect the evolution of government and departmental policy as well as the changing use of radio frequency spectrum over the intervening years. At the time, Industry Canada recognized that studies had been initiated in other countries which examined the principles of spectrum management. The Department determined that further review and revision to the Canadian Framework was warranted to ensure that it remains relevant and continues to be the appropriate policy foundation for the Program.

The Department initiated a second review of the Framework in May 2005, announced in DGTP-001-05, and entitled *Consultation on a Renewed Spectrum Policy Framework for Canada and Continued Advancements in Spectrum Management* (the Consultation). The Department received twenty-seven submissions in response. Generally, these comments were supportive of the proposed changes, although some issues with specific aspects of the proposal were raised. This renewed Framework responds to the substantial public comments received.

A number of other countries are also undertaking reviews and making fundamental changes to their spectrum management programs to address similar challenges. A common finding of these reviews has been the benefit of moving from a prescriptive form of spectrum management to one that embraces more flexibility and a greater reliance on market forces, particularly with respect to spectrum used for commercial purposes.

On March 22, 2006 the Minister of Industry, received the Telecommunications Policy Review Panel (TPRP) report. In acknowledging receipt of the report, the Minister stated that, “The telecommunications sector is of critical importance to Canada’s economy and our future well-being. I intend to work, along with my Cabinet colleagues, to ensure that Canada has a policy and regulatory framework that provides Canadians with access to telecommunications services which are, in every sense, world class”. This focus is reflected in the renewed Framework and the changes that are being adopted.

¹ All federal Acts can be found on the [Department on Justice web site](http://canada.justice.gc.ca) at <http://canada.justice.gc.ca>.

On December 14, 2006 the Governor in Council issued a policy direction to the Canadian Radio-television and Telecommunications Commission (CRTC) directing the CRTC to rely on market forces to the maximum extent feasible under the *Telecommunications Act*, and to regulate where there is still a need to do so in a manner that interferes with market forces to the minimum extent necessary. This renewed Framework reflects this broad policy orientation in the context of existing legislation.

The Department anticipates that this renewed Framework will continue to provide an effective policy and regulatory foundation for the Program to accommodate the evolving delivery of telecommunications, broadcasting and new media.

3. Context for the Spectrum Policy Framework

3.1 Government Mandate

The Minister of Industry, through the *Department of Industry Act*, the *Radiocommunication Act* and the *Radiocommunication Regulations*, with due regard to the objectives of the *Telecommunications Act*, is responsible for spectrum management in Canada. As such, the Minister is responsible for developing national policies and goals for spectrum resource use and ensuring effective management of the radio frequency spectrum resource.

3.2 Impact on Access to Spectrum

Spectrum is a finite resource. Many factors affect access to spectrum, such as:

- new and rapidly changing technology and accompanying market demands which are expected to challenge the Department's ability to anticipate and respond to requirements for access to spectrum in a timely manner;
- globalization, which elevates the need to ensure that there is a regulatory environment conducive to the efficient assignment of spectrum among competing uses that is internationally harmonized to the greatest extent feasible; and
- the increased focus on public safety and security, which is reflected in an array of emerging issues.

3.3 Developments in Other Countries

The spectrum management programs of other countries are facing similar challenges to those in Canada. A number of countries, such as Australia, the United Kingdom and the United States have undertaken extensive reviews of their spectrum management programs, and are currently implementing changes. A common finding in these reviews is that traditional methods of spectrum management have often impeded access to spectrum and are slow to adapt to changes in technology and markets. As a result of these reviews, these countries are taking steps to evolve from a prescriptive style of spectrum management to an approach that embraces more flexibility and a greater reliance on market forces.

3.4 Recent Developments in Canada

In Canada, an extensive review of government regulation of telecommunications was recently completed by the TPRP. In its report, the TPRP commented on and supported the Department's ongoing review of the Framework. The TPRP also noted the significant steps that the Department has taken to adapt the Program such as the use of spectrum auctions and a form of spectrum trading for certain licences. In the opinion of the TPRP, "Canada needs a policy framework that supports a strong and vibrant industry, enhances the efficient use of spectrum and facilitates the adoption of wireless". A number of the TPRP recommendations bear directly and indirectly on the role of the Framework in setting out policy and guidelines for the Program.

The government has expressed general support for the broad thrust of the TPRP report, in particular the move toward reliance on market forces to the maximum extent feasible.

The Department continues to explore and implement new approaches and techniques in spectrum management to ensure the greatest access to spectrum in a competitive marketplace and the availability of spectrum for public interest needs such as security and public safety. In this context, the Framework must serve as the appropriate policy vehicle to support the ongoing modernization of the Program.

3.5 The Public Consultation Context

The Consultation, the Department's second review of the Framework, resulted in extensive and varied comments (in all, twenty-seven submissions were received) primarily from service providers, manufacturers and associations representing various interest groups. Generally, the comments received were supportive of the proposed changes, although some respondents disagreed with certain aspects.

It is important to note that the public feedback provided to the Department has been very helpful in preparing this revision of the Framework. The Department anticipates that this renewed Framework will continue to provide an effective policy foundation for the Program and will accommodate the evolving delivery of telecommunications, broadcasting and new media in the near to mid term.

A number of themes emerged in the public comments and are presented as follows.

The Application of Economic Incentives and Market Forces in Spectrum Management

A particular focus that emerged in the comments on the proposed revision to the Framework was the appropriate balance in spectrum management between the use of economic incentives and market forces compared to government intervention. Some large service providers offered unqualified support for the application of market forces. Many other respondents offered support in principle, but subject to the caveat that reliance on market forces does not threaten use of the spectrum for public interest requirements. For example, many specific interest groups such as public safety and scientific entities argued that their access to spectrum should be exempted from the application of market forces. There were also calls for government intervention to support interoperability standards for public safety services, availability of licence-exempt spectrum and its impact on incumbents, set asides for linguistic minorities and for facilitating communications in rural areas.

Facilitating the use of Spectrum

There was overwhelming support for the introduction of a third-party access scheme and many specific comments and proposals were made regarding its implementation.

As well there was considerable support for allowing flexibility in the application of domestic frequency allocations, although there was concern expressed about the windfall that might accrue to current licensees of spectrum.

Roll-out Licence Conditions

Some incumbent service providers expressed the view that licensing conditions requiring the rollout of radio systems were inappropriate as the Department moves towards a greater reliance on market-based mechanisms in licensing. Consequently they proposed the deletion of that matter from the proposed Policy Guidelines. Others stated that at least rollout requirements should not apply to spectrum that has been licensed through an auction.

Others were of the view that rollout requirements should be retained as a means of encouraging the deployment of spectrum. Several specific suggestions were made for modification of the wording. One suggestion was to temper the wording of the Policy Guidelines to take into account "...the market, technology development, manufacturing, implementation and roll-out time for the service." Another suggestion proposed wording that would require the Department to periodically review licensed spectrum holdings and take appropriate steps in cases of non-compliance with licence conditions.

Spectrum for Licence-exempt Operations

There was general consensus that the Department should not create unique licence-exempt bands for Canada but rely on the larger market forces associated with regional or global designations.

However, concern was expressed by a number of service providers using licensed spectrum that a "tragedy of the commons" was occurring in frequency bands designated for licence-exempt operations whereby competing uses and inefficient practices were undermining the value of the spectrum. In addition, one comment stated that the creation of additional licence-exempt bands should be temporarily suspended until this issue is clarified. These service providers also believe that the Department should adopt measures to ensure that adequate protection is afforded to licensed operations in frequency bands adjacent to licence-exempt applications.

Various commentators offered suggestions for the means of ensuring that licence-exempt equipment operates within defined limits.

Advances in Technology

The Consultation elicited some positive response regarding the benefits of the future role of software-defined radio and cognitive radio. However, the general consensus was that these particular technologies would be introduced in an incremental fashion and the benefits would accrue slowly.

Certain interest groups expressed concerns about the potential for interference from underlay techniques or the application of the concept of Interference Temperature in spectrum management.

Several ideas were advanced regarding the establishment of research and development (R&D) requirements in licensing. Some respondents favoured the exemption of smaller licensees from R&D requirements, applying R&D requirements only to licences awarded by first come, first served process (FCFS) and also considering equivalent expenditures of in-kind contributions.

Facilitating Communications in Rural and Remote Areas

There was general support for the provisions of the Framework that seek to facilitate access to communications in rural areas. There were a few specific proposals for modifications of the wording.

In the discussion topics, there was considerable support for the use of flexible spectrum management tools which would facilitate the deployment of communications in rural areas. Another idea advanced was to apply R&D expenditures to fund rural/remote communications deployment. There was limited comment on the topic of a definition for rural areas, and most of that opposed the use of a population density as a measure. Another alternative was offered to define rural based on the availability of certain types of communications facilities in those areas.

Public Safety

Respondents were generally supportive or silent on the Framework provisions which ensure access to spectrum for security, sovereignty and public safety needs. However, a number of respondents pointed out that public safety and security communications are often carried by commercial systems, that this should be recognized in the Framework, and the priority for access to spectrum be afforded for all systems regardless of ownership. There was also considerable support for the adoption of interoperability standards for public safety. Most respondents felt that these standards should be derived by industry consensus.

3.6 The Bridge Between Changes Initially Proposed and the Opportunity to Bring More Progressive Change to the Renewed Framework

In light of the dynamic spectrum management environment and the challenges for government and industry in rolling out new and innovative radio technologies for the social and economic benefit of Canadians, the Department has taken the opportunity in this review to streamline the Framework. The Framework reflects the Department's evolution toward more market-based policies and regulation where appropriate, and the government's recently stated commitment to this approach. In addition, it is believed that this more concise Framework underlines the Department's ongoing thrust towards smarter regulation and reflects recent industry-expressed desires for a simpler, yet broad-shouldered enough guiding policy instrument to meet the challenges of the Program for the foreseeable future.

It is against this back drop of public consultation, extensive discussions with industry and the recent broader policy thrusts of the Department that the renewed Framework in Section 4 is now established.

4. The Spectrum Policy Framework for Canada

4.1 Elements of the Framework

The Framework is comprised of a Preamble, a Policy Objective (the Objective) and a set of Enabling Guidelines (the Guidelines). The Objective of the Framework provides the fundamental policy basis for the Program, whereas the Guidelines provide direction toward achieving the objective through management of Canada's spectrum resource. Together, these Framework components provide the policy and spectrum management direction for wireless applications, services and uses, which range from national defence, security and public safety through to commercial, consumer, scientific and private radio.

4.2 Preamble to the Policy Objective and Enabling Guidelines

Discussion

The Preamble to the Policy Objectives and Enabling Guidelines of the Framework recognizes the Department's mandate for management of the spectrum resource and sets out the role of the Objective and Guidelines in undertaking this responsibility.

The Department is adopting the following Preamble:

In managing the radio frequency spectrum resource by the powers conferred by the *Radiocommunication Act*, and with due regard to the objectives of the *Telecommunications Act* and other related legislation, the Department will be guided by the following Policy Objective and Enabling Guidelines.

4.3 Policy Objective

Discussion

The Consultation on the revision to the Framework included a number of "core objectives", a practice used in previous versions of the Framework. However, several respondents to the Consultation felt that some of the core objectives of the proposed revision were not true objectives, but rather matters relating to how the Department should conduct itself in carrying out its statutory responsibilities. Examples given of this include "regulating wisely and only where required"; "consulting widely and on a regular basis"; and "advancing Canadian interests internationally". In many instances, these concepts were also included in the proposed policy guidelines.

The Department recognizes the benefits of having a clear distinction between policy direction for the Program and the guidelines for meeting that policy direction. Hence, objectives that did not meet these criteria have been removed from this revision of the Framework.

Another characteristic of the core objectives in the proposed revision and previous versions of the Framework is that several of them emulated selected objectives of the *Telecommunications Act* by recasting them as objectives for the Program. The Department decided that this duplication may lead to ambiguity and hence, this wording has been removed from this revision of the Framework. The Program will continue to be guided by the mandate of the *Radiocommunication Act*, including where relevant, the policy objectives of the *Telecommunications Act*.

The Department believes that appropriate policy direction for the Framework can be provided in one spectrum-specific general objective that is consistent with both the *Telecommunications Act* and the *Radiocommunication Act*.

The Department is adopting the following policy objective:

Policy Objective

To maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource.

4.4 Enabling Guidelines

Discussion

As discussed earlier, the Department recognizes the importance of setting out clear guidelines toward achieving the policy objective and directing the operation of the Program. These guidelines should contain the necessary direction for the operation of the Program, while providing the Department the latitude to apply appropriate measures, as required. For these reasons, the proposed guidelines of the Consultation have been simplified and revamped in this revised Framework.

In developing these revised guidelines, the Department recognizes, as do many other administrations, the importance of relying on market forces in spectrum management, to the maximum extent feasible. This includes aspects such as the removal of barriers to secondary markets for spectrum authorizations. However, it is recognized that there will also be a need to make spectrum available for a range of services that are in the public interest, but may not be driven by market forces. In particular, spectrum will continue to be made available to meet requirements for sovereignty, security and public safety.

This decision to rely to a greater extent on market forces must be tempered by the continued need for the management of the resource. However regulation, where required, should be minimally intrusive, transparent, efficient and effective. Public consultation will continue to be used to solicit input on planned changes to the Program.

The Department recognizes the benefits of implementing flexibility in a spectrum management program enabling spectrum users to adapt to changing conditions, to the extent practical. This also requires that the obligations and privileges of spectrum authorizations be clearly defined. Spectrum should be made available in a timely fashion in order to meet evolving needs.

The Department will reallocate spectrum, as necessary, such as to support the implementation of new services or to comply with changes to international frequency allocations. The impact of these reallocations on existing services, including the potential displacement of existing services, will be taken into account. However, any displaced spectrum users will be responsible for all costs incurred as a result of any reallocation of spectrum by the Department.

The Department will continue its long-standing practice of advancing Canadian interests internationally.

The Department is adopting the following enabling guidelines:

Enabling Guidelines

- (a) Market forces should be relied upon to the maximum extent feasible.**
- (b) Notwithstanding (a), spectrum should be made available for a range of services that are in the public interest.**
- (c) Spectrum should be made available to support Canadian sovereignty, security and public safety needs.**
- (d) Regulatory measures, where required, should be minimally intrusive, efficient and effective.**
- (e) Regulation should be open, transparent and reasoned, and developed through public consultation, where appropriate.**
- (f) Spectrum management practices, including licensing methods, should minimize administrative burden and be responsive to changing technology and market place demands.**
- (g) Canada's spectrum resource interests should be actively advanced and defended internationally.**
- (h) Spectrum policy and management should support the efficient functioning of markets by:**
 - permitting the flexible use of spectrum to the extent possible;**
 - harmonizing spectrum use with international allocations and standards, except where Canadian interests warrant a different determination;**
 - making spectrum available for use in a timely fashion;**
 - facilitating secondary markets for spectrum authorizations;**
 - clearly defining the obligations and privileges conveyed in spectrum authorizations;**
 - ensuring that appropriate interference protection measures are in place;**
 - reallocating spectrum where appropriate, while taking into account the impact on existing services; and**
 - applying enforcement that is timely, effective and commensurate with the risks posed by non-compliance.**

5. Implementation

The Objective and Guidelines of the *Spectrum Policy Framework for Canada* provide the guiding principles for the Canadian Spectrum Management Program. The Department expects that this revision to the Framework will provide the appropriate foundation for Canada's evolving communications needs. The revision becomes effective upon its release.

Issued under the authority
of the Radiocommunication Act

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