

May 29th, 2013

REQUEST

for

**INFORMATION, REVIEW, AND
RECONSIDERATION of**

**PROPOSAL TO INSTALL
TELECOMMUNICATION ANTENNA at**

4555 VICTORIA ROAD SOUTH, RR#1 PUSLINCH by

ROGERS COMMUNICATION – SITE C4328

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1 Compliance to Procedure

CPC-2-0-03 has been identified as the governing document by Industry Canada for this proposal. Section 1.1 states clearly, “...proponents must follow the process outlined in this document when installing or modifying an antenna system.”

1.1 Notification - CPC-2-0-03 (Appendix 2)

The following components must be part of the Notification Package to be in compliance and were not included:

1.1.1 What are the documented reasons, as required by CPC-2-0-03, “...*why existing antenna systems or other infrastructure cannot be used...*” ?

1.1.2 CPC-02-0-03 requires, “...*a list of other structures that were considered unsuitable...*” What list can be provided which describes all locations considered?

1.1.3 What are the, “*future sharing possibilities for the proposal*” ?

1.1.4 CPC-02-0-03 (4.2) notes the importance of legibility in the notification information. A virtually unreadable engineer drawing was sent with the notification package. What legible electronic copy of that drawing can be provided now?

1.1.5 Please explain clearly what type of tower this is, how the tower is to be used and what service it will provide.

1.2 Use of Existing Infrastructure – CPC-2-0-03 (1.3 & 3)

As part compliance, “...*the process that must be followed by proponents seeking to install or modify antenna systems...*” includes, “*Investigating sharing or using existing infrastructure before proposing new antenna-supporting structures.*” Further, “...*parties should retain records (such as analyses, correspondence, and engineering reports)...*”:

1.2.1 In accordance with CPC-2-0-03 (3), what “*retained records*” and other documentation can now be presented to show that reasonable attempts were made to, “...*consider sharing an existing antenna system, modify or replacing a structure if necessary...*” before the proposal was made?

1.2.2 In accordance with CPC-2-0-03 (3), what documentation shows reasonable attempts were made to, “...*locate, analyze and attempt to use any feasible existing infrastructure such as rooftops, water towers etc.*” before the proposal was made?

1.2.3 What documented criteria and constraints were used to determine the suitability/unsuitability of existing sites, warranting the construction of a new site to be the only solution?

1.2.4 CPC-2-0-03 (3) states, “Owners and operators of existing antenna systems are to respond to a request to share in a timely fashion and to negotiate in good faith to facilitate sharing where feasible.” What documented negotiations, “proposed set of reasonable terms”, and “detailed explanation of why sharing is not possible”, can be shown to demonstrate there was no possibility to share or improve existing infrastructure before the proposal was made?

1.3 Initial Contact with Land-use Authority – CPC-2-0-03 (4)

1.3.1 CPC-2-0-03 (3) states, “Proponents are expected to establish initial formal contact with the land-use authority in writing in order to mark the official commencement of the 120-day consultation process.” What recipients are on on public record and what date is documented in order to establish the start date of this regulatory process.

1.3.2 CPC-2-0-03 (4) states that if CRTC approval is received before land-use consultation, applicants “...are required, at the time of the CRTC application, to notify the land-use authority with a Letter of Intent outlining a commitment to conduct consultation after receiving CRTC approval.” What CRTC application/approval has been undertaken at this time and what related notification to the land-use authority can be shown for this proposal?

2 Impacts

2.1 Imposing Visual Impact

This is obviously a very significant class of antenna structure with three legs and angular braces. A tower of this type is designed to carry heavy loads. At 70 metres (230 feet), it equates to the height of a 23 story apartment building. The result is an image that is overshadowing, unnatural, and distracting. While substantially wide, the height is wildly out of proportion to its geographical footprint, causing a dwarfing effect on the scale of trees, architecture, and landscape. The affected boundary radius is many times larger than the height of the antenna. The resulting adverse effect is to limit the benefits and uses of the properties within that boundary.

2.1.1 What concrete measures can be shown that have been taken up until now to maximize the distance from surrounding property lines?

2.1.2 Given that the proposed base of the tower is inches away from the neighbouring fence-line, both neighbours would be sharing an equal proportion of the developmental impact. However, only one neighbour has made an agreement with the proponent. What improvement can be made to the location to create an equitable proportioning of burden versus benefit?

2.1.3 Similar towers have an aeronautical light at the top which is baffled. However, additional co-located equipment is mounted on the side and red lighting is pointed directly outward from the radius. What written guarantee will there be that all lighting located on the tower, either proposed now or in the future, will not be visible to residents?

2.2 Future Impact

A tower of this class can be expanded to well over 100 meters. Further, it will be a dominant part of the landscape for generations. Industry Canada BPR-1 (Broadcasting Procedures and Rules) Section 2.7 states, *“if there is the potential for large developments in the area, the impact on future residents should also be considered.”* The current proposal does not address the full potential impact of what this telecommunications station will become if it is established as the new, *“existing infrastructure.”*

2.2.1 How much future capacity for carrier expansion/accommodation is this tower designed to hold for the same or other companies?

2.2.2 What category of equipment will/could be installed over the life of the tower?

2.2.3 The adjoining property is a prime location for future severance and development. This proposal will inhibit the neighbouring property of benefiting from that development. What concrete measures can be taken to minimize the possibility of damaging the potential to create a future residential severance in the adjoining location?

2.2.4 There is a development nearby, *Audrey Meadows*, that will have a larger population in the future. What documentation is available for review at this time that considers the potential impact of both this and other future developments?

2.3 Environmental Impact - CPC-2-0-03 (7.4)

It is required that, “Proponents will ensure that the environmental assessment process is applied as early as practical in the planning stages.”

2.3.1 What formal environmental assessment report can be provided for review at this time?

2.3.2 What is the full potential transmission power of the tower, including auxiliary/backup equipment?

2.3.3 What effective range is this antenna servicing?

2.3.4 What RF (Radio Frequency) measurements can be shown to have been taken relative to other communication towers in the area?

2.3.5 What RF interference specification, test reports, and service contour maps can be provided for review at this time?

2.3.6 What noise and vibration specification and test reports can be provided for review at this time, especially for any backup power generation?

2.3.7 With regard to Safety Code 6, Industry Canada BPR-1 (Broadcasting Procedures and Rules) (Section 2.4) states that, in addition to the requirements of CPC-2-0-03, an engineering brief must be submitted that “...shall contain an analysis of the RF exposure levels produced by the new or modified transmitting facility.” What full engineering brief, including RF exposure analysis, can be provided for review at this time?

2.3.8 In what ways has the analysis of measurements, such as for noise and RF exposure/interference, been implemented into a strategy to mitigate any adverse effect by this installation?

2.3.9 How can we be assured that the choice of this location will not cause interference to other service providers, compelling them to seek additional locations to improve their own coverage once again, in a form of competitive proliferation?

3 Alternatives

3.1 Abandon the Proposal

3.1.1 Given existing towers in the area and the fact that Industry Canada requires existing facility sharing and expansion, how will the abandonment of this proposal prevent the community from receiving any wireless data services?

3.1.2 What specific wireless data services are in no way being provided that depend exclusively on this particular tower installation?

3.1.3 In what way should the Minister of Industry be involved, given the non-compliance with CPC-2-0-03 described in Section 1?

3.2 Seek an Alternate Location

3.2.1 What investigative efforts have been performed to determine if there are any other better suited locations?

3.2.2 What comprises the list of currently approved (but not completed) telecommunications antennas in the area?

3.2.3 Given that there are other recently approved and proposed locations, what necessitates the further addition of this particular site, rather than the full utilization of those other proposed sites?

3.2.4 What higher elevations (allowing for shorter antennas) were investigated?

3.2.5 What appeals were made to other landowners in the Puslinch/Milton area where this installation would be better received?

3.2.6 What government or industrial lands have been investigated?

3.2.7 What are the criteria that describe an "ideal" location?



Industry
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BPR-1
Issue 5
January 2009

Spectrum Management and Telecommunications

Broadcasting Procedures and Rules

Part I: General Rules

Broadcasting Procedures and Rules (BPR)

The *Radiocommunication Act* stipulates that no radio apparatus that forms part of a broadcasting undertaking may be installed or operated without a broadcasting certificate issued by the Minister of Industry. Pursuant to paragraphs 5(1)(a) and (d) of the *Radiocommunication Act*, the Minister is empowered to fix the terms and conditions of the broadcasting certificate and to establish technical requirements and standards in relation to broadcasting undertakings.

This document prescribes the required information for filing applications for broadcasting certificates and specifies the technical standards and requirements, as well as the operational terms and conditions applicable to broadcasting undertakings. The Broadcasting Procedures and Rules consist of nine parts: Part 1 entitled General Rules sets out the technical requirements and application procedures common to all broadcasting undertakings. Parts 2, 3, 4, 5, 6, 7, 8 and 9 set forth the specific requirements applicable to AM, FM, TV, digital radio broadcasting (DRB), multipoint distribution television broadcasting (MDS), digital television (DTV), broadcasting receiving (cable TV) and terrestrial S-DARS undertakings respectively.

The content of these documents notwithstanding, Industry Canada may authorize certain minor departures from the standards and operational requirements specified herein when it is shown that the quality of service will not be compromised and that harmful interference will not occur.

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1. Application Procedure and Subsequent Action

1.1 Preamble

This section establishes the procedure to be followed in preparing and submitting the information required in support of applications for broadcasting undertakings.

1.2 Preparation of the Submission by Qualified Personnel

1.2.1 The planning and the design of new broadcasting undertakings or of changes to existing systems and the preparation of engineering briefs submitted in support of applications for such designs or design changes, constitute the practice of professional engineering. It is the responsibility of the person signing the submission to comply with the appropriate provincial legislation, insofar as the practice of professional engineering is concerned. Industry Canada requires that the design of a proposed system and/or a proposed changes to an existing system be carried out under the responsible supervision of a professional engineer who shall certify as to the adequacy of the design by affixing his/her signature and stamp to the engineering brief when this brief is sent to the Department in paper format. A signed electronic version of the engineering brief, in PDF format, can also be sent to the Department with the application.

1.2.2 When submitting an application to Industry Canada electronically, the applicant shall use the following e-mail address: DBCE-APPS@ic.gc.ca.

The following documentation shall be included:

- the appropriate application forms, which can be obtained from the Department's website at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf06066.html;
- the electronic brief (PDF format) including any required maps prepared in accordance with BPR-1 and any other relevant BPR;
- contours (MapInfo format: *.DAT/*.ID/*.MAP/*.TAB or GIS format: *.MIF,*.MID) (see section 3.4);
- form (in PDF format) IC-3052B entitled *Commitment Form*.

It is the responsibility of the applicant submitting the application to ensure that all electronic documents submitted have the necessary signatures.

The Department reserves the right to request a signed attestation to verify the authenticity of an application and may hold the processing of the application until a satisfactory attestation has been received.

1.2.3 Where low-power broadcasting undertakings, other than low-power DRB undertakings, are concerned, the Department may, in specific circumstances, waive its requirement that the technical submissions be prepared by broadcasting engineering consultants provided that qualified technical staff prepare and sign the submission.

1.2.4 All technical submissions for DRB shall be prepared by a broadcast engineering consultant.

1.3 Application Processing

1.3.1 An application to the Department for a broadcasting certificate shall be accompanied by an application to the Canadian Radio-television and Telecommunications Commission (CRTC) for a broadcasting licence. If no CRTC application is received within 30 days, the technical application will be returned to the applicant. This does not apply to terrestrial S-DARS and MDS undertakings that have been authorized by the CRTC or to applications meeting CRTC exemption criteria.

1.3.2 If the submission is found to be missing information, incomplete or incorrect, the applicant and/or consultant will be so notified and the CRTC will be advised accordingly. If the necessary information is not supplied within a period of time specified in the departmental letter (normally 30 to 45 days), the application will be returned.

1.3.3 Although the CRTC has established criteria to exempt certain categories of AM, FM, TV and cable systems from the requirements of CRTC licensing, the Department, for spectrum management reasons, maintains separate exemption criteria based on equipment standards. CRTC licence-exempt broadcasting/receiving undertakings must still meet the relevant BPRs, and must obtain radio authorizations in the form of broadcasting certificates to operate unless these undertakings also meet the applicable Industry Canada exemption criteria.

Industry Canada exemption criteria for broadcasting and receiving undertakings - the Broadcasting Certificate Exempt Radio Apparatus List - are available on the Department's website at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf06128.html.

1.4 Application for Call Signs

1.4.1 The application for a call sign for a new broadcasting undertaking shall be made in writing at the time of the application for the broadcasting certificate. To request a change of call sign for existing undertakings, an application is to be made in writing to the Department.

1.4.2 For each program in a DRB undertaking, the applicant shall request a call sign.

1.4.3 A listing of unassigned basic call signs is available on the Department's website at http://www.ic.gc.ca/eic/site/sp_dgse-ps_dggs.nsf/eng/gg00026.html.

The rules pertaining to call signs are contained in Section 7, Assignment and Identification Requirements for AM, FM, TV and DRB Broadcasting Undertakings.

1.5 On-Air Approval

Overview

On-air testing assures that the broadcasting undertaking will operate in accordance with the authorized technical brief and the issued letter of authority (LOA), and that the required protection is being given to broadcasting undertakings and radio systems, especially those involved with safety-of-life: aeronautical navigational and communications (NAV/COM) systems.

- 1.5.1 Following approval by the CRTC (where applicable) and authorization by Industry Canada and before the start of construction, any changes to the approved proposal (e.g. site, parameters, equipment etc.) shall be submitted to the Department for authorization. The Department's District Manager shall be kept informed of the progress of construction.
- 1.5.2 Departmental permission is required for on-air testing. When the construction is complete, notice of on-air testing shall be given to the District Manager at least three weeks (unless otherwise specified in the letter of authority) prior to transmission tests.
- 1.5.3 The normal period for on-air testing is four weeks, three being the minimum. If interference or other problems materialize, this period may be extended pending satisfactory resolution of the problems. Barring problems, on-air testing will terminate after four weeks.
- 1.5.4 Immediately following successful on-air tests, the applicant's consultant shall certify to the Department that the broadcasting undertaking is ready to commence operation in accordance with the approved technical submission and request permission to commence operation. For AM broadcasting undertakings, the certification shall be supported by a Preliminary or Final Proof of Performance (except for low-power broadcasting undertakings). Failure to meet these requirements shall terminate the on-air tests.

1.6 Broadcasting Allotment Plans

- 1.6.1 Industry Canada maintains allotment plans and related information for AM, FM and TV, along with information on assignments, on the departmental website at http://www.ic.gc.ca/eic/site/sp_dgse-ps_dggs.nsf/eng/gg00026.html.

For the DRB and DTV Allotment Plans, please see Industry Canada's website at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf06074.html.

- 1.6.2 The Department, in its role as spectrum manager, may make changes to the Canadian Broadcasting Allotment Plans, based on technical considerations. Please note that a broadcasting certificate shall not be construed as conferring any right to continued tenure in respect of the channel assigned to the broadcasting undertaking.

2. Antenna-Supporting Structure and Siting Considerations

Applicants proposing to erect a new antenna structure or to modify an existing structure must comply with the requirements set out in the Client Procedures Circular, *Radiocommunication and Broadcasting Antenna Systems* (CPC-2-0-03), as may be amended, which is available on the Department's website at <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html>.

2.1 Land-Use and Public Consultation

Unless the broadcasting proposal is excluded from land-use and public consultations (see CPC-2-0-03 for details), the following applies:

- 2.1.1 For applications already approved by the CRTC or meeting the CRTC exemption criteria, the broadcasting applicant shall proceed immediately to public and municipal/land-use consultation as described in CPC-2-0-03. As for other applications, they are subject to CRTC licensing processes in addition to Industry Canada requirements. Although Industry Canada encourages the applicants to consult as early as practical in the application process, it may not be prudent in some cases for the applicants to initiate public and municipal/land-use consultation before receiving CRTC approval, as application denial by the CRTC would result in unnecessary work for all parties involved.

Accordingly, the broadcasting applicants may opt to commence public and land-use consultation after having received CRTC approval. However, broadcasting applicants choosing this option are required, at the time of the CRTC application, to notify the land-use authority by a Letter of Intent (see Appendix 3) with a commitment to conduct consultation after receiving the CRTC approval. A copy of the Letter of Intent shall be sent to Industry Canada. If the land-use authority raises concerns with the proposal as described in the Letter of Intent, the applicant is encouraged to engage in discussions with the land-use authority regarding those concerns and attempt to resolve any issues.

- 2.1.2 The Department's technical acceptability will be subject to successful completion of the consultation process and the Department's Letter of Authority will be sent only when the Department has been informed that the consultation process as per CPC-2-0-03 is completed successfully.

2.2 Structural Adequacy of Antenna-Supporting Structures

To ensure structural adequacy, the Department recommends that all antenna towers and antenna-supporting structures be designed, manufactured and erected in accordance with accepted Canadian standards and that a qualified structural engineer be retained by the applicant.

2.3 Availability and Suitability of the Land

In addition to the sharing requirements set out in CPC-2-0-03, applicants should also consider such matters as availability of power and communication facilities at the proposed site, year-round accessibility to technical staff and environmental constraints or provisions for rezoning that could have a bearing on the establishment of the broadcasting undertaking at that location.

2.4 Exposure to Radio Frequency (RF) Energy

Applicants must ensure that their facilities are designed and operated to meet the requirements set out by Health Canada's guidelines entitled *Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6*, to assure protection of the general public. To this end, in addition to the requirements of CPC-2-0-03 on this matter, the engineering brief submitted in support of an application for a broadcasting certificate shall contain an analysis of the RF exposure levels produced by the new or modified transmitting facility. Details of the RF exposure evaluation procedure are given in Section 8 of this document.

2.5 Immunity-type Interference

Broadcast receivers and associated equipment, as well as radio-sensitive equipment in proximity of a broadcast transmitting site can experience immunity-type interference. Broadcasters are to ensure that their installations are designed and operated in such a way that such interference is minimized to the extent possible. The departmental document EMCAB-2 has defined field strength levels that can be used as a guideline in making determinations for these types of interference situations. BPR-2 through BPR-9 address this issue in more detail.

2.6 Other Factors Affecting Site Selection

Each service has specific factors that may affect site selection, for example, strong adjacent channel signals, intermodulation, interference to other services, proximity to nearby structures, etc. Refer to the service specific BPR for more information.

2.7 Broadcasters' Responsibility

Applicants are required to consider the population that may be affected by the types of interference described in sections 2.5 and 2.6. Furthermore, if there is the potential for large developments in the area, the impact on future residents should also be considered. Broadcasters are responsible for solving certain interference problems in the vicinity of their installations. Refer to BPR-2 to BPR-9 for details.

3. Preparation of Coverage and Frequency Re-use Contour (FRC) Maps

The engineering briefs in support of applications for new broadcasting undertakings or for changes in facilities of existing undertakings shall include service contours as prescribed under the relevant broadcasting application procedure. These service contours shall be submitted either on paper - contour maps - or electronic format. For contour maps, reproducible maps shall also be included with the application, as prescribed in this section. The service contours submitted electronically shall also be produced as prescribed in this section.

The maps, in either paper or electronic format, are used by the Department for its technical evaluation of the proposal and are reproduced for circulation to broadcasting consultants, the CRTC, the broadcasting industry and other interested agencies.

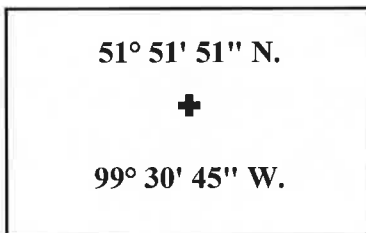
3.1 Preparation of Contour Maps

A reproducible copy of each contour map required shall be prepared in the standard format size i.e. 37 cm × 28 cm (14½" × 11"). Contour maps in electronic format should have all features clearly legible when printed in the standard format size.

3.1.1 The following is a summary of the requirements:

- (a) geographical coordinate information shall appear on at least two adjacent edges of maps supplied;
- (b) a dimensional scale shall also be clearly shown;
- (c) antenna location shall be plotted and marked with a cross with geographical coordinates clearly indicated as illustrated in the example below:

Antenna Location



- (d) all contours shall be clearly labelled. The preferred technique is to place labels along the contour lines, thereby avoiding arrows;
- (e) a title block, of dimensions 11.5 cm × 9.5 cm (4½" × 3¾"), shall be preferably placed in the lower right-hand corner. It should contain sufficient information to identify the proposal. A stamp by a professional engineer should be placed beside the title block. An acceptable block is illustrated below:

Name of Broadcasting Engineer Consultant _____	
Applicant's Name	
Proposed location of undertaking	
Call Sign	
Parameters of Proposed Operation (freq. or channel; average e.r.p.; class; mode of operation, etc.)	
Date Map Prepared	Signature or Initials

- (f) in cases of proposed changes in facilities, a map showing comparative contours shall be submitted (see Section 3.3(b)).

3.2 Notes

- (a) For most contour representations, Natural Resources Canada (Surveys and Mapping Branch) maps shall normally be used in the submission with a scale consistent with the extent of the contour and the format required. However, should more up-to-date official provincial government maps be available, these may be used when, for instance, there is a particular significance in determining the latest metropolitan area limits.
- (b) Reproducible prints of computer-generated contour maps are also acceptable. It is possible to generate contour maps with a computer using a Geographical Information System (GIS) software together with a GIS database (i.e. a standardized digitized geographical base map).

The GIS database used, whether it is a vector or raster-type base map, must have the resolution and the level of detail of a 1:1,000,000 scale map as a minimum for contour maps. For site location maps, a scale of 1:50,000 is required. If the GIS database used does not have this resolution, Natural Resources Canada maps or other types as referred in (a) are required.

The computer generated maps must have a representation, in terms of the level of detail (or layers) and colour scheme, comparable to the Natural Resources Canada maps referred in (a), and must be in accordance with the other requirements of Section 3 of this document. The scale must be consistent with the extent of the contour and the format required.

- (c) All map reproductions supplied shall be clear in all details ensuring that significant information is not hidden by labelling.

3.3 Reproducible Map Requirements

Reproducible maps are not applicable to low-power and very low-power broadcasting applications. For all other applications, the following reproducible maps are required:

- (a) maps bearing the title block and the engineering stamp defined in Section 3.1.1(e), and the required service contours (consult the relevant BPR for the applicable field strengths);
- (b) in case of change in facilities, one additional “comparative contours” map, showing the authorized and proposed service contours.

3.4 Electronic Submission of Service Contours

MapInfo is the geographical information infrastructure adopted by Industry Canada to process broadcasting engineering briefs for broadcasting undertakings. Engineering briefs that use the electronic format for the service contours will need to comply with the MapInfo file infrastructure (see Section 3.4.2).

3.4.1 Support for the Data Submitted

The service contours shall be submitted on a compact disc or diskette.

3.4.2 Contour Data

3.4.2.1 Geographical Projection

The latitude-longitude geographical projection shall be used and the datum NAD83 must be specified. The Department no longer supports datum NAD27, and will only consider NAD27 if it is justified and warranted by special circumstances.

3.4.2.2 Service Contours

Service contours shall be defined using at least one point at every 5 degrees starting at 0 degrees True North. For directional patterns, more points must be added to properly define the nulls and the shape of the directionality in the pattern. For interference contours, the level of detail needed with regard to the points used shall be similar to the service contour. All contours must define a closed region, thus covering 360 degrees.

3.4.3 Files to Submit

3.4.3.1 MapInfo Users

The following file types must be used in submitting contour information, with one set per service contour:

- *.DAT
- *.ID
- *.MAP
- *.TAB

The * symbol represents the name given to the file.

3.4.3.2 For Users of Geographical Information Systems (GIS) Software Packages Other than MapInfo

When choosing a GIS software package, make certain that it can export its output to the MapInfo Interchange Format (MIF) and that it can generate the needed file types *.MID and *.MIF, with one set of these files per service contour.

3.4.4 Naming Convention for the Files Submitted

The following structure shall be used to name each file submitted:

application identifier + underscore + contour type

Application identifier: a string of 12 characters maximum

Contour type: depends on the service; the examples given hereinafter illustrate the symbolism to use. For AM, follow the contour value with the appropriate D, N or NL letters (Day, Night or Night Limit).

The following table of examples illustrates the use of this naming convention. The application identifier used here for demonstration purposes is the usual “*” symbol.

Type of Application	Contour Type		Naming Under MapInfo	Naming Under Other GIS
	Contour	Symbol		
FM	500 μ V/m	5	*_05.dat, *_05.id, *_05.map, *_05.tab	*_05.mid *_05.mif
	3 mV/m	3	*_3.dat, *_3.id, *_3.map, *_3.tab	*_3.mid *_3.mif
TV	Grade A	A	*_A.dat, *_A.id, *_A.map, *_A.tab	*_A.mid *_A.mif
	Grade B	B	*_B.dat, *_B.id, *_B.map, *_B.tab	*_B.mid *_B.mif
DTV	DSC	DSC	*_DSC.dat, *_DSC.id, *_DSC.map, *_DSC.tab	*_DSC.mid *_DSC.mif
	DLC	DLC	*_DLC .dat, *_DLC .id, *_DLC .map, *_DLC .tab	*_DLC .mid *_DLC .mif
AM	Daytime 0.5 mV/m	05D	*_05D.dat, *_05D.id, *_05D.map, *_05D.tab	*_05D.mid *_05D.mif
	Night Limit mV/m	NL	*_NL.dat, *_NL.id, *_NL.map *_NL.tab	*_NL.mid *_NL.mif
DRB	FRC	F	*_F.dat, *_F.id, *_F.map, *_F.tab	*_F.mid *_F.mif
	DSA	D	*_D.dat, *_D.id, *_D.map, *_D.tab	*_D.mid *_D.mif
MDS	Service contour	MDS	*_MDS.dat, *_MDS.id, *_MDS.map, *_MDS.tab	*_MDS.mid *_MDS.mif

Realistic or terrain limited contours should append an ‘R’ to the end of a symbol, e.g. *_AR for a realistic Grade A contour.

The following contour type should be used for interference areas for any type of application:

contour type = channel + class + city of the interfering station.

Each interference area should be located in a separate set of files.

4. AM, FM or TV Proposals Predicated on Release of Assigned Broadcasting Frequencies or on Changes to Existing Broadcasting Facilities

- 4.1 Occasionally, it may appear expedient to file an application for a broadcasting undertaking predicated on a frequency which is not yet available, but is expected to become so as a result of a change of frequency or other changes at existing facilities.
- 4.2 The Department may accept an application for a broadcasting certificate based on the above situation. However, technical acceptability will be conditional on the release of the frequency or on the implementation of the change in facilities at the existing undertaking. Should this application be approved by the CRTC (where applicable), the implementation of the undertaking may not be affected until the frequency has actually been vacated or facilities changed. In order to minimize problems, coordination between all parties is encouraged. The cooperation of all parties is required for the approval of the application.
- 4.3 Under no circumstances will a proposal involving interference be considered unless agreement has been reached with the parties involved.

5. Requirements for the Technical Operation of Broadcasting Transmitter Facilities

- 5.1 These operational requirements apply to broadcasting undertakings that have received their broadcasting certificates.
- 5.1.1 The holder of a broadcasting certificate for a transmitter facility is responsible for maintaining frequency, modulation, antenna radiation patterns (directional and omnidirectional), and total power within permitted tolerances at all times. Minimum requirements for controlling, measuring and monitoring a broadcast transmitter facilities are specified in Section 5.3.
- 5.2 Compliance with the minimum requirements may be achieved either by operating the plant under local control (attended) or under remote control (unattended). If the facility is normally operated unattended via a remote control system and that system fails, the facility shall be operated under local control until the remote control system is again operative.
- 5.3 The minimum requirements for controlling, measuring and monitoring of transmitter facilities are as follows:
- 5.3.1 Controls:**
- (a) Carrier ON-OFF.
 - (b) For AM stations, selection of day and night power and/or radiation pattern selection where applicable.
 - (c) Overload reset, if applicable.

5.3.2 Accurate Measurements:

- (a) Frequency: The carrier frequency shall be measured.
- (b) Modulation: For analog transmitters, peak modulation under normal program conditions shall be measured.
- (c) Power: The power output of the transmitter shall be measured by either a permanently installed calibrated power meter¹ or by connecting a calibrated external power measuring device to a transmitter port. For AM transmitters, measurements shall be made of the RF current at the transmitter output or at the common point. For an AM transmitter with directional antenna(s), measurements shall also be made of the tower currents (or ratios) and phases for each radiation pattern certified.

5.3.3 Additional Aspects Associated with Accurate Measurements

Normally, the accurate measurements in 5.3.2 shall be made monthly except for FM modulation where the measurements shall be carried out weekly.¹ However, if the broadcaster requests that accurate measurements be taken less frequently and can demonstrate to the satisfaction of the Department that frequency, modulation and power remain stable, the Department may permit measurements to be made and logged less frequently.

Measurements in 5.3.2 shall be logged and the logs retained for inspection by the Department for a minimum period of six years for AM undertakings and two years for others. Also, any significant plant abnormalities and corrective action taken shall be logged.

Furthermore, as it is the responsibility of the holder of the broadcasting certificate to maintain the plant within permitted tolerances *at all times*, if any parameter is out of tolerance at the time of accurate measurements, then corrective action shall be taken and more frequent measurements shall be made until the parameter is reset within tolerance.

5.3.4 Monitoring

During periods between accurate measurements, undertakings shall be monitored either locally at the transmitter or remotely.

Rebroadcasting undertakings from which the off-air signals are not available at the control point shall be monitored by a person designated by the holder of the broadcasting certificate. Communication between monitoring and control points shall be available.

Note 1: If a modulation limiter is properly set and calibrated, then the FM modulation measurement can be carried out on a monthly basis.

Monitoring of RF power (visual transmitter power for TV undertakings) may be accomplished from either a direct monitoring method, or RF field strength. The minimum requirement is an indication from an "S" meter incorporated into a suitable monitor receiver at the control point, or an indication from a fixed-tuned receiver of the signal strength during the synchronizing peak for TV signals.

Undertakings shall be capable of being monitored continuously as follows:

5.3.4.1 AM Undertakings

AM transmitters may be monitored with a fixed-tuned receiver. At the control point, there shall be available a means for monitoring modulation, such as:

- an audio level meter connected to the output of the receiver,
- an oscilloscope displaying the modulated RF signal,
- any other audible or visible signalling device which will indicate the level of modulation.

In all cases, the off-air program audio shall be available at the control point for monitoring subjective quality and modulation.

For directional arrays, indication of additional antenna parameters may be required at the control point.

5.3.4.2 FM Undertakings

For monitoring modulation, an audio level meter driven by the receiver shall be visible at the control point, or an alternative audible or visible signalling device which will indicate the level of modulation that may be used. The off-air program audio shall be available at the control point for monitoring subjective quality and modulation; if applicable, facilities shall also be provided for aural monitoring of stereophonic and other signals.

5.3.4.3 TV Undertakings

Undertakings which have manned control facilities within reach of off-air signals shall have at their disposal:

- a demodulated off-air TV signal together with picture and waveform monitors;
- a means of indicating the depth of the modulation of the visual carrier; and
- a means of monitoring aural program level and quality.

Monitoring of RF power of the aural transmitter may be interpreted from transmission line power, voltage or current, plate current, or RF field strength. Remote monitoring of aural RF power is not mandatory.

5.3.4.4 Analog MDS transmission facilities

Monitoring of the RF power of the individual channels shall be performed when requested by the Department.

5.3.4.5 Other digital transmission facilities (Digital MDS, DRB, DTV, S-DARS)

Monitoring of the RF power shall be performed when requested by the Department.

5.3.4.6 Continuous Monitoring

Broadcasting undertakings that utilize remote control calibrated monitoring systems

- to monitor the critical operating parameters listed in Sections 5.3.2 and 5.3.4,
- to immediately report out-of-tolerance conditions to the control point(s),
- to log out-of-tolerance conditions,

shall be considered as meeting the monitoring requirements of Section 5 provided that corrective measures are initiated as soon as out-of-tolerance conditions are detected (see Section 5.3.3 on accurate measurements).

Where the broadcasting undertakings utilize such remote control and monitoring systems, the measurements referenced in 5.3.2, and any appropriate recalibration of the monitoring system, shall be conducted and logged during regular maintenance visits.

- 5.4 The holder of a broadcasting certificate is responsible for ensuring that the painting and lighting of antenna support structures are maintained in accordance with current Transport Canada requirements.

5.5 Description of Technical Facilities

The applicant for a broadcasting certificate shall submit to the Director, Broadcasting Applications, prior to “on-air” operation, a description of the technical facilities at his/her disposal enabling them to comply with the minimum requirements specified in Section 5.3 above. The submission shall include:

- 5.5.1 Transmitter manufacturer, model and departmental technical acceptance certificate (TAC) number. The requirement for a TAC does not apply to digital transmitters.
- 5.5.2 A description of the monitoring and the out-of-tolerance reporting system where the facilities are monitored on a continuous basis as described in 5.3.4.6 above.
- 5.5.3 A list of equipment available for the accurate measurements required in 5.3.2. If the measuring equipment does not normally remain at the transmitter plant, its normal location and availability shall be specified.
- 5.5.4 A list of equipment available for monitoring as in 5.3.4.

6. Requirements for the Establishment of Auxiliary Transmitting Systems

6.1 Introduction

- 6.1.1 Many broadcasting undertakings find it expedient to provide auxiliary transmitting systems to ensure continuity of service in the event of failure of the main transmitting system or for periods of maintenance. This action is in the public interest and every encouragement is given to licensees to equip their undertakings in this manner.
- 6.1.2 In order to comply with the provisions of the *Radiocommunication Act* and international agreements, and to maintain an appropriate engineering standard of equipment and installation, the requirements as outlined in this section have been put into place.
- 6.1.3 Authority is required for the installation and use of any auxiliary transmitting system. Applications for authority to establish alternate or standby facilities shall be made to the Director, Broadcasting Applications Engineering using departmental form IC-3051A, *Application for LP or VLP Undertaking or for Auxiliary Transmitter*, which can be found on the Department's website at <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08993.html>.
- Authority to establish an emergency transmitting system shall be obtained from the responsible local Industry Canada office.
- 6.1.4 Nothing contained herein relieves the licensee of his/her responsibilities under the *Radiocommunication Regulations* relating to the control of undertakings in a national emergency.

6.2 Definitions and Usage

6.2.1 Main Transmitter:

A broadcasting transmitter in respect of which a TAC has been issued with rated power output as authorized, and which is primarily used to provide the service for which the undertaking is licensed.

6.2.2 Auxiliary Transmitters

(a) Alternate Transmitter:

A broadcasting transmitter in respect of which a TAC has been issued with the same rated power and electrical characteristics as the main transmitter and which is used alternately with the main transmitter to provide the service for which the undertaking is licensed.

(b) Standby Transmitter:

A broadcasting transmitter in respect of which a TAC has been issued which is used to maintain some continuity of service in the event of failure of the main or alternate transmitter. This transmitter may also be used during specified periods when maintenance is being carried out on the main transmitter. The power or the coverage required of a standby transmitter is specified in Section 6.3.2.

(c) Emergency Transmitter:

An unplanned broadcasting transmitter installation used to provide continuity of service necessitated by unforeseen circumstances beyond the control of the undertaking licensee. The operation of such systems shall be limited to a duration of two weeks. Authority may be obtained from the responsible departmental local office. Otherwise, the provisions of Section 6.5 hereunder apply.

The maximum powers for these emergency operations for the various broadcasting services are as follows:

AM Broadcasting - 250 watts

FM Broadcasting - 1 kW e.r.p.

Television - 1 kW e.r.p.

Emergency transmitters, if not issued a TAC, shall comply with technical requirements dealing with frequency tolerance, spurious, harmonic radiation and safety. It is strongly recommended that these emergency transmitters comply with as many as possible of the other requirements as well.

6.3 Location of Main and Auxiliary Transmitters**6.3.1 Main and Alternate Transmitters**

Main and alternate transmitters shall be located at the main transmitter site as shown on the broadcasting certificate and shall operate into the antenna system which has been approved for the undertaking's power and frequency. In all respects, the two transmitters shall be completely interchangeable without measurable effect on the signal in any direction.

6.3.2 Standby Transmitters

Standby transmitters may be located at either the main transmitter site, or some other approved site and shall operate into either the main or some other approved antenna system.

The location and parameters of the standby operation shall be such that the local service contour would enclose the principal population centre which the undertaking is licensed to serve. The power of AM standby transmitter located in a metropolitan area shall not exceed 250 watts.

6.3.3 Emergency Transmitters

Emergency transmitting systems are unplanned installations, and their necessity results from unforeseen circumstances beyond the control of the undertaking licensee. The operation of such systems shall be limited to a duration of two weeks. Authority may be obtained from the departmental District Office. Otherwise, the provisions of Section 6.5 hereunder apply.

6.4 Maintenance and Operation

The requirements of Section 5 shall apply to alternate and standby facilities. When alternate, standby or emergency transmitters are used, a log shall be kept covering each operation with an explanation of the circumstances and the necessity for such an operation.

6.4.1 Identification of Undertakings During Standby or Emergency Operation

6.4.1.1 Undertakings shall identify hourly during times of standby or emergency operation and shall include an indication that the undertaking is operating with reduced power and with a different antenna location where applicable.

6.4.1.2 Since AM broadcasting undertakings are used extensively as aids to aeronautical navigation, it is very important that the exact transmitter site be known. Therefore, when circumstances make it necessary to operate an AM standby or emergency transmitter at a location different from the main transmitter, the following information shall be given in an announcement made every 15 minutes: the call sign and nominal location of the undertaking; a statement to the effect that a standby or emergency transmitter is being used; and a sufficiently clear descriptive name for the actual transmitter location to identify it as distinct from the main transmitter site. Example: "CALL Podunk, broadcasting from our standby transmitter located at our main studio in the Forum Building in downtown Podunk."

6.5 Special Case Operations

There may be exceptional circumstances requiring the operation of auxiliary facilities other than those described herein. Such requirements shall be submitted to the Director, Broadcasting Applications Engineering, and will be dealt with on a case-by-case basis.

7. Assignment and Identification Requirements for Broadcasting Undertakings

7.1 Introduction

7.1.1 Article 19 of the ITU *Radio Regulations* requires that the identification of broadcasting stations be done through the use of call signs. In Canada, this requirement is reflected in the *Radiocommunication Regulations* section 18, in these Broadcasting Procedures and Rules and in Broadcasting Equipment Technical Standard 11, *Technical Requirements Respecting the Identification of Broadcasting Stations* (BETS-11). Call signs do not apply to MDS and S-DARS broadcasting stations.

7.2 Assignment of Call Signs

7.2.1 The call sign shall be used for the identification of the broadcasting station by the main program and optionally by ancillary programs. Special call signs will not be issued for ancillary channels (e.g. SCMO) and for DRB ancillary services.

- 7.2.2 The call signs in the list developed by the Department begin with one of the letter groupings CF, CH, CI, CJ or CK, which constitute a subset of the letters that have been assigned to Canada under the ITU (see ITU *Radio Regulations*, Article 19 and Appendix 42). By special arrangement, broadcasting undertakings owned and operated by the Canadian Broadcasting Corporation can be assigned call signs beginning with CB. The use of CB does not apply to HF broadcasting.
- 7.2.3 The basic call signs are made up of four letters, the first two taken from the list given in Section 7.2.2 above. In special cases, three-letter call signs will be used for national network undertakings. Suffixes FM, TV, DR and DT will identify FM, TV, DRB and DTV undertakings respectively. Numerical suffixes will be appended to identify rebroadcasting undertakings, where the same basic call sign is assigned to the originating as well as to the rebroadcasting undertaking (rebroadcasting undertakings are those that broadcast simultaneously the programs of another undertaking for at least half of the broadcasting schedule).

If a specific call sign is not required by the applicant, special call signs consisting of two letters and four digits will be used for satellite-fed low-power FM² and TV undertakings which have no local programming i.e. VF2000 to VF9999 for FM and CH2000 to CH9999 for TV.

- 7.2.4 The call sign shall be selected by the applicant at the time of submitting an application for a broadcasting certificate and a broadcasting licence.³ It shall be selected from the list of available call signs which Industry Canada has posted at its website (see Section 1.4.3). The selected call sign will be reserved for the period that the application is considered active. Information concerning the call sign may be obtained by examining the application for the broadcasting certificate which is on file at the Department, after the CRTC has published its public notice relative to the related licence application.

7.3 Identification of Broadcasting Undertakings

- 7.3.1 Pursuant to the *Radiocommunication Regulations*, section 18 and to BETS-11, the holder of a broadcasting certificate shall identify the broadcasting station by a voice announcement in English or French, giving the call sign - by articulating each letter and number in the call sign, and by giving the principal city or community that is served by the undertaking. For TV undertakings, the voice announcement may be replaced by a visual announcement of not less than three seconds in duration that identifies the call sign and the principal city or community that is served by the undertaking. The announcement is to be made every hour, on the hour. Where a program is of more than one hour in duration, the announcement shall be made within 10 minutes of the hour, except where it is necessary to retain the continuity of a program in its entirety without interruption, in which case the announcement may be made at the beginning and at the end of the program.

² Also for other low-power FM undertakings that are CRTC licence-exempt, undertakings operating in museums, churches, etc., that are serving a specific audience.

³ Broadcasting licences are obtained from the CRTC.

- 7.3.2 If a broadcasting undertaking is associated with a rebroadcasting undertaking that is unable to originate its own identification, the holder of the broadcasting certificate in respect to that rebroadcasting undertaking may comply with the requirements of Section 7.3.1 by having an arrangement between the rebroadcasting undertaking and the broadcasting undertaking wherein the broadcasting undertaking identifies the rebroadcasting undertaking at least once a day.
- 7.3.3 Sections 7.3.1 and 7.3.2 do not apply to a rebroadcasting undertaking that is unable to originate its own identification, if the broadcasting certificate issued in respect of that rebroadcasting undertaking specifies that the rebroadcasting undertaking:
- (a) has been assigned a radio frequency without protection from interference by another broadcasting undertaking;
 - (b) shall not cause interference to the operation of any broadcasting undertaking; and
 - (c) is located outside any zone within Canada that, by virtue of any agreement between Canada and any other country, requires Canada to obtain the concurrence of that other country for the establishment of that rebroadcasting undertaking.

8. Assessment of Exposure to RF Energy

8.1 Introduction

Health Canada has issued *Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6*, which sets out safety requirements for the installation and use of stationary radiofrequency apparatus that operate in the frequency range 3 kHz to 300 GHz. Broadcasters are to ensure that their facilities are designed, installed and operated to meet Safety Code 6 requirements concerning the protection of the general public. To this end, the engineering brief submitted in support of an application for a broadcasting certificate shall contain an analysis of RF exposure levels.

8.2 Purpose

The purpose of this RF exposure procedure is:

- (a) to describe the departmental process with respect to the analysis and the technical acceptability of applications;
- (b) to recommend prediction methods to determine compliance with Safety Code 6;
- (c) to specify the responsibility with respect to the protection of the general public from exposure to RF energy.

8.3 Method of Analysis

For most broadcasting transmitting facilities, the contribution of non-broadcasting sources is minimal. These contributions need not be calculated except for certain RF exposure situations where broadcasting and non-broadcasting facilities have similar powers. Industry Canada will normally accept analyses of non-broadcasting contributions based on the HIFIELD method. In all cases, the Department reserves the right to ask for detailed calculations taking into account all contributing sources at the site. The Department will also accept actual measurements for existing facilities as part of the analysis.

Exposure limits specified in Safety Code 6 vary as a function of frequency. Where exposure to radiofrequency energy is caused by more than one source, compliance with exposure limits may be verified by the summing of the contribution of individual sources expressed as a fraction of the exposure limit for all radiocommunication and broadcasting systems in the area under consideration.

The fractional contribution is expressed as a fraction of the exposure limit at the pertinent frequency:

$$F_i = \frac{P_i}{S_i} \quad (1)$$

Where:

F_i = the fractional contribution of each source.

P_i = the power density produced by each source.

S_i = exposure limit at the pertinent frequency.

In the case of broadcasting, each fractional contribution for FM, DRB, TV, DTV, MDS and S-DARS undertakings is calculated using either of the following:

$$F_i = \frac{0.1305 \times k \times ERP_i}{d^2 \times P_{si}} \quad (2)$$

$$F_i = \frac{49.2 \times k \times ERP_i}{d^2 \times E_{si}^2}$$

$$F_i = \frac{346.2 \times k \times ERP_i}{d^2 \times H_{si}^2}$$

Where:

- | | | |
|-----|-------|---|
| k | = 1 | for single polarization FM, DTV, DRB, MDS and S-DARS terrestrial transmitters |
| | = 2 | for dual or circularly polarized FM and DTV undertakings |
| | = 0.7 | for horizontally polarized NTSC TV undertakings |
| | = 1.4 | for dual or circularly polarized NTSC TV undertakings |
| ERP | = | Maximum ERP for the individual station, in watts |
| d | = | shortest unobstructed distance from ground or any location accessible to the public to the centre of radiation of the transmitting antenna, in metres |

P_{si}	=	Exposure limit expressed as power density in W/m^2 at the pertinent frequency
E_{si}	=	Exposure limit expressed as electric field in V/m at the pertinent frequency
H_{si}	=	Exposure limit expressed as magnetic field in A/m at the pertinent frequency

The total exposure level for a given radio environment is then given by:

$$F = \sum_{i=1}^N F_i = \sum_{i=1}^N \frac{P_i}{S_i} \quad (3)$$

Where:

F = total fractional contribution of all sources

N = number of radio frequency sources under consideration

For compliance with Safety Code 6, the value of F must be less than unity.

Out-of-band emissions from a given source have been considered in estimating the exposure situation in a given radio environment taking into consideration filtering and antenna discrimination that takes place.

The exposure analysis for DRB should be based on the ERP of the RF channel regardless of how many program channels are carried by a DRB facility.

For AM broadcasting undertakings, the Department recommends the use of Table 1 of Appendix 2 as a method to evaluate the distance from individual towers of the antenna array where exposure to radio frequency energy is predicted to exceed the safety limit.

8.4 Conditions for Technical Acceptability

- (1) Standalone low-power and very low-power FM, TV, S-DARS, and DTV undertakings may be exempted from any analysis if the applicant can demonstrate that the general public will not have access to the area within the distance given in Table 2, Appendix 2, provided that the overall contribution from other radio apparatus in the vicinity is considered non significant.
- (2) For all other FM, DRB, TV, S-DARS and DTV undertakings, calculate F_i for the proposed application alone, assuming an isotropic source using the maximum value of the proposed ERP_i (equation 2 of Section 8.3), or use the HIFIELD program (Estimation of the Power Densities Near VHF and UHF Broadcasting Transmitting Sites), as developed jointly by the Department and the industry. For AM undertakings, use Table 1 of Appendix 2 to predict F_i at distance d as defined in Section 8.3.

If $F_i \leq 0.01$ (i.e. 1% of the exposure limit), then compliance is presumed. The Department may however, at its discretion, require further analysis if needed.

- (3) If the 1 % limit in step 2 is exceeded, the analysis should be repeated taking into account the contribution of the proposed facility, as well as those of all radio frequency apparatus in the vicinity.

(a) **Evaluated Total Exposure < Exposure Limit - 3 dB**

If the evaluated total exposure is at least 3 dB below the exposure limit, compliance is presumed and no further analysis is needed.

(b) **Exposure Limit - 3 dB < Evaluated Total Exposure < Exposure Limit**

If the evaluated total exposure is within 3 dB of the exposure limit without exceeding the limit, technical acceptability could be granted under the condition that the applicant undertakes measurements once the proposed facility is built and turned on for testing. Alternatively, the applicant may propose and install mitigation measures. In all cases, the applicant must demonstrate compliance with Safety Code 6 before the Department issues the broadcasting certificate. Refer to GL-01, *Guidelines for the Measurement for Radio Frequency Fields at Frequencies from 3 kHz to 300 GHz*, for recommended measurement procedures and determination of compliance and GL-02, *Guidelines for the Protection of the General Public in Compliance with Safety Code 6*, for the description of recommended mitigation measures. These guidelines are available on the Department's website at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf01841.html#guidelines.

(c) **Exposure Limit < Evaluated Total Exposure**

If the evaluated total exposure is predicted to exceed the exposure limit, the proposal shall include the necessary measures to assure compliance with Safety Code 6. Otherwise, it will be considered technically unacceptable.

Note: *Evaluated Total Exposure* is the predicted exposure from the facilities, or the sum of the measured levels of the existing exposure and the predicted levels from the proposed facilities.

8.5 Contact Currents

It is to be noted that undertakings operating in the frequency range up to 30 MHz (e.g. AM and HF broadcasting undertakings) may induce an alternating electric potential on ungrounded or poorly grounded metallic objects in the vicinity of antenna(s). If a person touches such objects, RF currents will flow through the person to the ground and the current levels will depend on a number of factors. Taking measurements is the only reliable way to ensure compliance with Safety Code 6 for such undertakings. Section 2.2.3 of the Code specifies the exposure limits and Appendix V, Section C1 provides the appropriate technical references for the suitable test circuit to be used in conducting these measurements.

8.6 Operational Considerations

- 8.6.1 Under the conditional technical acceptability (Section 8.4(3)(b)), if measurements uncover areas that exceed the exposure limit, then immediate action must be taken by the applicant to remedy the situation.

- (a) Mitigating measures recommended in Safety Code 6 can be found on Industry Canada's website in the *Guidelines for the Protection of the General Public in Compliance with Safety Code 6* (see 8.4(3)(b) above).
 - (b) Where mitigating measures cannot be applied, the applicant shall reduce transmitter power and/or adjust the antenna system or take other measures even to the extent of closing down the broadcasting facility to comply with Safety Code 6.
- 8.6.2 In all cases, the Department reserves the right to request the measurement of the exposure at a site, before or after the construction of the undertaking.
- 8.6.3 Compliance to Safety Code 6 is an ongoing responsibility for the operator of a radio apparatus to assure protection of the general public at all times.

9. Requirements for the Selection of Transmitting Equipment

The applicant or holder of a broadcasting certificate for a broadcasting transmitting undertaking is required to use transmitting equipment which meets the following criteria for all regular-power and low-power undertakings:

- (a) the equipment has been issued a TAC under the applicable Broadcasting Equipment Technical Standard as a single unit, or
- (b) the equipment has been constructed of sub-assemblies from certified transmitters (e.g. an exciter from one transmitter and a final amplifier from another transmitter).
- (c) the foregoing notwithstanding, the Department reserves the right to require that measurements be taken and that a report be submitted to show compatibility with the applicable Broadcasting Equipment Technical Standard with regard to spurious and harmonic emissions.
- (d) emissions from digital broadcasting facilities must conform with technical requirements specified in the service-specific Broadcast Procedure and Rules.

Appendix 1 - Addresses and Regional Boundaries

Address of the Departmental Headquarters

Director
Broadcasting Applications Engineering
Industry Canada
300 Slater Street
OTTAWA, Ontario
K1A 0C8

E-mail: DBCE-APPS@ic.gc.ca

Addresses of Regional Offices

Refer to Radiocommunication Information Circular 66 (RIC-66) for the addresses of Industry Canada's regional and district offices. This document is available on Department's website at <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01742.html>.

Description of Regional Boundaries

- (1) Pacific Region: British Columbia and Yukon
- (2) PNR Region: Alberta, Saskatchewan, Manitoba, the Northwest Territories and Nunavut
- (3) Ontario Region: Ontario
- (4) Quebec Region: Quebec
- (5) Atlantic Region: New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador

Appendix 2 - Tables to Predict the Location of Various Exposure Contours

Table 1 - AM

Distances (in metres) at which fields from AM undertakings are predicted to fall below various field strength levels.

Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Transmitter Power (kW)								
		50	25	10	5	2.5	1	0.5	0.25	0.1
25	0.06	109	83	60	47	37	27	22	18	13
50	0.13	65	51	37	29	23	18	14	11	8
75	0.19	49	38	28	23	18	13	11	8	6
100	0.25	40	31	23	19	15	11	9	7	5
150	0.38	30	24	18	15	11	8	6	5	4
200	0.5	25	20	15	12	9	7	5	4	3
280	0.74	21	17	12	10	7	5	4	3	2
300	0.75	20	16	11	9	7	5	4	3	<2
400	1.00	16	13	9	7	6	4	3	<2	<2
500	1.25	14	11	8	6	5	3	3	<2	<2
750	1.88	11	8	6	5	4	3	<2	<2	<2
1000	2.50	9	7	5	4	3	<2	<2	<2	<2

Note 1: This table can be used for all AM frequencies. The entries in this table apply to both electric field strength and the corresponding magnetic field strength (assuming a free-space impedance equal to 377 Ω).

Note 2: To verify compliance for an AM undertaking alone, determine the exposure limit value from Safety Code 6 for the frequency of the undertaking, then using the above table and assuming the proposed transmitter power at each individual tower, determine the radial distance (radius of circle) to the Safety Code 6 exposure limit for each tower of the array. The exposure limit is exceeded inside the area delimited by the envelope of these circles that are part of the coverage of the tower array. Linear interpolation can be used to determine the distance for intermediate values of exposure or transmitter power. If the site is shared with other radio facilities, use the table to obtain the field contribution by considering the distance *d* from the individual tower. The field contributions can then be added up.

Table 2: For Low-power (LP) and Very Low-power (VLP) FM and TV Undertakings

If the applicant can demonstrate that the general public cannot access the area surrounding the transmitting antenna delimited by the distance given in this table, the said applicant will be exempted from the analysis required in section 8.4. This table is based on the following two assumptions:

- Single polarization was used in deriving the values
- “Distance” is the distance from the centre of radiation of the antenna to any point

Broadcasting Service	Distance from Antenna in Metres
Low-power FM	2.6
Very Low-power FM	1.1
Low-power Television Lower - VHF (analog)	2.1
Low-power Television Upper - VHF (analog)	6.3
Very Low-power Television - VHF (analog)	0.3
Low-power Television - Channel 14 to 69 (analog)	12.1
Very Low-power Television - Channel 14 to 69 (analog)	0.5
Low-power Digital Television - Lower VHF	0.6
Low-power Digital Television - Upper VHF	1.1
Low-power Digital Television - Channel 14 to 69	2.5

Appendix 3 - Letter of Intent

This is to inform you that [company name] has applied to Industry Canada and the Canadian Radio-television and Telecommunications Commission (CRTC) for the authority to [operate a new or to modify an] [AM / FM / TV / DTV /MDS-TV/S-DARS] station to serve [community name]. The transmitting facility, which will be located in your community, includes a [new antenna-supporting structure at _____ / modification to the existing antenna-supporting structure located at _____].

This is also to inform you that requirements set out in CPC-2-0-03 on the [new/modification of the] transmitting facility will be fully complied with before any construction. However, our project is part of the CRTC public hearing process and is dependent upon CRTC approval. Therefore, we prefer to fully implement the full consultation process only should we receive a favourable ruling from the CRTC to our application. Please be advised that Industry Canada will not issue the authority to construct until we have completed the consultation process.

If you have further questions or comments, please contact [name], at [contact information]. [The CRTC public hearing for this application is scheduled for _____].

Yours sincerely,

President



**Industry
Canada**

**Industrie
Canada**

CPC-2-0-03

Issue 4

Released: June 2007

Effective: January 1, 2008

Spectrum Management and Telecommunications

Client Procedures Circular

Radiocommunication and Broadcasting Antenna Systems

**(Formerly CPC-2-0-03 - Environmental Process, Radiofrequency Fields and
Land-Use Consultation)**

Comments and suggestions may be directed to the following address:

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All Spectrum Management and Telecommunications publications are available on the following website at: <http://strategis.gc.ca/spectrum>.

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1. Introduction

Radiocommunication and broadcasting services are important for all Canadians and are used daily by the public, safety and security organizations, government, wireless service providers, broadcasters, utilities and businesses. In order for radiocommunication and broadcasting services to work, antenna systems including masts, towers, and other supporting structures are required. There is a certain measure of flexibility in the placement of antenna systems which is constrained to some degree by: the need to achieve acceptable coverage for the service area; the availability of sites; technical limitations; and safety. In exercising its mandate, Industry Canada believes that it is important that antenna systems be deployed in a manner that considers the local surroundings.

1.1 Mandate

Section 5 of the *Radiocommunication Act* states that the Minister may, taking into account all matters the Minister considers relevant for ensuring the orderly development and efficient operation of radiocommunication in Canada, issue radio authorizations and approve each site on which radio apparatus, including antenna systems, may be located. Further, the Minister may approve the erection of all masts, towers and other antenna-supporting structures. Accordingly, proponents must follow the process outlined in this document when installing or modifying an antenna system. Also, the installation of an antenna system or the operation of a currently existing antenna system that is not in accordance with this process may result in its alteration or removal and other sanctions against the operator in accordance with the *Radiocommunication Act*.

1.2 Application

The requirements of this document apply to anyone (referred to in this document as the proponent) who is planning to install or modify an antenna system regardless of the type of installation or service. This includes, amongst others, Personal Communications Services (PCS) and cellular, fixed wireless, broadcasting, land-mobile, licence-exempt and amateur radio operators. As well, parts of this process contain obligations that apply to existing antenna system operators.

1.3 Process Overview

This document outlines the process that must be followed by proponents seeking to install or modify antenna systems. The broad elements of the process are as follows:

1. Investigating sharing or using existing infrastructure before proposing new antenna-supporting structures.
2. Contacting the land-use authority (LUA) to determine local requirements regarding antenna systems.
3. Undertaking public notification and addressing relevant concerns, whether by following local LUA requirements or Industry Canada's default process, as is required and appropriate.
4. Satisfying Industry Canada's general and technical requirements.

It is Industry Canada's expectation that steps (2) to (4) will normally be completed within *120 days*. Some proposals may be excluded from certain elements of the process (see Section 6). It is Industry Canada's expectation that all parties will carry out their roles and responsibilities in good faith and in a manner that respects the spirit of this document.

2. Industry Canada Engagement

There are a number of points in the processes outlined in this document where parties must contact Industry Canada to proceed. Further, anyone with any question regarding the process may contact the local Industry Canada office¹ for guidance. Based on a query by an interested party, Industry Canada may request parties to provide relevant records and/or may provide direction to one or more parties to undertake certain actions to help move the process forward.

3. Use of Existing Infrastructure (Sharing)

This section outlines the roles of proponents and owners/operators of existing antenna systems. In all cases, parties should retain records (such as analyses, correspondence and engineering reports) relating to this section.

Before building a new antenna-supporting structure, Industry Canada requires that proponents first explore the following options:

- consider sharing an existing antenna system, modifying or replacing a structure if necessary;
- locate, analyze and attempt to use any feasible existing infrastructure such as rooftops, water towers etc.

Proponents are not normally expected to build new antenna-supporting structures where it is feasible to locate their antenna on an existing structure, unless a new structure is preferred by land-use authorities.

Owners and operators of existing antenna systems are to respond to a request to share in a timely fashion and to negotiate in good faith to facilitate sharing where feasible. It is anticipated that 30 days is reasonable time for existing antenna system owners/operators to reply to a request by a proponent in writing with either:

- a proposed set of reasonable terms to govern the sharing of the antenna system; or
- a detailed explanation of why sharing is not possible.

¹ Please refer to Radiocommunication Information Circular 66 (RIC-66) for a list of addresses and telephone numbers for Industry Canada's regional and district offices. RIC-66 is available via the Internet at: <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf01742e.html>.

4. Land-use Authority and Public Consultation

Contacting the Land-use Authority

Proponents must always contact the applicable land-use authorities to determine the local consultation requirements unless their proposal falls within the exclusion criteria outlined in Section 6. If the land-use authority has designated an official to deal with antenna systems, then proponents are to engage the authority through that person. If not, proponents must submit their plans directly to the council, elected local official or executive. Proponents are expected to establish initial formal contact with the land-use authority in writing in order to mark the official commencement of the *120-day* consultation process.

Proponents should note that there may be more than one land-use authority with an interest in the proposal. Where no established agreement exists between such land-use authorities, proponents must, as a minimum, contact the land-use authority(ies) and/or neighbouring land-use authorities located within a radius of three times the tower height, measured from the tower base or the outside perimeter of the supporting structure, whichever is greater. As well, in cases where proponents are aware that a potential Aboriginal or treaty right or land claim may be affected by the proposed installation, they must contact Industry Canada in order to ensure that the requirements for consultation are met.

Following the Land-use Authority Process

Proponents must follow the land-use consultation process for the siting of antenna systems, established by the land-use authority, where one exists. In the event that a land-use authority's existing process has no public consultation requirement, proponents must then fulfill the public consultation requirements contained in Industry Canada's Default Public Consultation Process (see Section 4.2). Proponents are not required to follow this requirement if the LUA's established process explicitly excludes their type of proposal from consultation or it is excluded by Industry Canada's criteria. Where proponents believe the local consultation requirements are unreasonable, they may contact the local Industry Canada office in writing for guidance.

Broadcasting Undertakings

Applicants for broadcasting undertakings are subject to Canadian Radio-television and Telecommunications (CRTC) licensing processes in addition to Industry Canada requirements. Although Industry Canada encourages applicants to consult as early as practical in the application process, in some cases it may not be prudent for the applicants to initiate public and municipal/land-use consultation before receiving CRTC approval, as application denial by the CRTC would result in unnecessary work for all parties involved. Therefore, assuming that the proposal is not otherwise excluded, broadcasting applicants may opt to commence land-use consultation after having received CRTC approval. However, broadcasting applicants choosing this option are required, at the time of the CRTC application, to notify the land-use authority with a Letter of Intent outlining a commitment to conduct consultation after receiving CRTC approval. If the land-use authority raises concerns with the proposal as described in the Letter of Intent, applicants are encouraged to engage in discussions with the land-use authority regarding their concerns and attempt to resolve any issues. See Broadcasting Procedures and Rules, Part 1 (BPR-1), for further details.

4.1 Land-use Authority Consultation

Industry Canada believes that any concerns or suggestions expressed by land-use authorities are important elements to be considered by proponents regarding proposals to install, or make changes to, antenna systems. As part of their community planning processes, land-use authorities should facilitate the implementation of local radiocommunication services by establishing consultation processes for the siting of antenna systems.

Unless the proposal meets the exclusion criteria outlined in Section 6, proponents must consult with the local land-use authority(ies) on any proposed antenna system prior to any construction with the aim of:

- discussing site options;
- ensuring that local processes related to antenna systems are respected;
- addressing reasonable and relevant concerns (see Section 4.2) from both the land-use authority and the community they represent; and
- obtaining land-use authority concurrence in writing.

Land-use authorities are encouraged to establish reasonable, relevant, and predictable consultation processes² specific to antenna systems that consider such things as:

- the designation of suitable contacts or responsible officials;
- proposal submission requirements;
- public consultation;
- documentation of the concurrence process; and
- the establishment of milestones to ensure consultation process completion within *120 days*.

Where they have specific concerns regarding a proposed antenna system, land-use authorities are expected to discuss reasonable alternatives and/or mitigation measures with proponents.

Under their processes, land-use authorities may exclude from consultation any antenna system installation in addition to those identified by Industry Canada's own consultation exclusion criteria (Section 6). For example, an authority may wish to exclude from public consultation those installations located within industrial areas removed from residential areas, low visual impact installations, or certain types of structures located within residential areas.

² Industry Canada is available to assist land-use authorities in the development of local processes. In addition, land-use authorities may wish to consult Industry Canada's guide for the development of local consultation processes.

4.2 Industry Canada's Default Public Consultation Process

Proponents must follow Industry Canada's Default Public Consultation Process where the local land-use authority does not have an established and documented public consultation process applicable to antenna siting. Proponents are not required to follow Industry Canada's Default Public Consultation Process if the land-use authority's established process explicitly excludes their type of proposal from public consultation or it is excluded by Industry Canada's criteria (see Section 6). Industry Canada's default process has three steps whereby the proponent:

1. provides written notification to the public, the land-use authority and Industry Canada of the proposed antenna system installation or modification (i.e. *public notification*);
2. engages the public and the land-use authority in order to address relevant questions, comments and concerns regarding the proposal (i.e. *responding to the public*); and
3. provides an opportunity to the public and the land-use authority to formally respond in writing to the proponent regarding measures taken to address reasonable and relevant concerns (i.e. *public reply comment*).

Public Notification

1. Proponents must ensure that the local public, the land-use authority and Industry Canada are notified of the proposed antenna system. As a minimum, proponents must provide a notification package (see Appendix 2) to the local public (including nearby residences, community gathering areas, public institutions, schools, etc.), neighbouring land-use authorities, businesses, and property owners, etc. located within a radius of three times the tower height, measured from the tower base or the outside perimeter of the supporting structure, whichever is greater. For the purpose of this requirement, the outside perimeter begins at the furthest point of the supporting mechanism, be it the outermost guy line, building edge, face of the self-supporting tower, etc.
2. It is the proponent's responsibility to ensure that the notification provides at least **30 days** for written public comment.
3. In addition to the minimum notification distance noted above, in areas of seasonal residence, the proponent, in consultation with the land-use authority, is responsible for determining the best manner to notify such residents to ensure their engagement.
4. In addition to the public notification requirements noted above, proponents of antenna-supporting structures that are proposed to be 30 metres or more in height must place a notice in a local community newspaper circulating in the proposed area.³

³ The notice must be synchronized with the distribution of the public notification package. It must be legible and placed in the public notice section of the newspaper. The notice must include: a description of the proposed installation; its location and street address; proponent contact information and mailing address; and an invitation to provide public comments to the proponent within **30 days** of the notice. In areas without a local newspaper, other effective means of public notification must be implemented. Proponents may contact the local Industry Canada office for guidance.

Responding to the Public

Proponents are to address all reasonable and relevant concerns, make all reasonable efforts to resolve them in a mutually acceptable manner and must keep a record of all associated communications. If the local public or land-use authority raises a question, comment or concern relating to the antenna system as a result of the public notification process, then the proponent is required to:

1. respond to the party in writing within **14 days** acknowledging receipt of the question, comment or concern and keep a record of the communication;
2. address in writing all reasonable and relevant concerns within **60 days** of receipt or explain why the question, comment or concern is not, in the view of the proponent, reasonable or relevant; and
3. in the written communication referred to in the preceding point, clearly indicate that the party has **21 days** from the date of the correspondence to reply to the proponent's response. The proponent must provide a copy of all public reply comments to the local Industry Canada office.

Responding to reasonable and relevant concerns may include contacting a party by telephone, engaging in a community meeting or having an informal, personal discussion. Between steps 1 and 2 above, the proponent is expected to engage the public in a manner it deems most appropriate. Therefore, the letter at step 2 above may be a record of how the proponent and the other party addressed the concern at hand.

Public Reply Comments

As indicated in step 3 above, the proponent must clearly indicate that the party has **21 days** from the date of the correspondence to reply to the response. The proponent must also keep a record of all correspondence/discussions that occurred within the **21-day** public reply comment period. This includes records of any agreements that may have been reached and/or any concerns that remain outstanding.

The factors that will determine whether a concern is reasonable or relevant according to this process will vary but will generally be considered if they relate to the requirements of this document and to the particular amenities or important characteristics of the area surrounding the proposed antenna system. Examples of concerns that proponents are to address may include:

- Why is the use of an existing antenna system or structure not possible?
- Why is an alternate site not possible?
- What is the proponent doing to ensure that the antenna system is not accessible to the general public?
- How is the proponent trying to integrate the antenna into the local surroundings?
- What options are available to satisfy aeronautical obstruction marking requirements at this site?
- What are the steps the proponent took to ensure compliance with the general requirements of this document including the *Canadian Environmental Assessment Act* (CEAA), Safety Code 6, etc.?

Concerns that are not relevant include:

- disputes with members of the public relating to the proponent's service, but unrelated to antenna installations;
- potential effects that a proposed antenna system will have on property values or municipal taxes;
- questions whether the *Radiocommunication Act*, this document, Safety Code 6, locally established by-laws, other legislation, procedures or processes are valid or should be reformed in some manner.

4.3 Concluding Consultation

The proponent may only commence installation/modification of an antenna system after the consultation process has been completed by the land-use authority, or Industry Canada confirms concurrence with the consultation portion of this process, and after all other requirements under this process have been met. Consultation responsibilities will normally be considered complete when the proponent has:

1. concluded consultation requirements (Section 4.1) with the land-use authority;
2. carried out public consultation either through the process established by the land-use authority or the Industry Canada's Default Public Consultation Process where required; and
3. addressed all reasonable and relevant concerns.

Concluding Land-use Authority Consultation

Industry Canada expects that land-use consultation will be completed within *120 days* from the proponent's initial formal contact with the local land-use authority. Where unavoidable delays may be encountered, the land-use authority is expected to indicate when the proponent can expect a response to the proposal. If the authority is not responsive, the proponent may contact Industry Canada. Depending on individual circumstances, Industry Canada may support additional time or consider the land-use authority consultation process concluded.

Depending on the land-use authority's own process, conclusion of local consultation may include such steps as obtaining final concurrence for the proposal via the relevant committee, a letter or report acknowledging that the relevant municipal process or other requirements have been satisfied, or other valid indication, such as the minutes of a town council meeting indicating LUA approval. Compliance with informal city staff procedures, or grants of approval strictly related to zoning, construction, etc. will not normally be sufficient.

Industry Canada recognizes that approvals for construction (e.g. building permits) are used by some land-use authorities as evidence of consultation being concluded. Proponents should note that Industry Canada does not consider the fact a permit was issued as confirmation of concurrence, as different land-use authorities have different approaches. As such, Industry Canada will only consider such approvals as valid when the proponent can demonstrate that the LUA's process was followed and that the LUA's preferred method of concluding LUA consultation is through such an approval.

Concluding Industry Canada's Default Public Consultation Process

Industry Canada's Default Public Consultation Process will be considered concluded when the proponent has either:

- received no written questions, comments or concerns to the formal notification within the **30-day** public comment period; or
- if written questions, comments or concerns were received, the proponent has addressed and resolved all reasonable and relevant concerns and the public has not provided further comment within the **21-day** reply comment period.

In the case where the public responds within the **21-day** reply comment period, the proponent has the option of making further attempts to address the concern on its own, or can request Industry Canada engagement. If a request for engagement is made at this stage, Industry Canada will review the relevant material, request any further information it deems pertinent from any party and may then decide that:

- the proponent has met the consultation requirements of this process and that Industry Canada concurs that installation or modification may proceed; or
- the parties should participate in further attempts to mitigate or resolve any outstanding concern.

5. Dispute Resolution Process

The dispute resolution process is a formal process intended to bring about the timely resolution where the parties have reached an impasse.

Upon receipt of a written request, from a stakeholder other than the general public, asking for Departmental intervention concerning a reasonable and relevant concern, the Department may request that all involved parties provide and share all relevant information. The Department may also gather or obtain other relevant information and request that parties provide any further submissions if applicable. The Department will, based on the information provided, either:

- make a final decision on the issue(s) in question, and advise the parties of its decision; or
- suggest the parties enter into an alternate dispute resolution process in order to come to a final decision. Should the parties be unable to reach a mutually agreeable solution, either party may request that the Department make a final decision.

Upon resolution of the issue under dispute, the proponent is to continue with the process contained within this document as required.

6. Exclusions

For the following types of installations, proponents are excluded from the requirement to consult with the LUA and the public, but must still fulfill the General Requirements outlined in Section 7:

- maintenance of existing radio apparatus including the antenna system, transmission line, mast, tower or other antenna-supporting structure;
- addition or modification of an antenna system (including improving the structural integrity of its integral mast to facilitate sharing), the transmission line, antenna-supporting structure or other radio apparatus to existing infrastructure, a building, water tower, etc. provided the addition or modification does not result in an overall height increase above the existing structure of 25% of the original structure's height;
- maintenance of an antenna system's painting or lighting in order to comply with Transport Canada's requirements;
- installation, for a limited duration (typically not more than 3 months), of an antenna system that is used for a special event, or one that is used to support local, provincial, territorial or national emergency operations during the emergency, and is removed within 3 months after the emergency or special event; and
- new antenna systems, including masts, towers or other antenna-supporting structure, with a height of less than 15 metres above ground level.

Individual circumstances vary with each antenna system installation and modification, and the exclusion criteria above should be applied in consideration of local circumstances. Consequently, it may be prudent for the proponents to consult the LUA and the public even though the proposal meets an exclusion noted above. Therefore, when applying the criteria for exclusion, proponents should consider such things as:

- the antenna system's physical dimensions, including the antenna, mast, and tower, compared to the local surroundings;
- the location of the proposed antenna system on the property and its proximity to neighbouring residents;
- the likelihood of an area being a community-sensitive location; and
- Transport Canada marking and lighting requirements for the proposed structure.

Proponents who are not certain if their proposed structure is excluded, or whether consultation may still be prudent, are advised to contact the land-use authority and/or Industry Canada for guidance.

7. General Requirements

In addition to roles and responsibilities for site sharing, land-use consultation and public consultation, proponents must also fulfill other important obligations including: compliance with Health Canada's Safety Code 6 guideline for the protection of the general public; compliance with radio frequency immunity criteria; notification of nearby broadcasting stations; environmental considerations; and Transport Canada/NAV CANADA aeronautical safety responsibilities.

7.1 Radio Frequency Exposure Limits

Health Canada has established safety guidelines for exposure to radio frequency fields, in its Safety Code 6 publication, entitled: *Limits of Human Exposure to Radiofrequency Electromagnetic fields in the Frequency Range from 3 kHz to 300 GHz*.⁴ While the responsibility for developing Safety Code 6 rests with Health Canada, Industry Canada has adopted this guideline for the purpose of protecting the general public. Current biomedical studies in Canada and other countries indicate that there is no scientific or medical evidence that a person will experience adverse health effects from exposure to radio frequency fields, provided that the installation complies with Safety Code 6.

It is the responsibility of proponents and operators of installations to ensure that all radiocommunication and broadcasting installations comply with Safety Code 6 at all times, including the consideration of combined effects of nearby installations within the local radio environment.

For all proponents following Industry Canada's Default Public Consultation Process, the proponent's notification package must provide a written attestation that there will be compliance with Safety Code 6 for the protection of the general public, including consideration of nearby radiocommunication systems. The notification package must also indicate any Safety Code 6 related signage and access control mechanisms that may be used.

Compliance with Safety Code 6 is an ongoing obligation. At any time, antenna system operators may be required, as directed by Industry Canada, to demonstrate compliance with Safety Code 6 by (i) providing detailed calculations, and/or (ii) conducting site surveys and, where necessary, by implementing corrective measures. Proponents and operators of existing antenna systems must retain copies of all information related to Safety Code 6 compliance such as analyses and measurements.

7.2 Radio Frequency Immunity

All radiocommunication and broadcasting proponents and existing spectrum users are to ensure that their installations are designed and operated in accordance with Industry Canada's immunity criteria as outlined in EMCAB-2⁵ in order to minimize the malfunctioning of electronic equipment in the local surroundings. Broadcasting proponents and existing undertakings should refer to Broadcasting

⁴ Safety Code 6 can be found on Health Canada's website at http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php

⁵ For more information see EMCAB-2, entitled: *Criteria for Resolution of Immunity Complaints Involving Fundamental Emissions of Radiocommunications Transmitters* available on Industry Canada's Spectrum Management and Telecommunications website at: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01005.html>.

Procedures and Rules - Part 1, *General Rules* (BPR-1) for additional information and requirements⁶ on this matter.

Proponents are advised to consider the potential effect that their proposal may have on nearby electronic equipment. In this way, they will be better prepared to respond to any questions that may arise during the public and land-use consultation processes, or after the system has been installed.

Land-use authorities should be prepared to advise proponents and owners of broadcasting undertakings of plans for the expansion or development of nearby residential and/or industrial areas. Such expansion or development generally results in the introduction of more electronic equipment in the area and therefore an increased potential for electronic equipment to malfunction. By keeping broadcasters aware of planned developments and changes to adjacent land-use, they will be better able to work with the community. Equally, land-use authorities have a responsibility to ensure that those moving into these areas, whether prospective residents or industry, are aware of the potential for their electronic equipment to malfunction when located in proximity to an existing broadcasting installation. For example, the LUA could ensure that clear notification be provided to future prospective purchasers.

7.3 Proximity of Proposed Structure to Broadcasting Undertakings

Where the proposal would result in a structure that exceeds 30 metres above ground level, the proponent is to notify operators of AM, FM and TV undertakings within 2 kilometres, due to the potential impact the physical structure may have on these broadcasting undertakings. Metallic structures close to an AM directional antenna array may change the antenna pattern of the AM broadcasting undertaking. These proposed structures can also reflect nearby FM and TV signals, causing 'ghosting' interference to FM/TV receivers used by the general public.

7.4 Canadian Environmental Assessment Act

Industry Canada requires that the installation and modification of antenna systems be done in a manner that complies with appropriate environmental legislation. This includes the CEAA and local environmental assessment requirements where required by the CEAA.

Proponents will ensure that the environmental assessment process is applied as early as is practical in the planning stages. This will enable proponents and other stakeholders to consider environmental factors in any decisions that may be made. As part of their environmental assessment, proponents are to give due consideration to potential environmental impacts including cumulative effects.

Proponents are advised to view the current CEAA exclusion list⁷ to see if their proposed installation meets the requirements to be excluded from assessment under the CEAA.

⁶ BPR-1 - Part I: General Rules can be found on the Spectrum Management and Telecommunications website at: <http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/en/sf01326e.html>.

⁷ The CEAA exclusion list can be found at <http://laws.justice.gc.ca/en/C-15.2/SOR-94-639/index.html>.

If not excluded, the proponent must first notify the local Industry Canada office which will direct the proponent on how to proceed with an environmental assessment. At this point, the proponent must not proceed with any construction related to the proposal.

Where the proposal requires assessment under the CEAA, the proponent must either:

- abandon the proposal; or
- participate in the environmental assessment process as established under the CEAA.

Should the environmental assessment identify that there is the potential for an adverse environmental effect, the proponent will be required to describe the effect and propose mitigation measures. Through an environmental assessment, careful consideration may be given to potential adverse environmental effects during the planning stages. This makes it possible to introduce measures which permit the project to proceed while protecting the environment.

Should any significant adverse environmental effect become apparent at any time during the installation, all construction must be stopped, regardless of whether the installation was excluded from environmental assessment.

For all proponents following Industry Canada's Default Public Consultation Process, the proponent's notification package must provide written confirmation of the project's status under the *Canadian Environmental Assessment Act*.

In those situations where an environmental assessment is required, Industry Canada will post a notification of the commencement of the assessment on the Canadian Environmental Assessment Registry website.⁸ This will help to ensure that all interested parties, including the general public, are aware of an assessment from the outset. The notification will include the name, location and a summary description of the project, and identify the project proponent(s) and federal department(s) directly involved in the assessment. Other pertinent documents will be placed on the Internet site as the assessment proceeds, including all public notices, decisions and information about follow-up programs. Should mitigation measures be identified further to the assessment, Industry Canada will ensure that the project does not proceed unless these measures are adequately addressed.

In addition, proponents are responsible to ensure that antenna systems are installed and operated in a manner that respects the local environment and complies with other statutory requirements such as the *Canadian Environmental Protection Act*, the *Migratory Birds Convention Act* and the *Species at Risk Act*, where applicable.

⁸ The Canadian Environmental Assessment Registry website can be found at: http://www.ceaa-acee.gc.ca/050/index_e.cfm.

7.5 Aeronautical Safety

Proponents must ensure their proposals for any antenna system are first reviewed by Transport Canada and NAV CANADA.

Transport Canada will perform an assessment of the proposal with respect to the potential hazard to air navigation and will notify proponents of any painting and/or lighting requirements for the antenna system. NAV CANADA will comment on whether the proposal has an impact on the provision of their national air navigation system, facilities and other services located off-airport.

As required, the proponent must:

1. submit an Aeronautical Obstruction Clearance form to Transport Canada;
2. submit a Land-use Proposal Submission form to NAV CANADA;
3. include Transport Canada marking requirements in the public notification package;
4. install and maintain the antenna system in a manner that is not a hazard to aeronautical safety; and
5. retain all correspondence.

For those antenna systems subject to Industry Canada's Default Public Consultation Process, the proponent will inform the community of any marking requirements. Where options are possible, proponents are expected to work with the local community and Transport Canada to implement the best and safest marking options. Proponents should be aware that Transport Canada does not advise Industry Canada of marking requirements for proposed structures. Proponents are reminded that the addition of, or modification to, obstruction markings may result in community concern and so any change is to be done in consultation with the local public, land-use authority and/or Transport Canada, as appropriate.

References and Details

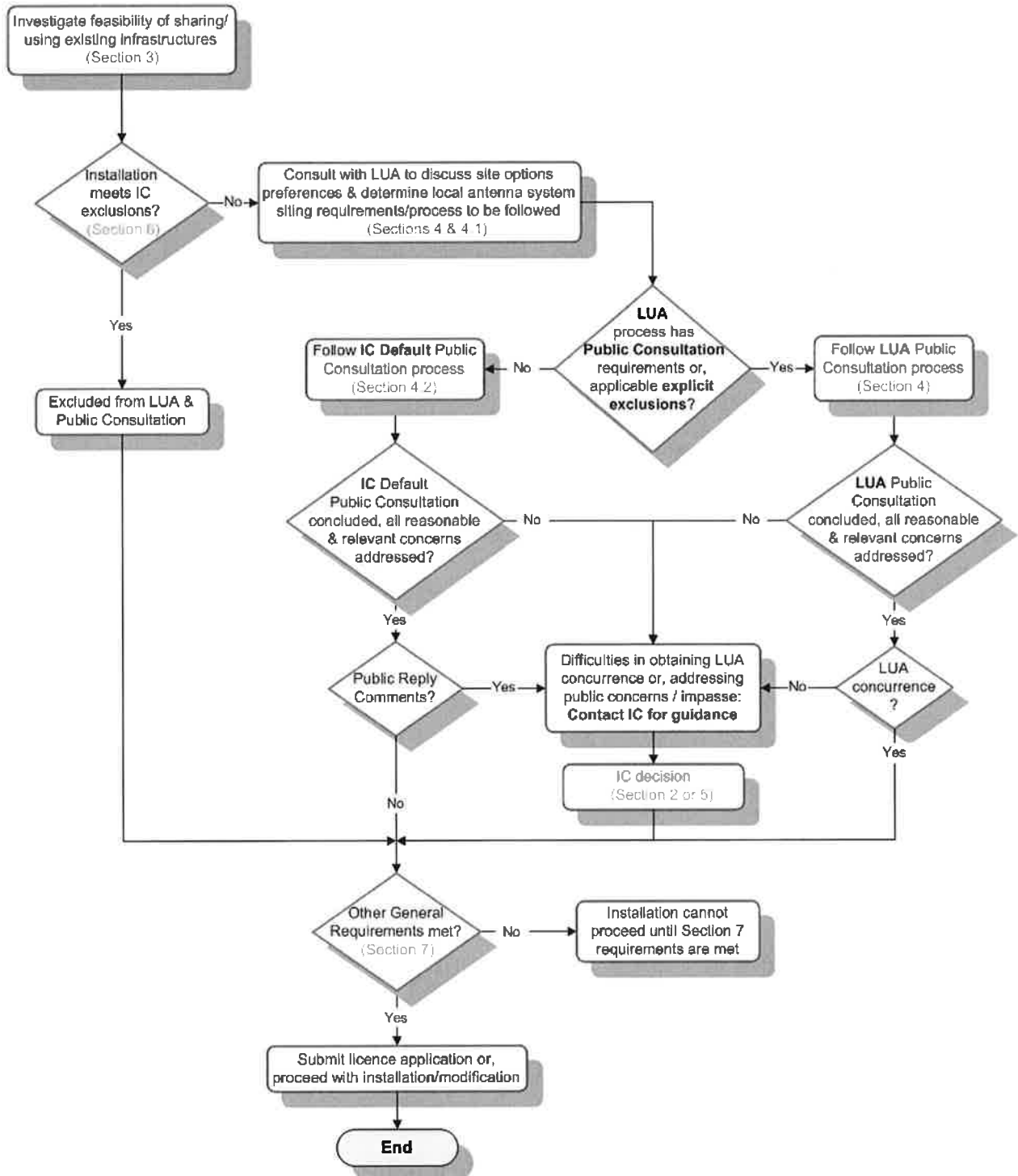
Aeronautical Obstruction Clearance forms are available from any Transport Canada Aviation Group Office. Both the Aeronautical Obstruction Clearance form (#26-0427) and a list of Transport Canada Aviation Group regional offices are available on the Transport Canada website.⁹ Completed forms are to be submitted directly to the nearest Transport Canada Aviation Group office. (Refer to Canadian Aviation Regulations, Standard 621.19, Standards Obstruction Markings).

Land-use Proposal Submission forms are available from NAV CANADA¹⁰ and completed forms are to be sent to the appropriate NAV CANADA General Manager Airport Operations (GMAO) office, East or West.

⁹ The Transport Canada website can be found at: <http://www.tc.gc.ca>.

¹⁰ Search keywords "Land-use Proposal" on the NAV CANADA website at: <http://www.navcanada.ca>.

Appendix 1 - Consultation Flow Chart



Appendix 2 - Industry Canada's Default Public Consultation Process - Public Notification Package (See Section 4.2)

The proponent must ensure that at least **30 days** are provided for public comment. Notification must provide all information on how to submit comments to the proponent in writing. The proponent must also provide a copy of the notification package to the land-use authority and the local Industry Canada office at the same time as the package is provided to the public.

Notification must include, but need not be limited to:

- (1) the proposed antenna system's purpose, the reasons why existing antenna systems or other infrastructure cannot be used, a list of other structures that were considered unsuitable and future sharing possibilities for the proposal;
- (2) the proposed location within the community, the geographic co-ordinates and the specific property or rooftop;
- (3) an attestation¹ that the general public will be protected in compliance with Health Canada's Safety Code 6 including combined effects within the local radio environment at all times;
- (4) identification of areas accessible to the general public and the access/demarcation measures to control public access;
- (5) the project's status under the *Canadian Environmental Assessment Act*²;
- (6) a description of the proposed antenna system including its height and dimensions, a description of any antenna that may be mounted on the supporting structure and simulated images of the proposal;
- (7) Transport Canada's aeronautical obstruction marking requirements (whether painting, lighting or both) if available; if not available, the proponent's expectation of Transport Canada's requirements together with an undertaking to provide Transport Canada's requirements once they become available;
- (8) an attestation that the installation will respect good engineering practices including structural adequacy;
- (9) reference to any applicable local land-use requirements such as local processes, protocols, etc.;

¹ Example: I, (*name of individual or representative of company*) attest that the radio installation described in this notification package will be installed and operated on an ongoing basis so as to comply with Health Canada's Safety Code 6, as may be amended from time to time, for the protection of the general public including any combined effects of nearby installations within the local radio environment.

² Example: I, (*name of individual or representative of company*) attest that the radio antenna system described in this notification package is excluded from environmental assessment under the *Canadian Environmental Assessment Act*.

- (10) notice that general information relating to antenna systems is available on Industry Canada's Spectrum Management and Telecommunications website (<http://strategis.ic.gc.ca/antenna>);
- (11) contact information for the proponent, land-use authorities and the local Industry Canada office;
and
- (12) closing date for submission of written public comments (not less than **30 days** from receipt of notification).