



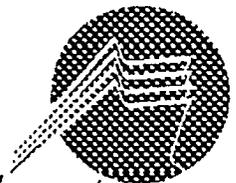
Policy and Call for Applications

**WIRELESS  
PERSONAL COMMUNICATIONS  
SERVICES  
IN THE 2 GHZ RANGE**

Implementing PCS in Canada

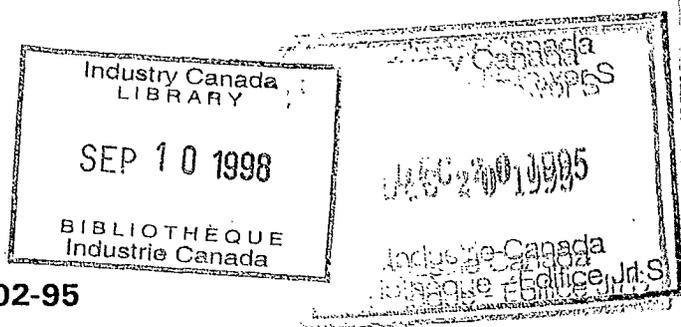
June 15, 1995

*Industry Canada*



JOWR  
TK  
0570  
.M6  
0557  
1995  
C.2

**DEPARTMENT OF INDUSTRY**  
**RADIOCOMMUNICATION ACT**  
**NOTICE NO. DGTP-005-95/DGRB-002-95**



**Wireless Personal Communications Services in the 2 GHz range**

This Notice announces the release of the paper entitled **Wireless Personal Communications Services in the 2 GHz Range**. The purpose of this document is to facilitate the timely and orderly implementation within Canada of wireless Personal Communications Services (PCS) in the 2 GHz range, by providing the policy and procedural framework within which potential service providers can submit radio applications. This notice and the above-noted paper initiate the selection and licensing process for 2 GHz PCS by calling for expressions of interest and detailed radio applications from prospective licensees.

On November 5, 1994, Industry Canada issued Gazette Notice DGTP-006-94, entitled **Policy Discussion and Proposals Respecting the Future Provision of Personal Communications Services and Frequency Spectrum in Canada in the 2 GHz Range**. That Notice outlined the general telecommunications policy objectives which would be pursued by the Industry Canada during the implementation of PCS, and raised a number of issues for public comment. In response to the Notice, twenty seven submissions were received from interested parties. The public submissions were given careful consideration by Industry Canada, and were also reviewed by the Information Highway Advisory Council, which provided Industry Canada with its recommendations on policy issues relating to PCS and the development of the Canadian information highway.

**Wireless Personal Communications Services in the 2 GHz Range** is available electronically via the Internet at the following addresses:

**Anonymous file transfer (FTP)**

son of debra.dgbt.doc.ca/ic-data/regulatory/gazette/dgtp

**Gopher**

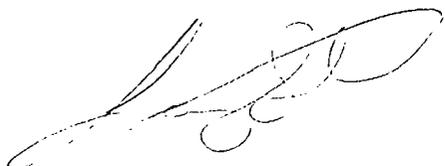
son of debra.dgbt.doc.ca port 70/Industry Canada Documents

**World Wide Web (WWW)**

<http://info.ic.gc.ca/ic-data/regulatory/gazette/dgtp>

Copies of the subject document are also available from the Communications Branch, Industry Canada, 235 Queen Street, Ottawa, Ontario K1A 0H5, (613) 947-7466, and from the offices of Industry Canada at Moncton, Montréal, Toronto, Winnipeg and Vancouver.

Dated at Ottawa this 9th day of June, 1995.



Michael Helm  
Director General  
Telecommunications Policy Branch



Jan Skora  
Director General  
Radiocommunications &  
Broadcasting Regulatory Branch

## Table of Contents

1.	Introduction . . . . .	1
2.	Background . . . . .	1
3.	General Telecommunications Policy . . . . .	3
4.	Policy Objectives for Personal Communications Services at 2 GHz . . . . .	4
5.	Spectrum Utilization for Personal Communications Services . . . . .	5
	5.1 PCS operations in the licence exempt band . . . . .	5
	5.2 Licensed PCS operations . . . . .	6
6.	Policy Principles for Licensed PCS . . . . .	7
	6.1 Eligibility . . . . .	7
	6.2 Services . . . . .	9
	6.3 Implementation . . . . .	10
	6.4 Number of PCS licences available . . . . .	10
	6.5 Technology and technical standards . . . . .	11
	6.6 Other competitive and social considerations . . . . .	12
	6.7 Research and development . . . . .	14
	6.8 Licences . . . . .	14
7.	Transition Policy . . . . .	16
	7.1 General principles . . . . .	16
	7.2 Policy provisions for PCS . . . . .	16
	7.3 Transition policy for PCS implementation . . . . .	17
	7.4 Transition provisions for licensed PCS . . . . .	18
	7.5 Development of transition provisions for licence exempt PCS devices . . . . .	19
8.	Interconnection Between Telecommunications Networks . . . . .	20
9.	Selection and Licensing Process . . . . .	21
	9.1 Three phase process . . . . .	21
	9.2 Submissions . . . . .	22
	9.3 Public access to documents . . . . .	22
	9.4 Phase one expressions of interest . . . . .	23
	9.5 Phase two detailed submission . . . . .	24
	9.6 Filing address . . . . .	28
10.	Further Information . . . . .	29
	Appendix A Related Documents . . . . .	30
	Appendix B Release of Information under the <u>Access to Information Act</u> . . . . .	31
	Appendix C Research and Development Definitions . . . . .	33

## **WIRELESS PERSONAL COMMUNICATIONS SERVICES IN THE 2 GHZ RANGE: Implementing PCS in Canada**

### **1. Introduction**

The purpose of this document is to facilitate the timely and orderly implementation within Canada of wireless Personal Communications Services (PCS) in the 2 GHz range. A key aim of the policy measures being adopted by Industry Canada is to foster the ability of Canadians to benefit fully from the implementation of advanced wireless technologies and services, and to participate actively in their development.

This document provides the framework for PCS and initiates the selection and licensing process for 2 GHz PCS by calling for expressions of interest and detailed submissions from prospective licensees.

### **2. Background**

On November 5, 1994, Industry Canada issued Gazette Notice DGTP-006-94 entitled *Policy Discussion and Proposals Respecting the Future Provision of Personal Communications Services and Frequency Spectrum in Canada in the 2 GHz Range*. This Notice sought comments and outlined the general telecommunications policy objectives that would be pursued during the implementation of PCS. Among the matters raised for public comment were:

- general principles on frequency allocation;
- frequency spectrum for PCS;
- fostering of sustainable competition and innovative service; and
- rules for the displacement of specific radio stations in order to make the necessary spectrum available for PCS.

In response to the Notice, twenty-seven submissions were received from interested parties. The public submissions were given careful consideration by Industry Canada, and were also reviewed by the Information Highway Advisory Council, which provided its recommendations on policy issues relating to PCS and the development of the Canadian Information Highway.

Regional and global radio frequency allocations are important to the successful implementation of PCS in Canada. In particular, developments relating to spectrum allocation in the United States are of interest to Canadians. In a series of decisions beginning in September 1993, the Federal Communications Commission (FCC) authorized new personal communications services from the 2 GHz "emerging technologies" band. The FCC assigned a total of 140 MHz of spectrum to PCS which will accommodate up to six PCS licences in blocks of two sizes (10 MHz and 30 MHz blocks) in any given geographical area. Twenty megahertz (of the 140 MHz) have been set aside to serve licence exempt voice and data PCS devices.

"Personal Communications Services" include a group of telecommunications services utilizing both existing and proposed technologies and network capabilities. There is general agreement that PCS will use radio terminals operating primarily in a mobile or portable mode. While particular definitions continue to be refined as the concept of PCS matures, the goal which the industry appears to share is one in which the separate fixed and mobile communications services will be accessible by means of a single personal communications portable terminal that is capable of a multiplicity of tasks. This terminal will allow its user to contact anyone, at any time, anywhere. For one person (or communicating or computing device) to be able to reach another anywhere in the world, PCS networks will have to make extensive use of personal numbers to identify people or devices within a network or several interconnected networks.

The Canadian public telecommunications networks rely on the integrated North American Numbering Plan to accommodate their numbering requirements, and the 500 and 533 Numbering Plan Area (NPA) codes have been designated for personal communications. Industry Canada is currently the Canadian Numbering Administrator (CNA), and any service provider requiring numbering resources will have to apply to the CNA, at the Telecommunications Policy Branch.

The Canadian Steering Committee on Numbering (CSCN) has been established to develop recommendations for the necessary strategies to best represent the overall interests in number planning and implementation for the Canadian telecommunications industry and users. The CSCN will liaise with the North American Numbering Fora and make recommendations to Industry Canada to ensure a consistent numbering scheme within North America.

On-going developments in PCS networks are also likely to result in the provision of a wide range of service offerings, including data/text retrieval and transfer, dispatch and group calling, paging, radiolocation, enhanced E-Mail, narrowband compressed video, image, digital audio and multimedia applications. It is toward the achievement of these broad service goals that Industry Canada has formulated the policy principles set out below.

### 3. General Telecommunications Policy

Wireless networks in general, and personal communications services in particular, are expected to play key roles in the development of the Canadian information highway. Accordingly, Industry Canada undertook its policy-formulation activities in this area having regard to the statutory objectives of the Radiocommunication Act and the three objectives identified in the information highway strategy: the creation of jobs through innovation and investment; the reinforcement of Canadian sovereignty and cultural identity; and the provision of universal access at reasonable cost. Five principles which are to guide the development and implementation of the information highway strategy were also considered:

- an interconnected and interoperable network of networks;
- collaborative private and public sector development;
- competition in facilities, products and services;
- privacy protection and network security; and,
- life long learning.

The Minister, in exercising his powers under the Radiocommunication Act, may have regard to the policy principles set out in the Telecommunications Act. One of the objectives of telecommunications policy as set out in section 7 of the Telecommunications Act is to promote the ownership and control of Canadian carriers by Canadians. Canadian facilities-based telecommunications carriers must therefore satisfy specific requirements respecting Canadian ownership and control. Under these requirements, 80 per cent of the voting interest in the carrier must be owned and controlled by Canadians.

The Telecommunications Act also sets out several other objectives, including the rendering of reliable and affordable telecommunications services in all regions and the fostering of increased reliance on market forces for the provision of telecommunications services. Thus, any entity which owns or operates transmission facilities used to provide telecommunications services to the public for compensation (i.e., a facilities-based carrier) is, pursuant to the Act, subject to tariff regulation by the Canadian Radio-television and Telecommunications Commission (CRTC). The Act, however, also grants the CRTC new powers to forbear from regulating services provided by the carriers under its jurisdiction if it deems there to be sufficient competition to protect the interests of users or if it finds that to do so would be consistent with the policy objectives of the Act (section 34). Provision is made for exempting a class of Canadian carriers from the application of the Act (section 9). In the case of resale, Canada allows resale and sharing based on the use of domestic telecommunications facilities, and resellers are not subject to CRTC regulation under the Act.

The unprecedented growth in communications and information technologies has created an increasing awareness of, and concern with, the protection of privacy. This issue is now explicitly reflected in the telecommunications policy objectives of the Act. In this regard, PCS represents both a challenge and an opportunity, in the first instance because it is a radio-based service, and in the second because considerations relating to privacy can now be given the attention they warrant from the initial phases of the design of the equipment through the formulation of standards, to the implementation of services.

#### **4. Policy Objectives for Personal Communications Services at 2 GHz**

General policy objectives, some of which were briefly discussed in the preceding section, have a specific application to the introduction of PCS. Following internal study and a review of the received public submissions, as well as receipt of the recommendations of the Information Highway Advisory Council, the following detailed objectives have been adopted for the development and deployment of PCS:

- a) the stimulation of additional choice in the provision of cellular-like mobile radiotelephone services and the support of new technologies and facilities of high security and low cost which could compete with existing local wireline services;
- b) the provision of additional and innovative personal communications services at 2 GHz, rather than only the replication by similar services of the mobile services currently operating below 1 GHz;

- c) the facilitation of national, North American and world-wide service offerings, to enable both Canadian equipment suppliers and consumers to benefit from the availability of larger markets, and to allow Canadian users the opportunity to make use of wide-scale roaming capabilities;
- d) the stimulation of competitive and comprehensive service offerings, provided through the utilization of both existing and new facilities, through, among other measures, the non-discriminatory access by third parties to networks, thereby also promoting value-added services and content;
- e) the support of the provision of services to the greatest possible number of Canadians; and
- f) the promotion of jobs and investment in Canada, through the support of research and development activities in Canada and the concomitant development of expertise for international trade and investment opportunities.

## 5. Spectrum Utilization for Personal Communications Services

Gazette Notice DGTP-006-94 indicated that Industry Canada intended to designate suitable frequency spectrum in the 2 GHz range for both licensed and licence exempt PCS applications, having due regard for the existing services in that range. In order to obtain the greatest flexibility in the implementation of PCS in Canada, and to increase the opportunities for coordinating around the existing fixed (microwave) systems, the entire frequency band of 140 MHz (1850-1990 MHz) is designated for PCS.<sup>1</sup>

### 5.1 PCS operations in the licence exempt band

Licence exempt devices are radio apparatus which are exempt under the Radiocommunication Act from the requirement to operate under a radio licence in specified radio frequency bands and which conform to appropriate Industry Canada regulations and technical standards.

---

<sup>1</sup> It should be noted that additional mobile service spectrum has been allocated in the 2 GHz range, and that the 2110-2160 MHz band, in particular, may provide future spectrum for advanced universal personal communications.

Spectrum has been designated for licence exempt devices to allow for small scale personal and business applications that may fall outside the envelope of services offered by licensed PCS providers. In accordance with the above-referenced Gazette Notice, Industry Canada is confirming the designation of 20 MHz of spectrum in the band 1910-1930 MHz for PCS licence exempt device operations. This band is further subdivided between data and voice applications. The 10 MHz portion, 1910-1920 MHz, is to be used for asynchronous (data) communication devices, and the 10 MHz portion, 1920-1930 MHz, for isochronous (voice) applications.

As these licence exempt devices will operate in a common pool of spectrum, there is a need to adopt a scheme to avoid mutual interference. In that regard, Industry Canada will adopt a spectrum etiquette based on the one developed by WinForum and adopted by the FCC for use in the United States. The implementation of this band, 1910-1930 MHz, for PCS is dependent on the issue of the transition of fixed systems which is further discussed in section 7.

## 5.2 Licensed PCS operations

The larger portion of the PCS band is for use by licensed PCS systems - specifically, the sub-bands 1850-1910 MHz and 1930-1990 MHz.

As noted in section 2, the FCC in the United States adopted a frequency plan for licensed PCS that accommodates three 30 MHz blocks of spectrum and three 10 MHz blocks of spectrum. Each block is composed of equal size paired sub-blocks, for example, a 15 + 15 MHz pair or a 5 + 5 MHz pair. An important issue was whether to adopt the same frequency plan for PCS in Canada, or alternatively, whether to choose a different plan.

Industry Canada notes the success of cellular radio service in Canada and attributes large market penetration to the availability of a wide choice of cellular equipment developed for larger markets. In this case, reliance on the North American market has contributed to this success.

In considering the use of a frequency plan employing different block sizes than those of the United States, a number of technical and operational factors were considered. It was determined that significant differences in the frequency plan would result in a requirement for modification of equipment. Although these modifications might be relatively minor in nature, they would likely result in higher equipment costs and, perhaps more importantly, delays and limitations in the availability of equipment. As well, the use of the frequency plan employed in the United States provides both large and small blocks of spectrum facilitating a diversity of service offerings in Canada.

Based on these technical and operational considerations, and the policy objectives for PCS set out in section 4, Industry Canada is opting to use the PCS frequency plan which will permit a North American wide approach to the development and extension of services.

The frequency plan is therefore as follows:

Block A	30 MHz	1850-1865/1930-1945 MHz
Block B	30 MHz	1870-1885/1950-1965 MHz
Block C	30 MHz	1895-1910/1975-1990 MHz
Block D	10 MHz	1865-1870/1945-1950 MHz
Block E	10 MHz	1885-1890/1965-1970 MHz
Block F	10 MHz	1890-1895/1970-1975 MHz

It should be noted that the use of the above frequency blocks in areas near the Canada/U.S. border must be in accordance with the Interim Sharing Arrangement, dated November 14, 1994, between Industry Canada and the FCC concerning the use of the band 1850-1990 MHz.

## **6. Policy Principles for Licensed PCS**

The following policy determinations, of both broader and more specific application, are directed towards the provision of personal communications services within Canada in the spectrum defined in section 5.

### **6.1 Eligibility**

#### **6.1.1 Existing and new service providers**

The construction of the extensive infrastructure necessary to provide existing radiocommunication services, and in particular the deployment of the base stations needed to link the mobile units to the public switched telephone network, could enable existing providers to realize economies of scale when adapting their networks to provide PCS. They could implement PCS relatively more quickly and with minimal duplication of telecommunications facilities. Of further interest and concern in any such deliberation is the current business environment in which the service providers must operate. This environment is marked by the growth of large firms seeking to offer a comprehensive range of services on a global basis and by

regulators' evolving views on the appropriateness of permitting competition to resolve marketplace issues. The argument has been put forward that Canada needs a relatively small number of large telecommunications entities to compete internationally with the large multinational firms which are likely to dominate the industry in the near future.

At the same time, however, there are concerns that existing service providers, and especially cellular service providers, would simply replicate their operations and service offerings in a new frequency band. These concerns include the absence of competition and the fairness of any selection process in which potential new service providers could face disadvantages in competing to offer the new service.

More broadly, the question was raised of the extent to which the competing or complementary activities of the applicants should be considered in the selection process for a new wireless technology. Views have been expressed to limit the participation of those providers currently offering services with which the new service could be expected to compete. Allowing new entrants, which are not involved in the operation of existing systems, to implement the new services may result in more aggressive deployment and implementation strategies, foster price competition between services having overlapping target markets, and hasten the introduction of innovative new services.

Having considered the submissions outlined above and the policy objectives outlined in section 4, it has been decided to adopt certain eligibility criteria for those entities seeking to provide PCS. Any entity will be eligible to hold radio licences covering, in any geographic area, frequency assignments aggregating up to a total of 40 MHz of spectrum. This aggregation consists of:

- a) spectrum licensed for new PCS in the 2 GHz band;
- b) spectrum licensed for cellular mobile radiotelephony services in the 800 MHz band, and for similar public high-mobility radiotelephony services, other than air-to-ground telephony and mobile-satellite services;
- c) spectrum as defined in a. and b. above that is licensed to any affiliate<sup>2</sup> of the entity); and,

---

<sup>2</sup> "affiliate" is defined in the same manner as in subsection 35(3) of the Telecommunications Act; viz. "...a person who controls the carrier, or who is controlled by the carrier or by any person who controls the carrier."

- d) spectrum as defined in a) and b) above that is licensed to any other entity which has an operating and/or marketing arrangement with the subject entity (or with any of its affiliates) for the provision of uniformly-branded or jointly-offered telecommunications services.

An entity may undertake in its application for a PCS licence to divest itself of such spectrum resources, or to implement such changes in its commercial arrangements, so as to bring it within these eligibility criteria prior to the issuance of the requisite licences for PCS, in each case describing the mechanism and timetable under which such divestiture or change in arrangements would be effected. This limit on the aggregation of spectrum will be in effect during a term of three years from the initial selections of PCS licensees after which the restriction may be reviewed by Industry Canada. The aggregation rule will also be observed when the transfer of an ownership interest in a successful applicant is effected.

#### 6.1.2 Operating areas of licences for new services.

Large regional and nationwide licences have the potential to provide consumers with the convenience of wide-area access, obviously important in the development of mobile telecommunications services. Smaller geographic operating areas, however, decrease the capital requirements of individual licensees, and may promote more rapid deployment and greater consumer responsiveness. Although the licensing processes for most of the recently introduced mobile radio services have been oriented towards favouring applications undertaking to provide national or broad coverage, there are likely to be mobile radio service applications in the future which will neither be demanded nor economic over large geographical areas.

Accordingly, while local, regional and national companies are fully eligible, and encouraged, to participate in the comparative licensing procedure for every spectrum block, preference in the larger blocks will be extended to companies that are capable of supplying integrated, nation-wide, end-to-end service. Individual companies could demonstrate this ability through, for example, evidence of contractual affiliations with other companies that would enable the necessary level of service to be provided.

#### 6.2 Services

In Canada Gazette Notice DGTP-006-94, comments were solicited with respect to the types and descriptions of services that might be offered by PCS in the future. Public comments received in response to this Notice were overwhelmingly in favour of not predetermining services to be offered by PCS, and, as a result, there will not be any such requirements.

Industry Canada will give very careful consideration during the selection process to the innovative nature of the services that applicants propose to offer, as well as to proposals for the delivery of value added services and content. Applicants are therefore urged to carefully address in their applications how their proposed service offering would meet novel foreseen needs, existing needs in a new or improved manner, or demands not currently being adequately satisfied. Included within the scope of such explanatory materials could be the manner in which a proposed service would address niche markets, either as an offering in a diverse urban market or in a non-urban location that has different or unique demands. Applicants proposing to offer innovative services should be able to substantiate in reasonable detail their ability to deliver such services.

The enhancement of the efficiency and competitiveness of Canadian telecommunications, at both the national and international levels, is certainly an objective of Canadian telecommunications policy that PCS could be expected to foster. The telecommunications carriage and equipment-manufacturing industries are major sources of economic activity in Canada, employing over 100,000 people; they also represent Canada's leading high technology industries. The timely introduction of new personal communications services enables Canadians to take advantage of novel means by which to increase their productivity and enhance their personal lives. It also allows Canadian suppliers of services and products to gain experience with new technologies and new services.

### 6.3 Implementation

Industry Canada will require applicants to submit their proposed implementation schedules. Applicants that undertake to provide the most rapid and the most extensive population and geographic coverage within their identified service areas will receive comparatively more favoured consideration.

Applicants are reminded of the necessity to proceed in a manner that minimizes the displacement of fixed microwave stations while meeting their commitments with respect to PCS implementation. Selected service providers are, in any event, urged to obtain any required regulatory approvals and to effect any necessary contractual arrangements as soon as reasonably possible after the selection process has concluded.

### 6.4 Number of PCS licences available

How many service providers will be licensed to offer PCS? The licensing of radio facilities for essentially all eligible and qualified service offerings allows competitive forces to rationalize the offerings in accordance with consumer preferences, albeit at some cost in infrastructure investment and in spectrum utilization. To the extent that a variety of innovative services are to be

encouraged, licensing more, rather than fewer, competitors would foster an environment in which consumers have the greatest and most direct ability to influence the market to meet their needs. At the same time, if there are applications that do not describe services which are likely to provide a significant benefit to the public, it would mitigate against an award of licences in all of the identified frequency blocks.

Accordingly, Industry Canada will not make a predetermination of the number of service providers that are to be licensed in the current process. Instead, it will review all the submitted applications with a view toward licensing those proposals most likely to lead to the development of innovative services that will be useful to Canadians, and which will effectively contribute to an expanding range of services and suppliers, subject to spectrum capacity and efficiency considerations. As a consequence, in the absence of sufficiently meritorious applications, Industry Canada will not necessarily license, in the initial selection round, all possible blocks of spectrum, and may instead reserve part of the identified spectrum resources for future services. Once the initial authorization of service providers has been completed, Industry Canada anticipates that no further authorizations for new PCS providers in the 2 GHz band will be issued for the near to intermediate term.

#### 6.5 Technology and technical standards

Industry Canada is aware that the telecommunications industry is working aggressively to complete several voluntary interoperability standards for PCS. These standards are based on different technologies and for each technology these standards provide for interoperability and roaming across the PCS spectrum blocks as set out earlier.

In view of this standards development activity, Industry Canada will not mandate any particular standard at this time. Industry Canada will encourage PCS operators to adopt those standards for their service which would provide benefits of interoperability and roaming to consumers.

For the purposes of equipment certification, Industry Canada will use standards developed by industry standards development bodies. In addition, minimum technical standards will be used to avoid potential harmful interference to other PCS operations and to other radio services operating in bands other than the PCS bands. These minimum standards will be harmonized with those of the United States.

Applicants should provide with their proposals, information about the technical means for and costs of, providing for lawfully warranted interception of communications by law enforcement agencies under Part VI of the Criminal Code of Canada.

## 6.6 Other competitive and social considerations

### 6.6.1 Impact on basic telephone service

What impact could PCS services have on the principle of universal, affordable access to basic telephone service? Consideration must be given to new, competitive means by which local and other telephone services can be supplied, the public switched telephone network being only one type of network with which PCS terminals can be interconnected. PCS will likely include services that can compete with those higher margin services that have traditionally provided the revenues required to ensure universal access to local telephone service, and may promote the utilization of services that do not make use of existing commercial networks. PCS may also offer alternatives, through the exploitation of new technologies, which may decrease or eliminate the current transfer of resources deemed necessary to achieve universal access by regulated wireline carriers. Indeed, some analysts note that PCS can provide access to alternative telecommunications networks (new wireless or existing cable television networks, for example) without requiring the installation of additional or replacement access facilities to the home. These analysts foresee PCS as competing more with conventional, copper local loop technology than with such existing mobile telecommunications services as paging and cellular telephony. Others, however, believe that new mobility service applications will dominate, at least as long as spectrum remains relatively scarce.

Given the objective of fostering competition in the provision of services, the selection process will favourably consider the introduction of new PCS services which might have a beneficial impact on the competitive provision of affordable local service and universal access. Applicants should also, where appropriate, indicate other means by which they would support universal service, e.g. by making available hearing aid compatible terminals.

### 6.6.2 Impact on the Information Highway

What is the impact that any particular new telecommunications development might have on the information highway and the other critical developing information technologies of the future? PCS might serve as the "last link" of the conduit by which such services are provided to the consumer, or it may have a broader role. Accordingly, favourable consideration in the selection process will be given to the extent to which a service offering advances the development of an integrated personal communications system capable of fulfilling the objectives of the Information Highway.

### 6.6.3 Equality of competition

Order in Council P.C. 1994-1689, dated October 8, 1994, contains clear statements of government policy pertaining to competition between facilities-based carriers. Two of the policy statements contained in PC 1994-1689 that are directly applicable to PCS are repeated below.

It is government policy that:

- the facilities and capacity of telecommunications carriers under federal jurisdiction, ..., be made available for lease, resale and sharing by service providers and other carriers on a non-discriminatory basis; and
- facilities and capacity, including support structures should, to the extent practicable, be provided in a manner that allows users to use and pay for only those parts of the network infrastructure that they require.

It is expected that applicants will indicate their intention to respect these policies by, for example, undertaking to make their future PCS and existing telecommunications facilities available to others on a resale basis. Applicants should be aware that facilities being used for the provision of cellular mobile radiotelephony services at 800 MHz are included within the scope of the policy referred to in this section.

Similarly, applicants are expected to respect Industry Canada's policy of encouraging shared use of advantageous antenna sites among mobile telecommunications service providers, where this is practical and where appropriate commercial agreements can be reached.

### 6.6.4 Access to 911 service

The introduction of PCS provides an opportunity to address a number of the concerns that Canadians have expressed over the past several years about the social impact of wireless communications. Wireless communications can offer a "lifeline" by means of which assistance can be summoned in the event of a medical emergency or when the assistance of law enforcement officials is required. This is especially important for the elderly and mobility impaired, for whom easier access to the telecommunications network can result in an enhanced sense of security and an increased level of convenience. Applicants will be expected to provide connection to appropriate 911 services.

### 6.6.5 Privacy

Similarly, Canadians have clearly expressed, in a number of fora, that they value their privacy. The use of radiocommunications to effect the link between the personal communicators and the conventional public switched telephone network (or other networks) has obvious ramifications for the privacy concerns of users, as evidenced most recently in the cellular area. PCS provides an opportunity to introduce a relatively high level of privacy protection for both voice and data applications. Applicants will be encouraged to delineate the enhancements to privacy protection that they can offer through the inherent technology being utilized and through the use of additional optional features.

### 6.7 Research and development

The Government of Canada encourages research and development in Canada through the objectives set out in the Telecommunications Act. To enhance the competitiveness of Canadian industry, successful applicants will be expected to support R & D activities in Canada relating to, in particular, communications technologies. Applicants who undertake and/or support research and development equitably distributed among the regions in Canada will be favoured.

### 6.8 Licences

#### 6.8.1 Fees

Radio licence fees are prescribed by regulation. Industry Canada believes that PCS licence fees should correspond to fees for similar existing services. As a result, wide area coverage, high mobility type systems should have licence fees which generally correspond to the existing radio station licence fee for cellular radiotelephone systems. For smaller area coverage systems, where the radius of coverage is less than 1 km, fees should be scaled down proportionally from the wide area licence fee on a general basis. Industry Canada will be recommending licence fees of \$17/MHz/station for limited area systems and \$1,700/MHz/station for wide areas systems, based on the frequency block allotted. Thus, for example, for each station operating within a 10 MHz frequency block, the limited area system fees would be \$170 per station and wide area system fees would be \$17,000 per station. For each station operating within a 30 MHz frequency block, the limited area system fees would be \$510 per station and wide area system fees would be \$51,000 per station.

Applicants are further advised that Industry Canada is currently preparing a comprehensive review of the radio licence fee regime. Applicants are reminded that Industry Canada has yet to conclude its consideration of comments received in response to its review of the comparative selection and licensing process and

both, therefore, are subject to revision in the future. In formulating their proposals and business plans, applicants should be aware that Industry Canada is giving consideration to establishing licence fees in the future based on authorized, rather than utilized, spectrum. Further, Industry Canada continues to be of the view that radio licence fees should reflect the economic value of the radio frequency resource consumed.

### 6.8.2 Conditions of licence

The licensee must comply with the Canadian Carrier eligibility criteria as set out in subsection 16(1) of the Telecommunications Act and in the Canadian Telecommunications Common Carrier Ownership and Control Regulations. Licensees must also utilize equipment which meets applicable technical requirements and is approved for use in Canada and comply with the requirements and conditions for the transition of existing fixed microwave licensees as set forth in section 7 of this document.

Applicants are also advised that the conditions of licence such as, but not limited to, the following may be applicable:

- the licensee will comply with the requirements and conditions set forth in this document except as specifically authorized to the contrary;
- the system will be installed and operated in accordance with the implementation plan and all other commitments will be met as outlined in the phase two submission;
- the licensee will file a detailed annual report outlining progress made in all areas; and
- the licensee will fulfill its five year R & D commitments as set out in the phase two submissions.

### 6.8.3 Transfer of authorizations

Consistent with general policy in this area and the specific provisions of section 18 of the General Radio Regulations II, the transfer of an authorization to another party will not be allowed without a full review of the application by Industry Canada and the approval of the Minister. In the absence of exceptional circumstances, no transfer of authorizations will be permitted in the first three years after the award of an authorization granted pursuant to this policy to provide PCS.

## 7. Transition Policy

### 7.1 General principles

The *Spectrum Policy Framework for Canada* issued in 1992 outlines, among other things, the policy guidelines dealing with the allocation of spectrum resources and the displacement of radio systems. The policy states that:

The radio frequency spectrum, as a national public resource, will be allocated and planned to advance public policy objectives, while ensuring a balance between public and private radiocommunication use to benefit the Canadian public. The allocation of and access to the spectrum will be adapted to meet changing user requirements, to provide spectrum that best meets the needs of the user, and to facilitate new and innovative services.

As a guideline for radio system or services displacement, the policy states that:

As a radio licence does not confer ownership nor a continued right to a particular radio frequency, the Department will continue to provide reasonable notice to inform users of any conditions or circumstances which could result in the displacement of their services or systems to other bands.

Moreover, the policy reconfirms that there is no liability or responsibility or intent by the Department to financially compensate spectrum users being displaced. Furthermore, as new services have been introduced, it has not been the practice of Industry Canada to ask new radio users to compensate existing users being displaced. Of course, private arrangements may be made between new radio users and existing users on a voluntary basis, within the provisions of the spectrum transition policy.

The terms of the policy are reinforced by section 20 of the General Radio Regulations, Part II, which provides that the assignment of a radio frequency does not confer a monopoly on the use of the frequency or any right of continued tenure.

### 7.2 Policy provisions for PCS

As established by public consultation, there is strong support and interest for the implementation of PCS in the 2 GHz range. Also, the public comments received on DGTP-006-94 support, with some variations of certain aspects, the general direction and rules proposed for a transition mechanism to take into

account the specific fixed stations that need to be displaced to make frequency spectrum available, where necessary, for the implementation of PCS.

Industry Canada has taken the following policy actions as a first step to accommodate the spectrum requirements of PCS and fixed services.

The *Revision to the Canadian Table of Frequency Allocations (1994)*, announced in Gazette Notice DGTP-005-94 dated October 29, 1994, makes frequency allocations for the implementation of mobile service such as PCS. The new footnote C35<sup>3</sup> in the Canadian Table establishes the inter-service provisions for the fixed and mobile allocations in the band 1850-1990 MHz.

Industry Canada adopted a full *Revision of the Microwave Spectrum Utilization Policies in the Range of 1-20 GHz* with the publication of Gazette Notice DGTP-002-95 on January 21, 1995. These policies include the re-arrangement of fixed microwave bands at 2 GHz to enable the implementation of PCS service. Also, effective January 21, 1995, a moratorium has been placed in effect on any further licensing of new fixed microwave stations in the bands 1990-2010 MHz and 2110-2200 MHz, in order to facilitate, in due course, the introduction of emerging wireless communications, including future generations of personal communications. The microwave spectrum policies will assist existing microwave users to take advantage of the availability of frequencies in the modified fixed service bands at 2 GHz (outside the frequency spectrum designated for PCS and the bands identified in the above-mentioned moratorium) and in other suitable bands above 3 GHz.

As announced in Gazette Notice DGTP-006-94, Industry Canada has put a moratorium on the licensing of new fixed microwave applications in the band 1850-1990 MHz effective November 5, 1994.

### 7.3 Transition policy for PCS implementation

A *Spectrum Transition Policy* and the provisions being adopted in this section will provide for the release of frequency spectrum for PCS systems and the orderly displacement of fixed stations.

The following provisions of the *Spectrum Transition Policy* recognize the need to provide a reasonable period of notification for displacement of fixed

---

<sup>3</sup> C35 (CAN 94) Existing fixed stations operating in the band 1850-1990 MHz will have priority over the mobile service until 1 July 1997. After this date, specific fixed stations will need to be displaced where necessary to enable the implementation of new mobile systems such as personal communications. The displacement of fixed stations as well as the implementation of new mobile systems will be governed by spectrum utilization policies.

stations and the need to introduce PCS in the marketplace in the earliest time frame. Moreover, the provisions outline a "where necessary" displacement approach which links the relocation of fixed stations to the PCS service implementation and spectrum requirements.

#### 7.4 Transition provisions for licensed PCS

The following provisions apply to the displacement of fixed stations to provide spectrum for licensed PCS systems:

- a) Notification for displacement of specific frequency assignments of fixed stations to make spectrum, where necessary, available in certain geographical areas will begin to be served after PCS licences have been awarded. Industry Canada will issue a set of operating guidelines, in the near future, outlining the displacement process and the related spectrum sharing criteria for coordination.
- b) The displacement of frequency assignments of fixed stations and the date indicated in the notification will be based on the frequency spectrum necessary for the implementation of PCS. PCS operators will ensure that such displacements, including dates, are critical to meet the PCS service dates and that reasonable frequency spectrum alternatives do not exist.
- c) For any fixed frequency assignment subject to displacement, the notification period will be a minimum of 4 years for microwave equipment that has been licensed for 10 years or less at the time of the notification, with the exception of frequency assignments authorized to PCS licensees and their affiliates (as referred to earlier in this document), and the cellular carriers, in which case a minimum notification period of 2 years will apply. Frequency assignments for which the microwave equipment has been licensed for more than 10 years at the time of notification will be given a minimum notification period of 2 years. Earlier displacement may be achieved through mutual agreements between PCS operator(s) and the affected fixed station operator(s).
- d) The fixed station operator will cease the operation of the identified frequency assignment(s) on or before the displacement date indicated in the served notification. In accordance with footnote C35 in the Canadian Table of Frequency Allocations, a fixed station licensee will not be required to displace frequency assignments before July 1, 1997.
- e) In the event a PCS operator identifies a need to defer a notified displacement date, an amendment to the notice of displacement should be issued at least 1 year prior to the displacement date in effect.

f) The PCS and fixed service operators are encouraged to negotiate mutually acceptable displacement dates within the provisions of section c) above. Industry Canada will retain oversight of the displacement process and will assist, where appropriate, affected fixed operators in identifying new replacement frequency assignments.

Some PCS licensees may also be operators of fixed stations with frequency assignments in the band 1850-1990 MHz. Industry Canada may take certain necessary action, including the incorporation of specific PCS licence conditions addressing the displacement of such frequency assignments, in order to foster a level playing field amongst the licensed PCS operators and to make available the necessary spectrum. As an example, prior to providing service in a specific area, a PCS licensee may be required to cease operation of those of its fixed station frequency assignments that would prevent the timely introduction of the service in that area by other licensees. Also, it would be expected that existing fixed station operators will act in good faith to accommodate PCS.

It should be noted that a significant delay in the use of released frequency spectrum by PCS licensees, after the displacement date, will be viewed by Industry Canada as a serious breach of service commitment, particularly if fixed stations were displaced prematurely.

Industry Canada will monitor the effectiveness of the spectrum policy provisions related to the displacement of fixed systems. Changes to these provisions may be made to ensure that the continued availability of spectrum for PCS services is accomplished in the most efficient manner.

#### 7.5 Development of transition provisions for licence exempt PCS devices

The implementation of licence exempt PCS devices can provide an opportunity to develop and implement new innovative services. The willingness of Canadian industry to actively develop an approach to encourage the release of frequency spectrum will be a strong indicator of the interest of Canadian industry to be more than importers but also manufacturers of PCS devices.

Initially there may be sufficient frequency spectrum unused in certain geographical areas in the frequency band 1910-1930 MHz to introduce non-nomadic licence exempt devices. ("Non-nomadic" refers to a device whose spectrum usage can be identified and controlled in a given area.) In some areas, it may be possible to coordinate the introduction of such devices with existing fixed stations.

The operation of nomadic licence exempt PCS devices may not be feasible until contiguous sub-bands of spectrum are made available country-wide.

Industry Canada believes that an industry organization should be established with a mandate to facilitate the orderly introduction of licence exempt PCS devices in Canada. Such an organization would be responsible for most aspects of the transition process including the following:

- The development of recommendations to Industry Canada regarding the displacement of frequency assignments of fixed stations, across Canada or in specific areas, in accordance with a business plan and a set of transition rules. (The transition rules for licence exempt PCS will be established by Industry Canada).
- The identification of specific sub-bands, and operating conditions, in populated areas where non-nomadic devices could operate without causing interference to fixed stations.

Industry Canada is currently seeking the view of industry on the structure and operating mandate of such an industry organization.

## **8. Interconnection Between Telecommunications Networks**

It is expected that many services authorized pursuant to this policy will require interconnection to the public switched telephone network. The CRTC, and in Saskatchewan, the relevant provincial authority, are responsible for approving the terms and conditions of interconnection for access to the public switched telephone network.

Interconnection standards similar to IS-01 (interconnection of cellular radio systems and common carrier systems) will be required to facilitate the interconnection with public switched networks. The Terminal Attachment Program Advisory Committee (TAPAC) will be required to develop these standards.

There are also likely to be opportunities for interconnection between the facilities constructed for PCS and networks other than the public switched telephone network. Proposals which enhance communications capabilities while rationalizing infrastructure investment will be encouraged. As noted above, one means of effecting such rationalization may be through the use of resale, by either offering to resell capacity on the PCS facilities to be constructed or by arranging for the use of (some part of) existing facilities.

## 9. Selection and Licensing Process

Industry Canada anticipates, due to interest already expressed, that the demand for this spectrum will exceed that available. Consequently, a comparative selection and radio licensing process will be used to introduce PCS in Canada in the 2 GHz range. A general outline of the process is presented below. For a detailed description refer to the document entitled *Industry Canada's Three-Phase Selection and Radio Licensing Process*.

### 9.1 Three phase process

The first phase announces the process and requests expressions of interest from applicants. A list of all those who expressed interest is made available to the public as soon as possible after the filing date. This provides applicants with an opportunity to identify other interested parties and potentially to identify those with whom they may wish to form alliances.

In the second phase, detailed submissions are filed by applicants. During this phase, Industry Canada evaluates the submissions and reserves the right to request additional information for the clarification or resolution of issues arising from this evaluation. Any such requests would be made in writing to the applicants, with responses to be in writing. Contact with departmental officials concerning the merits of any submission will not be entertained during this phase of the process. This does not limit contact with departmental officials concerning the process in general or for other unrelated issues.

In the third phase, site specific radio licences are issued to the successful applicants upon request in accordance with Industry Canada's normal licensing procedures. Before the issuance of radio licences, and hence, authority to install and operate specific stations, electromagnetic compatibility and environmental issues including safety and land use matters, among other issues, are considered.

The goal of the process is to ensure the best radiocommunication services are made available for Canadians and that the services are developed and established in an orderly and timely fashion. To this end, and given the expressed views of interested parties advocating an expeditious process, the first and second phases of the process for PCS are being run concurrently. All potential applicants are strongly encouraged to participate in phase one and phase two. Should there be an insufficient number of meritorious applications, the resulting unallotted spectrum may be held in reserve for future use.

## 9.2 Submissions

Applicants should be familiar with the policy provisions outlined in the preceding sections, and use them as a guide in the preparation of their submissions. Applicants should demonstrate in their submissions what measures they will take to comply with the policy if successful in the licensing process. Submissions which are inconsistent with any element of the policy will be considered but applicants should provide reasons for any inconsistency.

Industry Canada recognizes that applicants may wish to apply for differing amounts of spectrum, based on an amalgamation of the frequency blocks, or different blocks of the same or different size in a certain order of preference. Given the differences in service and technical plans which would be required where differing amounts of spectrum are requested, separate submissions must be provided for each proposal. If, however, applicants have a preference regarding a certain specific frequency block over another of the same size (eg. Block A versus Block B), only one application would be required.

## 9.3 Public access to documents

Industry Canada recognizes that certain portions of the submissions may be considered confidential by an applicant. In these instances, an applicant must clearly identify the information they consider confidential and, if claiming confidentiality, must submit both a non-confidential and a confidential version of their submissions. Industry Canada will make the non-confidential submissions available for viewing for a period of one year after the completion of the second phase of the selection and licensing process at its libraries located at 365 Laurier Avenue West, Ottawa and in its offices in Moncton, Montreal, Toronto, Winnipeg and Vancouver. During the same period, copies of the non-confidential submissions will be made available via a commercial printing service. Costs of duplication will be charged. After this period, arrangements for the viewing of the non-confidential submissions may be made through the office of the Director General, Radiocommunications and Broadcasting Regulatory Branch.

Applicants should be aware that information which they have identified as being confidential might still be subject to release upon request under the Access to Information Act and should refer to this Act. However, as a guide in determining whether information could be released pursuant to such a request, a list of some of the questions used as part of any review under the Access to Information Act is provided in Appendix B.

#### 9.4 Phase one expressions of interest

Expressions of interest for the implementation of PCS in Canada are to be filed with Industry Canada on or before July 17, 1995. By this date, applicants are to provide in writing sixteen (16) copies of their expressions of interest and one (1) electronic copy of their expression of interest. Should an applicant consider portions of their expressions of interest to be confidential, they are to provide in writing sixteen (16) copies of their confidential expressions of interest, eight (8) copies of their non-confidential expressions of interest, and one (1) electronic copy of their confidential and non-confidential expression of interest. Applicants are requested to identify the wordprocessing and graphic software utilized.<sup>4</sup> In the case of any discrepancies or questions with a submission, Industry Canada will consider the written version of the (confidential) expression of interest submitted by the applicant as the definitive text.

A list of those who applied, including their affiliates, and what was applied for will be made available to the public as soon as possible after the closing date for receipt of the expressions of interest.

Certain measures have been adopted in the policy which are intended to ensure fair and sustainable competition between established carriers and new PCS providers. Applicants should indicate whether additional measures, such as the delay of start-up of PCS mobile voice telephony-type services by successful applicants that are established carriers, would be desirable.

Industry Canada will review expressions of interest based on the criteria described below.

##### 9.4.1 Frequency block

Applicants must indicate their preference for frequency block(s) and the order of preference.

##### 9.4.2 Ownership and control

Applicants must provide a detailed description of their corporate ownership and control structure and provide an attestation that the applicant meets or will meet the provisions of section 16 of the Telecommunications Act and of the Canadian Telecommunications Common Carrier Ownership and Control Regulations. This should include copies of any agreements related to control in

---

<sup>4</sup> The electronic version must be in DOS format on a 3½" diskette, preferably using WordPerfect 5.1 or Microsoft Word 6.0. Graphic information should preferably be in one of the popular formats such as: WPG, PCX, BMP, TIFF, CDR, CGM, or WMF.

fact of the company, a list of the principals, affiliates and consortium members, if applicable, and their backgrounds. It should also include a description of the applicant's and, if applicable, the principals' corporate experience in the provision of telecommunications services or other related experience.

#### 9.4.3 Current spectrum usage

Applicants must provide a summary of their current spectrum allotments for cellular radiotelephone and similar public high-mobility radiotelephony services, if applicable. In addition, applicants must provide the spectrum allotments to its affiliates and any other entity with which it has an operating and/or market arrangement for the provision of uniformly-branded or jointly-offered telecommunications services. To satisfy the policy concerning spectrum aggregation, applicants may wish, in their submission, to indicate their willingness to commit to divesting enough of their current spectrum allotments or assignments subsequent to authorization but prior to licensing to render themselves eligible to obtain and maintain a licence. Refer to section 6 for a detailed description of Industry Canada's policy on this matter.

#### 9.5 Phase two detailed submission

Detailed submissions must be filed with Industry Canada on or before September 15, 1995. By this date, applicants are to provide in writing sixteen (16) copies of their detailed submission and one (1) electronic copy of their detailed submission. Should an applicant consider portions of their detailed submission to be confidential, they are to provide in writing sixteen (16) copies of their confidential detailed submission, eight (8) copies of their non-confidential detailed submission, and one (1) electronic copy of their confidential and non-confidential detailed submission. Applicants are requested to identify the wordprocessing and graphic software utilized.<sup>5</sup> In the case of any discrepancies or questions with the submission, Industry Canada will use the written version of the (confidential) detailed submission as the definitive text.

Industry Canada will evaluate the detailed submissions based on the criteria described in this document. Further, the criteria identified herein should be clearly reflected in the submissions.

##### 9.5.1 Financial capability

Financial capability is a significant factor in an applicant's ability to install and operate a new radiocommunication system, given the potential costs involved.

---

<sup>5</sup> Ibid

Applicants who can demonstrate financial capability for the implementation of their system will be favoured for selection. All applicants must include the following information in their detailed submission:

- audited financial statements of the applicant for the past three (3) full fiscal years, if applicable;
- current interim financial statements;
- audited financial statements of the parent company or affiliates for the past three (3) full fiscal years, if applicable;
- a five (5) year business plan for the applicant and the proposed system, including detailed financial forecasts for this period, complete with the key underlying assumptions (in sufficient detail to enable verification of plausibility);
- evidence that other necessary financing is obtainable on reasonable terms and conditions, if applicable; and
- any institutional, economic and/or technical arrangements with other companies or organizations related to the development and provision of the service, if applicable.

Upon authorization by the Minister, successful applicants will be requested to stringently and clearly demonstrate that both they and any affiliated or related companies and organizations have the necessary financial resources (for example: cash, operating cashflow, irrevocable lines or credit, other sources of financing) to implement and operate the proposed system for the initial two (2) years. Any instrument of financing must demonstrate that, absent of material change in circumstances, the applicant is creditworthy. Failure on the part of any applicant to provide this information to the satisfaction of the Department within a reasonable period of time following authorization (such as 90 days), may result in the suspension or revocation of the authority pursuant to subsection 5(2) of the Radiocommunication Act.

#### 9.5.2 Other capability

Applicants should demonstrate other capabilities supporting the delivery of their proposed PCS services such as, but not limited to, their technical expertise for both implementing the proposed PCS system and identifying/coordinating displacement of specific fixed stations, personnel in support of all aspects of system implementation, marketing, sales activities, and equipment availability. As evidence of such capability, applicants should include in their detailed submission

their current capability and any institutional, economic and/or technical arrangements with other companies or organizations for the delivery of their proposed service.

### 9.5.3 Services

Applicants proposing demonstrably achievable yet highly innovative new services in addition to services that would also provide increased competition to existing services will be favoured. To this end, applicants should provide a detailed outline of the services they will be offering, clearly demonstrating their innovative or competitive aspects. The description should clearly indicate the types of services envisaged, including supporting evidence such as market studies, field trials, and any other information in support of their submission. Innovative concepts must be supported by concrete evidence of potential implementation without the requirement for extraordinary government intervention.

### 9.5.4 System implementation

Applicants who propose system implementation in a timely manner, offering the greatest coverage to the most people within the geographic area requested, while providing a plan for the orderly transition of existing licensees in the affected spectrum block, will be favoured. Specifically, applicants must outline their PCS system implementation plans for the initial five (5) years and include:

- a detailed description of each specific geographic area in which service would be offered (cities and interconnecting traffic corridors) and the respective populations of these areas - the description of the geographic areas and their respective populations may be as defined, for example, by the 1991 Census;
- an annual schedule outlining the approximate number of stations that will be installed and in operation and the population to be covered for each geographical area such that the desired level of service is provided;
- any market assessment assumptions on which decisions concerning future marketing and rollout are based; and
- an explanation of how service will be provided over a larger area where an applicant is proposing to implement its service over more than one of the geographical areas defined above.

Applicants should submit a description of the manner and likely timing in which incumbent radiocommunication systems will be displaced and the technical

and/or operational measures to coexist with existing radiocommunication systems that will not be displaced.

Consideration is being given to the use of performance guarantees to ensure compliance to the system implementation plans as described in an applicant's detailed submission and to avoid the premature displacement of fixed microwave links. For example, a guarantee could consist of, but not be limited to, monetary commitments equivalent to the loss of radio licence fee revenue to the Crown for failure to respect system implementation plans.

Applicants are invited to propose in their submissions the form of such performance guarantees, specific milestones, and the appropriate value of any commitment into which they would be prepared to enter as a condition of licence upon authorization by the Minister. Industry Canada intends to announce its conclusions with respect to guarantees prior to the award of licences.

Premature displacement of a fixed microwave link will be viewed seriously and Industry Canada is considering mechanisms to adequately protect incumbent licensees from this occurrence. As a result, to ensure that fixed microwave links are displaced only when and where necessary, the Department is considering, among other options, the use of performance guarantees. Applicants are invited to propose in their submission the form of such guarantees and the appropriate value of any commitment.

#### 9.5.5 Technology

Applicants must provide a description of the technology(ies) to be used in the provision of the PCS services including references, as appropriate, to technical standards. Applicants should include a description of the following:

- how the proposed service features will be technically implemented;
- technical measures to coexist with other PCS operations and fixed systems in Canada and with those in the United States in accordance with the interim frequency sharing arrangement - the description should include the basis upon which the technical analysis was done, whether based on recognized industry procedures such as TIA/EIA Telecommunications Systems Bulletin (TSB10-F) entitled *Interference Criteria for Microwave Systems*, or on a mutually acceptable arrangement between the applicant and the other PCS operations and/or fixed systems;
- whether and how interoperability with other frequency blocks will be provided; and

- transmission facilities and system linking - in the event that applicants propose additional RF spectrum requirements in higher frequency bands for system linking, they should clearly indicate the frequency bands preferred, the amount of spectrum required, the architecture of radio facilities, eg. short collector links and multi-links, and any other relevant details.

The description should also identify how system capacity will be maximized. Applicants may also include evidence of any contractual arrangements already established, such as for the supply of equipment or antenna site agreements.

#### 9.5.6 Research and Development

Applicants should provide a description of any commitments to future Canadian research and development activities relating to personal communications technologies in the 2 GHz range. The description should outline, where applicable:

- the percentage of adjusted gross revenues that will be spent on related research and development in Canada;
- the in-house staff allocated to research and development;
- a research and development plan for the initial five (5) years; and
- measures to be undertaken to provide for equitable distribution of the research and development in the regions of Canada.

Refer to Appendix C for the definition of research and development.

#### 9.6 Filing address

Applicants should submit phase one and phase two written submissions to:

The Director General  
Radiocommunications and Broadcasting Regulatory Branch  
Industry Canada  
Journal Tower North  
300 Slater Street  
Ottawa, Ontario  
K1A 0C8

## 10. Further Information

General inquiries, strictly on clarification of the policy or on the application requirements and procedures contained in this document, may be addressed to either the Telecommunications Policy Branch, 300 Slater Street, Ottawa, Ontario, K1A 0C8 (Phone: 613-998-4333, 613-998-4470; Facsimile: 613-952-0567) or the Radiocommunication and Broadcasting Regulatory Branch, 300 Slater Street, Ottawa, Ontario, K1A 0C8 (Phone 613-998-3768; Facsimile: 613-952-9871).



Jan Skora  
Director General  
Radiocommunication and Broadcasting  
Regulatory Branch



Michael Helm  
Director General  
Telecommunications Policy  
Branch

## Appendix A Related Documents

The documents listed below provide background information related to PCS in the 2 GHz range. Copies of these documents may be obtained on request from Industry Canada, 300 Slater Street, Ottawa, Ontario K1A 0C8, attention DOSP-P, or from Industry Canada's regional and district offices.

1. Canada Gazette Notice DGTP-006-94, entitled *Policy Discussion and Proposals respecting the Future Provision of Personal Communications Services and Frequency Spectrum in Canada in the 2 GHz Range*.
2. Industry Canada's document entitled *Industry Canada's Three-Phase Selection and Radio Licensing Process*.
3. Industry Canada's discussion paper released in April 1994 entitled *The Canadian Information Highway*.
4. *The Interim Sharing Arrangement Between Industry Canada and the Federal Communications Commission Concerning the Use of the Band 1850 to 1990 MHz*.
5. *Revision to the Canadian Table of Frequency Allocations (1994)*, announced in Gazette Notice DGTP-005-94, October 29, 1994.
6. *Revision of the Microwave Spectrum Utilization Policies in the Range of 1-20 GHz* announced in Gazette Notice DGTP-002-95, January 21, 1995.

## Appendix B Release of Information under the Access to Information Act

The questions below are used during any review of information with respect to section 20(1) of the Access to Information Act.

### Section 20(1)(a) of the Access to Information Act

1. Is any information considered to be a "trade secret"?
2. If so, in what way is the information a "trade secret"?

For a record to qualify as a trade secret it must meet all of the following requirements:

1. it must consist of information;
2. the information must be secret in an absolute or relative sense, that is, known only by one or a relatively small number of persons;
3. the possessor of the information must demonstrate that they have acted with the intention to treat the information as secret;
4. the information must be capable of industrial or commercial applications; and
5. the possessor must have an interest (eg. an economic interest) worthy of legal protection.

Information or data not meeting the requirements of a "trade secret" may nevertheless qualify for exemption under other provisions applying to section 20(1).

### Section 20(1)(b) of the Access to Information Act

1. Is the information financial, commercial, scientific or technical information?
2. Who provided the information to the department?
3. Has the information been consistently treated as confidential?
4. What measures have been taken to consistently treat the information as confidential?
5. Is any information in the records publicly known or readily available upon request from the third party itself or another source?

Section 20(1)(c) of the Access to Information Act

1. Could the disclosure of information reasonably be expected to result in material financial loss to you?
2. Could the disclosure of the information reasonably be expected to result in material financial gain to someone else?
3. In what way could there be a material financial loss or gain resulting from the disclosure of information?
4. Could the disclosure of information prejudice your competitive position?
5. Describe in what way there could be a prejudice to your competitive position by the disclosure of the information.

Section 20(1)(d) of the Access to Information Act

1. Could the disclosure of the information reasonably be expected to interfere with contractual or other negotiations of your firm/company?
2. If so, in what way?
3. Are such contractual or other negotiations now underway or are they clearly expected in the near future?

## Appendix C Research and Development Definitions

Research is defined as the planned investigation undertaken with the hope of gaining new scientific, technical or social knowledge and understanding. Such investigation may or may not be directed towards a specific practical aim or application.

Development is defined as the translation of research finding or other knowledge into a plan or design for new or substantially improved material, devices, products, processes, systems or services. The costs of development include testing and demonstration costs until the process, system, or service is totally acceptable for commercial use/normal service offering. Such costs include overhead costs.

Adjusted gross revenues are defined as total service revenues less inter-carrier payments, bad debt, third party commissions, and provincial and goods and services taxes collected.