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Client Procedures Circular

# **Displacement of Fixed Service Stations Operating in the 2 GHz Frequency Range to Accommodate Licensed Personal Communications Services (PCS)**

## Preface

Client Procedures Circulars describe the various procedures or processes to be followed by the public when dealing with Industry Canada. The information contained in these circulars is subject to change without notice. It is therefore suggested that interested persons consult the nearest district office of Industry Canada for additional details. While every reasonable effort has been made to ensure accuracy, no warranty is expressed or implied. As well, these circulars have no status in law.

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## 1. Principle

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 radio frequency spectrum management in Canada. As such, the Minister is responsible for developing national policies and goals for spectrum resource use and ensuring the effective management of the radio frequency spectrum.

## 2. Mandate

By virtue of paragraph 5(1)(e) of the *Radiocommunication Act*, the Minister is given the authority to plan the allocation and use of the radio frequency spectrum. Section 40 of the *Radiocommunication Regulations* 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. Furthermore, by virtue of the *Department of Industry Act*, paragraphs 4(1)(k) and 4(1)(l), the Minister of Industry is given powers, duties and functions relating to telecommunications in addition to the development and utilization generally of communication undertakings, facilities, systems and services for Canada. As well, under paragraph 5(g) of that Act, the Minister is required to exercise these powers, duties and functions in a manner that will promote the establishment, development and efficiency of Canadian communications systems and facilities and assist in the adjustment to changing domestic and international conditions.

## 3. Related Documents

1. *Wireless Personal Communications Services in the 2 GHz Range*, June 15, 1995 (DGTP-005-95/DGRB-002-95);
2. *Revisions to Microwave Spectrum Utilization Policies in the Range of 1-20 GHz* (SP 1-20 GHz), January 1995;
3. TIA/EIA Telecommunications Systems Bulletin TSB-10-F, *Interference Criteria for Microwave Systems*, June 1994;
4. *Spectrum Policy Framework for Canada*, June 2007 (DGTP-001-07);
5. *Policy and Licensing Procedures for the Auction of Additional PCS Spectrum in the 2 GHz Frequency Band* (DGTP-007-00/DGRB-005-00); and
6. A Brief History of Cellular and PCS Licensing, October 2004.

## 4. Policy

It is the general policy of Industry Canada to effect the displacement of frequency assignments, only where necessary, and with a minimum amount of disruption to the users.

## 4.1 General Principles

The *Spectrum Policy Framework for Canada* (reissued in June 2007) outlines, among other things, enabling policy guidelines related to the allocation of spectrum resources and the displacement of radio systems. The enabling guidelines state that although market forces will be relied upon to the maximum extent possible in consideration of the Department's spectrum management mandate, this decision will also be tempered to ensure spectrum availability for the public interest. As well, the Department recognizes the benefits of implementing sufficient flexibility in its spectrum management program to enable spectrum users to adapt to changing conditions.

With respect to displacement of radio systems or services, the enabling guidelines state that:

The Department will reallocate spectrum, as necessary, such as to support the implementation of new services or to comply with international frequency allocations. The impact of these reallocations on existing services, including the potential displacement of existing services, will be taken into account.

Moreover, the Personal Communications Services (PCS) policy<sup>1</sup> reaffirms that there is no liability or responsibility or intent by Industry Canada to financially compensate spectrum users being displaced. Furthermore, as new services are introduced, it has not been the practice of the Department 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.

## 4.2 Policy Provisions for PCS

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

The *Canadian Table of Frequency Allocations 9 kHz to 275 GHz (2005 Edition)* (amended February 2007) notes frequency allocations for various radio services, including allocations for PCS. Footnote C35<sup>2</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 full *Revisions to Microwave Spectrum Utilization Policies in the Range of 1-20 GHz* (SP 1-20 GHz) with the publication of Gazette Notice DGTP-002-95 on January 21, 1995. These policies include the rearrangement of fixed microwave service bands at 2 GHz to enable the implementation of PCS. These microwave spectrum policies allow 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 in other suitable bands above 3 GHz.

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<sup>1</sup> Refer to Policy and Call for Applications: Wireless Personal Communications Services in the 2 GHz Range (*Canada Gazette* Notice DGTP-005-95/DGRB-002-95a).

<sup>2</sup> C35 (CAN-04): In the band 1850-1990 MHz, stations of the mobile service have priority over those of the fixed service with displacement of fixed assignments governed by the appropriate spectrum utilization policy.

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

### 4.3 Transition Policy for PCS Implementation

The PCS policy, originally released on June 15, 1995 and amended in June 2000<sup>3</sup>, provides a transition policy that addresses the release of frequency spectrum for PCS systems and the consequential orderly displacement of fixed stations.

The transition policy recognizes the need to provide a reasonable period of notification for displacement of fixed 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 implementation and spectrum requirements.

The following amended transition provisions (Section 7.4) 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 available in certain geographical areas may be served once PCS licences have been awarded.
- (b) The displacement of frequency assignments of fixed stations and the date indicated in the notification will be based on the spectrum necessary for the timely implementation of PCS. Operators will ensure that such displacements are required to meet the service dates and that reasonable frequency spectrum alternatives do not exist.
- (c) As of January 2001, all frequency assignments of fixed stations subject to displacement are afforded a minimum of a two-year notification period;

As of January 2002, the following minimum notification periods apply:

- for PCS implementation inside urban areas<sup>4</sup> having a population of 25,000 or more, all frequency assignments of fixed stations subject to displacement will be afforded a minimum of a one-year notification; and
  - for PCS implementation in other markets, all frequency assignments of fixed stations subject to displacement will be given a minimum of a two-year notification period.
- (d) As of January 2002, the Department may consider petitions from PCS operators to designate areas to be opened for service, including along major highways, where the displacement of all frequency

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<sup>3</sup> Refer to *Policy and Licensing Procedures for the Auction of Additional PCS Spectrum in the 2 GHz Range* (*Canada Gazette* Notice DGTP-007-00/DGRB-005-00).

<sup>4</sup> Urban areas are defined in the Statistics Canada Census Dictionary and in *A national overview - population and dwelling counts (data products: 1996 Census of Population)* Catalogue number 93-357-XPB.

assignments or fixed stations within that area will be given a minimum of a one-year notification period.

- (e) Earlier displacement may be achieved through mutual agreements between PCS operator(s) and the affected fixed station operator(s). Industry Canada will retain oversight of the displacement process and will assist, where appropriate, affected fixed operators in identifying new replacement frequency assignments.
- (f) In the event that a PCS operator identifies a need to defer a notified displacement date, an amendment to the notice of displacement should be issued as early as possible.
- (g) 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 among 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.
- (h) It should be noted that a significant delay in the use of released frequency spectrum by PCS licensees, after the displacement date, would be viewed negatively by Industry Canada.
- (i) Industry Canada will monitor the effectiveness of the spectrum policy provisions related to the displacement of fixed systems. Changes to these provisions and/or licence conditions may be made to ensure the continued availability of spectrum for PCS is accomplished in the most efficient manner.

## 5. Procedure

Industry Canada recognizes the need to provide a reasonable period of notification for displacement of frequency assignments. Prior to the original award of PCS licences, fixed station licensees received a letter from Industry Canada that outlined the potential need for displacement of frequency assignments to accommodate the introduction of PCS. Notification for the displacement of specific fixed microwave station assignments in the bands 1850-1910 MHz and 1930-1990 MHz<sup>5</sup> to make PCS spectrum available in certain geographic areas will be processed following the issuance of this procedure. Since the original award of radio station licences in December 1995 to deliver PCS<sup>6</sup>, various corporate mergers and acquisitions have taken place and previous PCS radio station licences have been converted

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<sup>5</sup> The band 1910-1930 MHz is designated for licence-exempt PCS systems. Displacement of fixed systems in this band is the subject of a transition procedure to be released by the Department.

<sup>6</sup> The names of companies originally awarded authority to deliver PCS are available at the following Industry Canada website: <http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf08411e.html#AppendixC>.

to spectrum licences. A review of related PCS licensing transitions can be found on Industry Canada's Spectrum Management and Telecommunications website<sup>7</sup>.

Industry Canada will send the notice of displacement to the fixed service microwave licensee for displacement of specific frequency assignments in order to implement PCS service in specific areas. The displacement notice will indicate the displacement date according to the minimum notification period or a later notification date, if so requested by the PCS operator. In the case where a shorter displacement period was mutually agreed upon between the PCS operator and the affected fixed station licensee, Industry Canada will note the earlier than minimum date. In the event that a PCS operator identifies a need to defer a notified displacement date, the operator must submit the request to the Department as early as possible, upon which the Department may amend the notice of displacement issued to the fixed station licensee.

Licence amendments to the fixed service's station arising from the displacement process, notably the authorized frequency, will be implemented effective the displacement date. Fixed service licensees are reminded that, under the *Radiocommunication Act*, they are required to respect the terms and conditions of their licence, which include the authorized frequency. Furthermore, the licence may be suspended or revoked where the Minister is satisfied that, after having given written notice and a reasonable opportunity for response, the terms or conditions of the licence have been contravened. Industry Canada is prepared to work with the affected microwave operators to find suitable spectrum to relocate their affected assignments to other bands.

The guidelines for the process under normal circumstances are described in the following subsections. This does not preclude simplification of the process where there is mutual agreement between the parties involved.

## 5.1 Engineering Analysis

PCS operators will be required to perform an engineering analysis of the proposed PCS system and the potential impact on existing microwave systems. The table of required coordination distances contained within TIA/EIA Telecommunications Systems Bulletin 10-F (TSB10-F) is accepted as generally sufficient to ensure protection of fixed service receivers. The methodologies contained within TSB10-F, or other mutually acceptable method, may be used in making initial determinations of interference protection criteria and interfering power at the receivers.

The development of the carrier to interference (C/I) ratios and interference criteria, and the methods employed to compute the interfering power at the receivers shall follow generally accepted engineering practices. In general, the interference protection criterion for microwave paths should be such that the interfering signal will not produce more than 1 dB degradation of the practical threshold of the microwave receiver for analog systems or such that the interfering signal will not cause an increase in the bit error rate from  $10^{-6}$  to  $10^{-5}$  for digital systems. Interference calculations shall be based on the sum of the power received at the terminals of each microwave receiver from all of the applicants' current and proposed PCS operations.

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<sup>7</sup> See *A Brief History of Cellular and PCS Licensing* available at the following Industry Canada website:  
<http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf08251e.html>.



The analysis should not be limited to situations of co-frequency or overlapping spectrum. Consideration must be given to receivers which may be affected by transmitters in adjacent spectrum.

The engineering analysis should, where applicable, substantively address the following items:

- (i) the level and percentage of time of interference from the proposed PCS serving area into specific microwave fixed station receivers;
- (ii) the level and percentage of time of interference from specific microwave fixed station transmitters into the proposed PCS serving area and why it would be unacceptable;
- (iii) the time frame in which the specific amount of radio spectrum requested is required to meet the service implementation plans.

Some flexibility should be allowed with respect to provision of information associated with engineering analysis since not all precise details of the PCS implementation may be available at the time of the initiation of the notification process. However, PCS operators should endeavour to make the submission as complete as possible.

PCS operators should also note that the licensing of PCS stations will occur on the basis that no interference will be caused to fixed station receivers:

- which have not been notified; or
- before the expiry of the notification period unless a mutually acceptable arrangement has been made beforehand.

It is the responsibility of the PCS operator to ensure that all potentially affected fixed service receivers have been considered. In the case where the PCS operation does not cause interference to microwave receiving stations at a sufficient level to significantly affect the transmission performance of the radio link, the microwave licensee may elect to continue operating after the expiry of the notification period on a no-protection basis. If so, the fixed station licensee is required to notify Industry Canada so that the associated licence may be appropriately amended. Under these circumstances, Industry Canada will consider the licensee of this affected frequency assignment as having been notified, and the licensee will not have the benefit of the minimum notification periods provided by the policy should another PCS operator require this spectrum.

In order to assist PCS operators in carrying out technical analysis on the potential requirement for displacement, Industry Canada will store licensed microwave radio station information in its departmental radio licensing database, and will make such information available via the Spectrum Direct website. This database will be updated as required to reflect specific displacement notifications of frequency assignments.

## **5.2 Communication with Incumbent Microwave Operators**

PCS operators are required to initiate discussions with fixed service licensees which may be affected by planned PCS systems, and may also be requested to communicate the findings of the above engineering analysis with a view to resolving possible conflicts. The Department encourages PCS operator(s) to

commence discussions with affected fixed service operator(s) at the earliest opportunity to clarify their analysis, evaluate information, and where necessary, make adjustments to displacement date.

As a minimum, associated correspondence should provide all relevant technical details as identified in Appendix B of Client Procedures Circular, *Licensing Procedure for Spectrum Licences for Terrestrial Services* (CPC-2-1-23),<sup>8</sup> including:

**Applicant's name**

**Transmitting station**

- location name
- geographical coordinates (NAD83)
- site elevation (AMSL)
- transmitting frequencies

**Transmitting equipment**

- type
- stability
- output power
- emission designator/bandwidth
- type of modulation

**Transmitting antenna**

- type/model
- typical pattern/azimuth
- maximum gain
- antenna structure height (AGL)

**Receiving station**

- location name
- geographical coordinates (NAD83)
- site elevation (AMSL)

**Receiving antenna**

- type/model
- typical pattern/azimuth
- maximum gain
- antenna structure height (AGL)

Path distance, path loss and C/I criteria used to assess the potential for interference.

In correspondence to incumbent fixed service operators, PCS operators should also include details of their technical analysis, including calculations and/or measurements which clearly support the requirement for the specific frequencies, as well as any other information that will support the requirement for displacement. Industry Canada expects fixed station licensees to cooperate with PCS applicants in order to permit a reasonable and orderly transition of the spectrum. A response by the incumbent operator should be provided as quickly as possible, even if no technical problems are anticipated.

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<sup>8</sup> CPC-2-1-23 is available at the following website: <http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01875e.html>.

If no response is received from the incumbent licensee within 30 days from the date of submission of the initial correspondence by the PCS operator, this applicant will be deemed to have made reasonable coordination efforts and may file its formal request for displacement to Industry Canada.

### **5.3 Preparation of the Request for Displacement of Specific Frequency Assignments**

PCS operators will be required to make formal requests to the Department for displacement of specific frequency assignments in order to implement PCS in particular areas.

In addition to including the requested date of displacement, the submission of a request for displacement should:

- (a) identify the fixed service frequency assignment
  - licence name
  - location
  - licence number/record identifier (where possible)
  - transmission/reception frequency(ies)
  - centre frequency
  - azimuth
- (b) provide information supporting the need for the spectrum; demonstrate that the spectrum is needed to meet planned dates of service; indicate that no alternatives exist and that the request for displacement is in accordance with the business plan; etc.
- (c) indicate the status of the communication with the fixed service operator(s), highlighting concurrence or any potential areas of disagreement such as:
  - (i) the fixed service operator concurs with the requirement for displacement; or
  - (ii) that agreement has not yet been achieved; or
  - (iii) that no response has been received.
- (d) give any other relevant information.

### **5.4 Issuance of Notification of Displacement by Industry Canada**

The Department will notify the affected fixed station operator(s) by registered mail with a copy of the notice being sent to the PCS operator. The notification period shall commence on the day that the notice is sent. The displacement notice will indicate the displacement date according to the minimum notification period or a longer notification date, if so requested by the PCS operator.

In the case where a shorter displacement period was mutually agreed upon between the PCS operator(s) and the affected fixed station operator(s), Industry Canada will note the earlier than minimum period date. Where an early displacement is achieved through mutual agreement between the fixed station licensee(s) and the PCS operator(s) exists and where two or more PCS operators may also benefit, Industry Canada will encourage all interested parties to participate in the displacement arrangements.

Although individual circumstances associated with a displacement request vary, Industry Canada generally considers that once a request for displacement is received, and provided that no additional information is required, the notice of displacement will be issued within 30 days.

### **5.5 Conflict Resolution**

The satisfactory resolution of potential interference problems is a necessary and preliminary step in the licensing process. Conflicts that cannot be resolved by affected parties will be reviewed by the Department, and a final decision will be made regarding the licensing of the proposed radio system.

Industry Canada will review all relevant information, interference analysis results and any coordination information submitted to support the specific displacement of frequency assignments. Also, the Department will review the PCS applicant's analytical findings and rationale related to its specific need for spectrum being used by the affected microwave system.

The Department's review will focus on 'whether the request is reasonable' based on all relevant information provided. The Department will **not** attempt to re-engineer the analysis or suggest technical or operational changes to either the PCS operator or the affected microwave system operator. In the event that the Department believes that more information or analysis is required, affected parties will be notified accordingly.

### **5.6 Assisting Microwave Operators to Relocate Outside of PCS Spectrum**

Industry Canada is prepared to work with affected microwave operators to find suitable alternative spectrum. Periodic policy revisions with respect to displacement of microwave stations will be reflected in future renditions of the Department's Spectrum Utilization Policy for the 1-20 GHz band (SP 1-20 GHz), as well as relevant Standard Radio System Plans (SRSP).

### **5.7 Coordination**

Coordination is required between PCS system operators and new and existing fixed microwave system licensees operating outside the band 1850-1990 MHz in accordance with the procedure contained in Radio Standards Procedure RSP-113 entitled *Application Procedures for Planned Radio Stations above 960 MHz in Terrestrial Fixed Service*.

Coordination will also be required between Canadian PCS system operators and U.S. microwave and PCS system operators in accordance with the *Interim Sharing Arrangement between Industry Canada and the Federal Communications Commission Concerning the Use of the Band 1850-1990 MHz*.

**Annex I - Original December 1995 PCS Licensees  
and Corresponding Frequency Assignments**

Block A	30 MHz	1850-1865/1930-1945 MHz	MicroCell Network Inc.
Block B	30 MHz	1870-1885/1950-1965 MHz	Clearnet PCS Inc.
Block C	30 MHz	1895-1910/1975-1990 MHz	Reserved
Block D	10 MHz	1865-1870/1945-1950 MHz	The regional shareholders of Mobility Personacom Canada Ltd.
Block E	10 MHz	1885-1890/1965-1970 MHz	Reserved
Block F	10 MHz	1890-1895/1970-1975 MHz	Rogers Cantel Mobile Inc.