

**ANALYSES OF THE TECHNICAL REPORT
PUBLISHED BY IMAGINEERING LIMITED
ON RADIO BROADCASTING SERVICES
IN THE GREATER TORONTO AREA**

FM Broadcasting Services

Prepared for Industry Canada

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Table of Content

1. Introduction..... 4

2. Objective 4

3. Governing Authorities, Regulations, Rules and Agreements..... 4

4. Allotment Considerations 5

5. Proposed Amendments 6

6. New Channels for the GTA..... 9

7. Other Considerations..... 14

8. Conclusion..... 14

1. Introduction

On January 31 2001, The CRTC issued a Report to the Governor in Council on measures to ensure that the residents of the Greater Toronto Area receive a range of radio services reflective of the diversity of their languages and culture (Public Notice CRTC 2001-10). The CRTC Report is published in response to an Order in Council (P.C. 2000-1464) issued pursuant to section 15 of the Broadcasting Act. The report acknowledged the strong demand for new radio services to serve the ethnic population in the Greater Toronto Area (GTA), the scarcity of suitable AM and FM allotments under the existing Industry Canada technical rules relating to spectrum usage and makes recommendations on how to alleviate the situation.

To facilitate its response to the Order in Council, the CRTC engaged Imagineering Limited to undertake a detailed analysis of the technical measures that might be available to increase the number of radio services in the GTA, in AM, FM and Digital Radio Broadcasting (DRB) bands.

Imagineering Limited, in their report issued to the CRTC on 24th of November 2000, considers the existing regulatory policies of Industry Canada, the CRTC and, in general terms, of other governing bodies such as Health Canada, NAV Canada that impact on the ability of the Commission to license new services in the GTA. Furthermore, the report recognizes the current congestion of radio broadcast spectrum in the GTA and the difficulty of adding allotments unless various technical rules are relaxed or eliminated. Finally, based on such assumptions, it identifies a number of AM drop-in frequencies, DRB channels and FM services that are theoretically feasible.

For the record, the Imagineering report identifies the GTA as the area encompassing the City of Toronto and the regions of Durham, York, Peel and Halton, an area covering 7042.2 km² and home to some 4.6 million people.

2. Objective

The present report will seek to analyze the benefits of the technical assumptions made by the Imagineering report relating to FM broadcasting in general and to the GTA in particular. The report will provide a listing the proposed changes to the Industry Canada technical rules and evaluate their veracity. It will also examine the implications, including the impact on other assignments and the Canada/US FM Agreement. Finally, it will examine some of the other existing regulatory policies of NAV Canada, Health Canada etc. that may limit the number of radio broadcast channels that could be added.

3. Governing Authorities, Regulations, Rules and Agreements

In addition to the CRTC Radio Regulations, the authorities and regulations that govern the licensing of an FM broadcasting channel are as follows:

Industry Canada

- Broadcasting Procedures and Rules Parts 1 and 3 (BPR-1 and BPR-3),
- Technical Bulletin TB-5 (Report on Predicting Television Ghosting Interference and Picture Quality),
- Broadcasting Circular BC-11 (FM/NAV/COM Service Compatibility Analysis),
- Client Procedures Circular CPC-2-0-02 (Antenna Structure Clearance),
- Internal Procedures Circular IPC-2-0-01 (Antenna Structure Clearance),
- Client Procedures Circular CPC-2-0-03 (Environmental Process, Radiofrequency Fields and land-Use Consultation),
- Internal Procedures Circular IPC-2-0-03 (Environmental Process, Radiofrequency Fields and land-Use Consultation),

International Agreements

- Agreement between the Government of Canada and the Government of the United States of America Relating to the FM Broadcasting Service and the Associated Working Arrangement 1991.
- Changes to the 1991 Working Agreement Between the Government of Canada and the Government of the United States of America Relating to the FM Broadcasting Service 1999.

Health Canada

- Safety Code 6: Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz.

4. Allotment Considerations

The key factors that are taken into consideration in the development of the FM allotment plan are the classes of FM stations, the protected service contour, the protection ratios that are associated with various channel relationships and the separation distances that are derived from the above factors.

FM Classes are based on two parameters: the Effective Antenna Height Above Average Terrain (EHAAT) and the Effective Radiated Power (ERP) of the allotment. The EHAAT and ERP are explained in BPR-3. The maximum parameters of FM Classes are as follows:

Class A1:	ERP=250 W	EHAAT=100 m
Class A:	ERP=6 kW	EHAAT=100 m
Class B1:	ERP=25 kW	EHAAT=100 m
Class B:	ERP=50 kW	EHAAT=150 m
Class C1:	ERP=100 kW	EHAAT=300 m
Class C:	ERP=100 kW	EHAAT=600 m

The protected field strength contour value is the 0.5 mV/m (or 54 dB μ V/m) contour. The distance to the protected contour is as follows:

Class A1:	18 km
Class A:	38 km
Class B1:	51 km
Class B:	65 km
Class C1:	86 km
Class C:	97 km

The protection ratios for channel adjacencies are:

Co-channel:	D/U=20 dB
1 st Adjacent:	D/U=6 dB
2 nd Adjacent:	D/U=-20 dB
3 rd Adjacent:	D/U=-40 dB
4 th Adjacent:	No overlap of 100 dB μ V/m and 80 dB μ V/m contours
53 rd /54 th Adjacent (IF):	Generally, no overlap of 100 dB μ V/m and 80 dB μ V/m contours.

Assuming that assignments will potentially be using the maximum parameters of their class, the minimum separation distances that correspond to the above classes and technical conditions are outlined in section C-1.4 of BPR-3.

Other technical constraints that may limit the assignment of a new service in the GTA are:

- The requirement for FM stations on channels 201-220 to protect television stations on channel 6 (BPR-3, section C-6).
- The potential for NAV/COM interference due to various spurious emissions or intermodulation products (BPR-3, section B-8).
- The need to obtain the approval of existing stations which are short-spaced (BPR-3, section C-1.5).

5. Proposed Amendments

To reduce the separation distances or to be able to drop-in addition allotments, the above protection ratios may have to be relaxed or the technical conditions associated with certain assignment practices may have to be modified. The Imagineering report proposes a number of amendments to improve the use of spectrum for the FM broadcasting band. The proposed amendments are as follows:

- As long as protection requirements are met, separation requirements can be relaxed by using directional antennas and/or by using actual terrain data.

Position: Although the allotments in the plan are based on omni-directional patterns and most FM stations use such patterns, Industry Canada allows the use of directional antennas (BPR-3, section B-2.7) as long as the maximum-to-minimum ratio does not exceed 20 dB (BPR-3, section C-9). Industry Canada believes applicants can take advantage of directional patterns to maximize spectrum usage. Furthermore, Industry Canada allows the use of actual terrain data where the intervening terrain justifies the use (BPR-3, section C-1.5.1). The terrain factors have traditionally been accepted for the protected contour but not for evaluating the interfering field strength.

International Agreements: Directional patterns are allowed but the standard separation distances, as outlined in the agreement, have to be complied with. The distances are based on F(50,50), F(50,10) curves.

- 2nd adjacent channel. It is proposed to allow applicants to maintain the required D/U ratio in any location within the coverage area of the protected station. It is also proposed to revise the D/U to reflect the selectivity characteristics of modern FM receivers. Proposed D/U=-40 dB.

Position: It may be possible to avoid interference to the related station if the appropriate D/U ratio¹ is retained within the coverage area. This will allow co-location or near co-location of the 2nd adjacent channel. Moreover, the protection ratio for the 2nd adjacent channel in the United States is the same as the 3rd adjacent channel, i.e. D/U=-40 dB. Latest FCC tests confirm this ratio. A sub-committee of the Broadcast Technical Advisory Committee (B-TAC) is currently reviewing the matter and will make appropriate recommendations. Using the same ratios for 2nd and 3rd adjacent will bring the separation distances for the 2nd adjacent in line with those of the 3rd adjacent.

International Agreements: The standard separation distances have to be complied with. The distances are based on D/U=-20 dB. Co-location is not applicable.

- 3rd adjacent channel. It is proposed to allow the applicant to maintain the required D/U=-40 dB ratio in any location within the coverage area of the protected station.

¹ The edge of coverage protection ratio is about D/U=-40 dB. However, for locations near the co-located transmitters where higher field strength prevail, the appropriate D/U ratio seems to be -30 dB or less for the 3rd adjacent and probably around -20 dB or less for the 2nd adjacent. This needs to be studied further.

Position: It may be possible to avoid interference to the related station if the appropriate D/U ratio² is retained within the coverage area. This will allow co-location or near co-location of the 3rd adjacent channel. A sub-committee of the Broadcast Technical Advisory Committee (B-TAC) is currently reviewing the matter and will make appropriate recommendations.

International Agreements: The standard separation distances have to be complied with. The distances are based on D/U=-40 dB. Co-location is not applicable.

- 4th adjacent channel. It is proposed to relax this requirement. The 4th adjacent relationship should not be more stringent than the 2nd or 3rd adjacent.

Position: The 4th adjacent channel requirement is not more (or less) onerous than that of the 2nd or the 3rd adjacent. Industry Canada already allows co-location of the 4th adjacent. There are no separation requirements for the 4th adjacent channel except as described in section 4.

International Agreements: The standard separation distances have to be complied with. The distances are based on the criteria outlined in section 4. Co-location is not applicable.

- 53rd/54th adjacent (IF). It is proposed to relax this requirement.

Position: The IF assignment requirements should not be more stringent than the 4th adjacent. IF related station can be co-located.

International Agreements: Same as 4th adjacent.

- Where a related distant station uses less than full parameters, it is proposed to protect this station to the actual contour instead of the one corresponding to maximum parameters.

Position: Section C-1.5.3 of BPR-3 requires the related assignment to be protected to the maximum extent of the 0.5 mV/m contour for its class. It would be helpful if the Department relaxes this requirement. However, since it is likely to affect a number of existing broadcasters around the GTA it would be wise to proceed with the usual consultation process before making such amendment.

International Agreements: Current agreement requires protection up to the maximum parameters of the class.

² The edge of coverage protection ratio is about D/U=-40 dB. However, for locations near the co-located transmitters where higher field strength prevail, the appropriate D/U ratio seems to be -30 dB or less for the 3rd adjacent and probably around -20 dB or less for the 2nd adjacent. This needs to be studied further.

6. New Channels for the GTA

Imagineering Limited considers that any new station would have to be co-located or near co-located with any of the existing 2nd or 3rd adjacent operations. These additions will have to protect all distant stations. Also, where the distant station is using less than maximum parameters, it is proposed to protect up to its actual coverage.

Furthermore, according to the report, most incoming stations need to use directional antennas with deep nulls to protect distant stations. However, the interference would be to the incoming station. The report suggests that such interference should be recognized and accepted as the price to pay for obtaining a new channel.

The report does not attempt to engineer the possible channels in terms of best possible parameters or appropriate antenna patterns. Details relating to improvements are left to potential applicants.

FM Channel Number	Requires Relaxation of The Following Rule	Comment
210	Co-location of the 2 nd adjacent on both sides. Co-location of 54 th adjacent.	Requires directional pattern for Class A or a Class A1. May not overcome B Class interference on both sides.
214	Co-location of the 2 nd adjacent on both sides.	Requires directional pattern for Class A or a Class A1. May not overcome B and C1 Class interference on both sides.
218	Co-location of the 2 nd adjacent and 3 rd adjacent. Co-location of 53 rd adjacent.	Requires directional pattern for Class A. May not overcome C1 Class interference on both sides.
220	Short spacing 3 rd adjacent channel – Numerous Conditions	May be difficult to find parameters for reasonable service. Class A1 at best, maybe used as limited Class A if directional pattern is used to serve north from the CN Tower. It is 3 rd adjacent to CISS-FM (Class B), therefore has to be located near the CN Tower and has to have enough power to overcome CISS-FM.
245	Co-location of the 2 nd (above) and 3 rd (below) adjacent.	Requires directional pattern for Class A or a Class A1. May not overcome C1 Class interference on both sides.
254	Co-location of the 2 nd (above) and 3 rd (below) adjacent. Co-location of 53 rd adjacent.	Requires directional pattern for Class A. May not overcome C1 Class interference on both sides.
258	Co-location of the 2 nd adjacent on both sides. Co-location of 53 rd adjacent.	Requires directional pattern for Class A or a Class A1. May not overcome C1 Class interference on both sides.
262	Co-location of the 2 nd adjacent on both sides. Co-location of 54 th adjacent.	Requires reduced parameters and/or directional pattern for Class A. May not overcome C1 Class interference.
267	Short spacing 3 rd adjacent channel – Numerous Conditions	Already used by multi-ethnic CHIN-FM-1 (LPFM). Possibly a limited Class A or Class A1 that can replace the LPFM. It is 3 rd adjacent to CHIN-FM. Needs to co-locate with CHIN-FM and obtain their agreement (short-spacing under the current rules).

FM Channel Number	Requires Relaxation of The Following Rule	Comment
269	Co-location of the 2 nd Adjacent. Co-location of the 53 rd adjacent.	Requires reduced parameters and/or directional pattern for Class A. May not overcome C1 Class interference. NAVCOM Concerns.
277	Short spacing with 54 th adjacent. OK for a very small station – Mutually exclusive with 279	Limited Class A1 or LPFM that can serve Markham or the eastern suburbs. Mutually exclusive with 279. May be short-spaced with CIDC-FM 278 Orangeville.
279	None. OK for a very small station – Mutually exclusive with 277	Limited Class A1 or LPFM that can serve Markham or the eastern suburbs. Mutually exclusive with 277. May be short-spaced with CIDC-FM 278 Orangeville.
281	Co-location of the 2 nd Adjacent. Co-location of the 53 rd adjacent.	Requires directional pattern for Class A. May not overcome C1 Class interference. NAVCOM concerns.
285	Co-location of the 2 nd Adjacent. Co-location of the 54 th adjacent.	Requires reduced for Class A. May not overcome C1 Class interference. NAVCOM concerns.
288	None. OK for a small station	Possibly a Class A1 that can replace LPFM (CHRY-FM). May have difficulty clearing NAVCOM analysis.
290	Co-location of the 3 rd Adjacent.	Probably a Class A1. NAVCOM Concerns.

Table 1: Possible FM channels for Toronto

Analysis

It is to be noted that the above channels will need to curtail the radiated power in many directions to protect assignments on co-channel and 1st adjacent channel outside the GTA. In some cases, a cardioid pattern may provide the required protection. In other cases, there may not be a practical antenna pattern that can meet all the protection requirements. Also, co-location or near co-location will force these stations to have antenna heights that exceed 200-300 m and therefore, the actual ERP will have to be significantly lower than the maximum ERP for the class. The relatively low power, the limitations on the shape of the antenna pattern or the lack of a practical pattern to achieve protection requirements will compel many of the potential channels to use reduced Class A parameters or Class A1 parameters. Such assignments will only be able to provide service within 15-20 km.

The Imagineering report does not consider the interference to the proposed channel from existing stations on co-channels and first-adjacent channels around the GTA. The report simply assumes that interference to the incoming station should be accepted by the applicant as the price for obtaining a new frequency in the GTA. Our preliminary studies on the reverse interference have indicated that large areas, within the outer perimeter of the stations, may be affected from co-channel and first-adjacent channel assignments. Reverse interference will reduce further the real coverage of the incoming station. Consequently, few of the potential assignments seem to be

appropriate for serving ethnic communities. Most ethnic groups are probably not concentrated in the downtown area but are scattered in the wider GTA.

There is yet another type of interference that may affect the entire service area of potential Class A1 and A stations. As most of these proposals are to be co-located with Class C1 and Class B stations on the 2nd or 3rd adjacent channel, the proposed assignments may not have (due to the above constraints) sufficient power differential to overcome interference from the existing high power stations.

Stations are protected up to maximum parameters under current Industry Canada rules. The proposed channels are based on protecting the stations outside the GTA to their actual contours rather than the contours that correspond to the maximum parameters of their classes. The assignment of the proposed channels will prevent future expansion for some of the stations outside the GTA to maximum coverage allowed for their classes. Since such a departure will likely affect many stations outside the GTA, it is recommended to conduct formal consultations before assigning such channels.

Low Power Stations

Low power stations on the 2nd or 3rd adjacent may be located within the 60-90 dB μ V/m contour of the related station. For example, if the signal level of the 2nd adjacent is 90 dB μ V/m or higher and assuming a D/U of -30 dB, it is only necessary for the new station to keep the 120 dB μ V/m off the ground, which may be possible for low power stations. Considering the reverse situation, the new station on the 2nd adjacent may have an interference free coverage within the 60 dB μ V/m contour. A 50 W ERP and 30 m antenna will provide a coverage area of about 5 km, hardly sufficient to serve a scattered cultural group but quite sufficient for some applications such as universities and community colleges.

Under the above conditions, channels 233, 273, 274, 286 and 298 may be used.

LPFM additions such as the ones contemplated above are considered short spacing under the current rules (BPR-3). These require the agreement of the "affected" station. The Imagineering report suggests that proposals that meet protection requirements in terms of minimum D/U ratio should not be considered short-spaced. Furthermore, the D/U of the 2nd adjacent channel will need to be -30 dB for the LPFM to provide any meaningful coverage.

FM Interference to TV Channel 6

Section C-6 of BPR-3 requires stations on channel 201-220 (88.1-91.9 MHz) to protect television stations on channel 6. The Imagineering report raises some concerns regarding the protection of CIII-TV channel 6 in Paris, Ontario, but it doesn't fully examined this aspect. The following is a complete list of TV channel 6 stations and allotments in Ontario:

TV Channel 6	Distance (in km) of the Grade B contour from the CN Tower	FM 210		FM 214		FM 218		FM 220	
		Required Field Str. (dBµV/m)	Calculated Field Str. (dBµV/m)	Required Field Str. (dBµV/m)	Calculated Field Str. (dBµV/m)	Required Field Str. (dBµV/m)	Calculated Field Str. (dBµV/m)	Required Field Str. (dBµV/m)	Calculated Field Str. (dBµV/m)
Deseronto	102	78	36	81	36	89	36	95	36
Dryden	1151	78	N/A	81	N/A	89	N/A	95	N/A
North Bay	180	78	22	81	22	89	22	95	22
Ottawa	258	78	9	81	9	89	9	95	9
Paris	7	78	85	81	85	89	85	95	85
Stevenson ³	240	78	12	81	12	89	12	95	12
Timmins	469	78	N/A	81	N/A	89	N/A	95	N/A
Wawa ²	593	78	N/A	81	N/A	89	N/A	95	N/A

Table 2: FM channels which may impact on TV channel 6

FM assignments of Class A on channels 210 and 214 will affect CIII-TV channel 6 in Paris unless a directional pattern is employed. However, a Class A1 assignment on 210 or 214 is unlikely to affect the Paris station since the calculated field strength at the Grade B contour will only be 71 dBµV/m instead of 85 dBµV/m.

FM Interference to NAVCOM

Aeronautical radio-navigation and communications (NAVCOM) services in North America are assigned in the frequency band 108-137 MHz. This band is adjacent to the FM band and consequently there is a potential for interference to these aeronautical services (BPR-3, section B-8). The FM/NAVCOM compatibility is based on four types of interference mechanisms. These are:

- Type A1 (spurious emissions at the transmitter),
- Type A2 (emissions outside the FM channel or caused by the skirt of the spectrum mask),
- Type B1 (intermodulation products generated in the airborne receiver. There are two types: B1 COM and B1 LOCALyzer) and,
- Type B2 (blanketing of the airborne receiver caused by FM emissions).

The Imaginering report does not consider the potential for NAVCOM interference. This needs to be analyzed on a case-by-case basis by the Department.

The computer modeling tools have been made available to broadcast consultants to verify FM/NAVCOM compatibility. Although applicants can now assess in advance the probability of rejection of their application due to NAVCOM interference, the Department does not consider an application acceptable until NAV Canada gives the green light.

Industry Canada conducted a preliminary analysis of FM/NAVCOM compatibility on the proposed FM channels that are being considered for the GTA. All these channels were evaluated at Class A parameters. The

³ Digital allotment.

transmitter site was considered to be the First Canadian Place transmitting facility with the following parameters:

Geographical Coordinates: 43° 38' 56" N, 79° 22' 55" W
 Ground Level: 84.1 m above sea level.
 Radiation Center Above Mean Sea Level: 421.1 m
 EHAAT: 303.7 m
 ERP: 630 W

These parameters are representative of any potential Class A assignment that might be co-located in Toronto.

All Table 1 channels under consideration exhibited a large quantity of Type A1 hits. However, these will not preclude the use of any of the channels under consideration, as they are spurious emissions produced by the FM transmitter. These emissions are easily detectable and controllable.

Channels 210, 214, 218, 220, 245, 254 and 258 did not show any other hits and therefore could probably be considered usable from FM/NAVCOM perspective.

In addition to the Type A1 hits, channels 262, 267 and 269 also experienced Type B1 COM hits, which may, but do not generally, lead to rejection by NAV Canada.

In addition to Type A1 and Type B1 COM hits, channels 277, 279, 281, 285, 288 and 290 also have Type B1 LOCALizer hits. These channels will require a more detailed evaluation by NAV Canada to determine their usability.

Channels 277, 279, 288 and 290 were also evaluated as Class A1 (equivalent maximum ERP=27 W). Under this scenario, there are again many Type A1 hits but no Type B1 hits on channel 279, so this channel could be considered OK. Channel 277 and 288 had Type A1 and Type B1 COM hits only. In addition to Type A1 and Type B1 COM hits, channel 290 had several B1 LOC hits. It is most likely that this channel is unusable.

FM Channel	210	214	218	220	245	254	258	262	267	269	277	279	281	285	288	290
Type A1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Type B1 COM	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Type B1 LOC	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: FM/NAVCOM Compatibility of Class A stations

To summarize, channels 210-258 (lower 7 channels) inclusive will cause Type A1 interference. This type of interference is easily controllable at the source. Channels in the range 262-290 (upper 9 channels) inclusive may cause Type A1 and Type B1. These may be rejected by NAV Canada.

The above determination should in no way constitute or interpreted as acceptance or rejection of any given channel for the given parameters and site from a NAVCOM perspective. Precise data on the location and the ERP are crucial for accurate NAVCOM investigation. Final determination of compatibility may only be given by NAV Canada once studies are done with actual parameters for any particular channel.

Exposure to Radiofrequency Fields

The proposed stations are of Class A and A1. These stations will be co-sited or near co-sited with many of the existing Class B and Class C1 stations. The contribution of a Class A or A1 station to the overall RF exposure is expected to be negligible in that environment.

7. Other Considerations

Most tests on the 2nd and 3rd adjacent channel D/U are conducted with the assumption that there will be one 2nd or 3rd adjacent channel relationship. In the GTA, proposed channels 210, 214, 258 and 262 will have co-located 2nd adjacent channels above and below their frequencies. Current ratios may be a bit optimistic for this particular situation and they need to be studied further by the B-TAC sub-committee.

The addition of so many co-located stations on the 3rd and 2nd adjacent may produce intermode products (composite beats) in some receivers. Such products are likely to be situated in the middle of the FM broadcasting band where many FM stations are located in the GTA.

Although North American regulators haven't yet adopted a digital standard for the FM band, some broadcasters in the US are currently considering the hybrid (analog/digital) in-band on-channel (IBOC) digital sound broadcasting system of iBiquity®. In the IBOC hybrid system, low-level digital sidebands are added to each side of the standard analog FM channel. While the projected spectrum of the IBOC system is fully compatible with the standard spectrum mask of the FM signal, potential IBOC implementation by North American broadcaster may still have an impact on co-located 2nd adjacent stations.

8. Conclusion

Imagineering has proposed that certain Industry Canada rules be relaxed to make room for additional allotments in the Toronto area. Generally, we do not disagree with the proposed changes to the assignment criteria. Although some of the proposed changes need to be studied further, we believe less stringent rules may be feasible and may not necessarily result in increased interference. However, most additional capacity in the GTA is conditional on the 2nd adjacent channel being co-located. The Department is currently conducting receiver test to determine if this is possible.

Although it may possible to relax the technical requirements (co-location of the 2nd and 3rd adjacent) and possibly implement some of the limited Class A or Class A1 station channels as they are listed in Table 1, any or all of the

proposed allotments may be turned down by NAV Canada. Toronto is a very sensitive area for NAV Canada.

New implementations will have to be made in the vicinity of the CN Tower and will cover a limited area near the tower. As such, they don't seem to be well suited to serve the widely scattered and diverse linguistic and cultural elements in the GTA. The limited area near the CN Tower probably doesn't have large ethnic components.

Most channel proposals are based on the protection of the current coverage of the stations outside the GTA. These assignments will not be able to increase their parameters up to the maximum allowed for their classes. Consultation is needed with parties that may be affected by this proposal. Furthermore, calculation of interference from US stations is based on current parameters. There is no guarantee that the new GTA assignments will be protected should the US assignments go to full parameters for their classes, to which they are entitled to under the present agreement.

The Department has made provisions to provide a Digital Radio Broadcasting (DRB) program channel for every existing AM and FM station in the GTA. Although the DRB allotment plan has some spare capacity for additional FM stations, some of the new stations in Toronto may not have a reserved DRB program channel and may be unable to migrate to digital.

Finally, it should be noted that other regulatory constraints, such as aeronautical, environmental, municipal, health and safety issues, might obstruct implementation even when a channel satisfies all Industry Canada assignment criteria.