



Radio Amateurs of Canada Radio Amateurs du Canada

Member Society of the International Amateur Radio Union

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Dear Professor Townsend:

INTRODUCTION

Radio Amateurs of Canada (RAC) is pleased to participate in your National Antenna Tower Policy Review (the "Review"). The paper herein provides background to the Amateur Service, addresses its antenna support structure requirements for effective and efficient communication and proposes changes to the present consultation process with Land Use Authorities (LUAs).

Radio Amateurs of Canada Inc. (RAC) is the national society representing amateur radio in Canada. RAC is a corporation incorporated under Part II of the *Canada Corporations Act*, R.S.C. 1970, c. C-32 and is a not for profit entity. It is the Canadian member of the International Amateur Radio Union (IARU), a Non-Government Organization (NGO) that represents the interest of more than 4 million radio amateurs at the international level. IARU has observer status with the International Telecommunications Union (ITU).

RAC represents the interests of Canada's 52,000 radio amateurs to Industry Canada. It meets twice a year with Industry Canada representatives through the Canadian Amateur Radio Advisory Board (CARAB). RAC participates as a member of the Canadian delegation to the periodic World Radiocommunication Conferences held by the ITU. RAC has a current membership of approximately 6000 members.

RAC is a sponsor member of the Radio Advisory Board of Canada (RABC). RAC participated in the formulation of the RABC's response to the Review. This submission by RAC is from the perspective of the Amateur Service, but it is in consonance with the RABC response, which necessarily addresses the broader antenna support structure requirements of all its members.

DISCUSSION

This submission from RAC provides the Review with information about the Amateur Service in Canada and on its antenna support structure needs. In addition, it addresses the seven questions posed – six in Minister Rock's contract and the additional one, added by you, concerning the possible impact on real property value from the proximate location of a communication tower.

The information provided and the answers to the questions are from the perspective of the Canadian Amateur Service whose stations and antennae are classed as Type 2 installations.

As part of this report, RAC has included a successful model for the approval of amateur radio towers that has been developed in co-operation over several years with a major city in western Canada. The Review Committee may wish to consider its applicability to both amateur radio towers and other Type 2 installations. This model is discussed further in the Section below entitled Perspective of Radio Amateurs of Canada on the Consultation Process for Amateur Radio Antenna Structures, and in the answer to Question 1. It is defined in Annex A.

The Board of Directors of Radio Amateurs of Canada has formally approved this submission.

THE AMATEUR SERVICE

Amateur radio has a specific technical definition in the *International Radio Regulations* (RR) of the International Telecommunications Union (ITU). ITU RR S1.56 defines it as:

“A radio communication service for the purpose of self-training, inter-communications and technical investigations carried out by amateurs, that is by duly authorized persons interested in radio technique solely without personal aim and without pecuniary interest...”

The very name of the Amateur Service causes many to equate “amateur” with “unqualified”. This is hardly the case. All radio amateurs must qualify through examinations in technical, regulatory and operating matters. In the context of the RR, “amateur” simply means skilled and trained operators who have a personal interest in both the art and science of radio and in helping people, but who do not get paid for the use of their radios, their skills or their time.

More than 4 million radio amateurs around the world have taken the necessary examinations and received radio transmitting licences from their national administrations. These individuals have then constructed or purchased and maintained communications equipment and antennas and supporting structures to allow them to operate on a number of frequency bands allocated by international regulation to the Amateur Service throughout the radio spectrum from medium frequencies (MF) (1.8 MHz) to extra high frequencies (EHF) (300 GHz). Radio amateurs use the different parts of the spectrum and various operating modes to allow them to communicate down the street or around the world.

For the most part, amateur radio operators have more than a passing interest in the art and science of radio and many make important contributions of a scientific nature. For example, amateurs are currently conducting propagation studies and experiments at 135 kHz (VLF) and at 47 GHz (EHF) and even higher. Recently much has been made of the use of low earth orbit (LEO) satellites. Many people are not aware that LEO satellites were first developed and successfully deployed by radio amateurs as early as 1965, triggering commercial development and use. Since 1965, the Amateur Service has placed in orbit and used more than 40 amateur-designed and constructed satellite systems, variously operating from 21 MHz (HF) to 24 GHz (SHF).

Radio amateurs are involved in considerably more activities than experimentation and personal communications with their radio equipment. Radio amateurs are a community resource that provides equipment and trained, disciplined and experienced operators for communications for public service needs and in particular, in emergencies. These communications frequently have local, provincial and international components, requiring the use of different frequency bands and consequently, various antenna systems. There are countless examples of the communications skills that amateur radio operators bring to the humanitarian community. Radio amateurs regularly conduct communication drills for simulated emergencies. In addition, they have an annual "Field Day" in which amateurs practice setting up emergency communications in the field and operating from emergency power sources independent of the normal power mains. In many cases, such as in Nova Scotia and Vancouver, BC, radio amateurs are an integral part of provincial emergency planning organizations. Amateur communications in Canada regularly provide organizations such as the Canadian Red Cross with emergency communications. Amateurs regularly support Search and Rescue operations for lost hunters, fishermen and campers.

At the recent World Radiocommunication Conference, Geneva, in July 2003, the requirement for international Public Protection and Disaster Relief (PPDR) communication was a major agenda item. The Amateur Service was recognized as an emergency communications resource and its contributions over the years were acknowledged. Administrations were encouraged to foster amateur radio as an element of their national PPDR programs.

Radio amateurs in Canada and several other countries actively support youth education to promote an interest in science and technology. They have done this through amateur radio communications from schools with the astronauts (many of whom are amateurs, such as Canadian astronaut Robert Thirsk) on board the shuttles (the Shuttle Amateur Radio Experiment (SAREX) program) and with the astronauts on the International Space Station.

While almost all amateur radio operators live and work in technology-developed nations, training in amateur radio skills is an attractive and low cost way of developing human resources for developing nations. In fact, amateur radio offers an important and cost-effective opportunity for technology transfer. The uses of effective digital communications have been developed, enhanced and implemented by radio amateurs for many years. New modes of digital communication to enhance spectrum usage efficiency are still being developed by amateurs.

AMATEUR RADIO AS AN EMERGENCY SERVICE IN CANADA

For many Canadians, their exposure to amateur radio occurs during a time of crisis. Floods, earthquakes or other natural disasters will disrupt commercial communications facilities with the result that amateur radio operators quickly step in to provide needed communications. Indeed, the first news reports from a disaster-stricken area often rely on information provided by amateurs. Humanitarian and disaster relief workers are very aware of the important communication facilities that amateurs provide in times of crisis. Recent international examples include the earthquakes in Colombia in January 1999, Turkey in August 1999, El Salvador in January 2001, and India in February 2001, and the December 1999 flood in Venezuela. Many Canadian radio amateurs participated in the health and welfare traffic associated with these events, although located far from the scene of the disaster.

In North America, amateurs provide communications before and after the frequent tornadoes, floods, and fires in the United States and Canada. In Canada there is an amateur radio CANWARN network that provides a volunteer weather watch that provides information to alert Environment Canada to weather changes portending possible problems. In the USA, there are Hurricane and Tornado watch nets that try to provide early warning of dangerous weather activities. Following a natural disaster, amateurs provide communications for both emergency operations and health and welfare purposes. These communications cross borders and regularly involve amateurs in both Canada and the US; due to propagation conditions at various frequencies it is often necessary for information to be relayed through distant stations. A very recent case in point is the aftermath to Hurricane Fabian that struck Bermuda, in which both Canadian and American amateurs assisted. In Canada, some major events in which amateurs figured prominently were the Winnipeg floods, the Ice Storm of 1998, and the Swiss Air crash off Nova Scotia. At the end of September 2003, amateurs in Nova Scotia provided emergency communications in the aftermath of the destruction caused by Hurricane Juan.

Many yachtsmen hold amateur radio licences and use amateur HF nets through which they can obtain and exchange information as well as receive help. There are documented cases where amateurs, including Canadian amateurs, have assisted yachts in danger of sinking and to provide medical advice and arrange assistance. A recent case involving amateurs was the help to a yacht that was attacked by pirates in the Caribbean.

American amateur radio operators immediately mobilized to provide on-scene communications in the recent events in New York City when the many communications antennas on the World Trade Center were destroyed. As time went on, they were augmented with some Canadian amateur teams who went to New York and volunteered to assist as relief operators.

There are many other examples of public service help by radio amateurs, but in general it can be said that the public has experienced and recognized that amateur radio operators perform valuable humanitarian services. Relatives attempting to determine the status of loved ones in a disaster-stricken area will often overload commercial communications facilities. In such cases, amateurs provide a valuable role in providing emergency communications to advise on the status of friends and loved ones. Many amateur radio operators will attest to the personal gratification they receive by being able to confirm to worried relatives that their family is alive and well.

With respect to emergency communications, therefore, the Amateur Service is a community resource:

- (a) That provides a trained cadre of volunteer radio operators, technicians and engineers who can use their considerable skills, and equipment, to augment disaster communication facilities;
- (b) That offers services without charge for the use of their networks, and therefore they have considerable flexibility in rearranging their communications points as they are free of commercial contract constraints;

- (c) Whose operators, while having access to the latest technology, are also able to make do with limited resources, as their equipment and networks are self-owned, but do not generate any income; and
- (d) Who lend their time and resources in training others to be licensed in the service and to give the benefit of their knowledge in the installation of communications facilities.

Radio amateurs were recently recognized by the Prime Minister of Canada for their contributions in his letter (copy overleaf) of congratulations on World Amateur Radio Day.

COMMUNICATIONS EFFECTIVENESS

The antenna is the key element to communication effectiveness in any transmitting installation. There is a wide range of parameters that must be considered in designing an antenna and its support structure. Antenna and support system designs are affected by factors such as: size and height above ground at MF and HF. At UHF and SHF, where line-of-sight (LOS) communication is often a major consideration, the antenna size may be small but it will be essential to get the antenna above energy-absorbing foliage and physical structures that could obscure transmission in a particular direction.

Global and domestic long-range communications by radio amateurs are conducted principally in the HF portion of the radio spectrum on frequencies between 3 and 30 MHz. HF communication between two points depends almost solely on propagation of radio signals through the ionosphere. One necessary condition for ionospheric communications is that the radio waves must encounter the ionosphere at the correct angle. Accordingly, in order to communicate effectively, an antenna used for HF frequencies must be set at an appropriate height above ground.¹ The height of typical support structures for amateur radio HF antenna systems ranges from 12 Meters (40 feet) to 31 metres (100 feet).

CURRENT PROCEDURES USED TO DETERMINE TOWER PLACEMENT FOR RADIO AMATEURS

Amateur radio operators in Canada derive their authority to operate from the *RadioCommunication Act*, R.S.C. 1985, c. R-2. The regulation and implementation of the *RadioCommunication Act* lies with Industry Canada. Industry Canada divides the users of the radio communication spectrum who are regulated under the *RadioCommunication Act* into two groups. The first group is stations that require site specific radio authorization and the second group is stations that do not require site specific authorization. The second group (which are referred to as Type 2 stations) would encompass the general radio service (GRS, commonly called CB) and the Amateur Service.

RAC submits that municipalities have no lawful jurisdiction to manage the use of the radio spectrum nor can municipal rules or ordinances expressly control or limit the type or height of an

¹ A detailed discussion can be found in Straw, R.D. and Hall, G.L. "Antenna Height and Communications Effectiveness" (1999). A copy is attached as Annex E.



CANADA

PRIME MINISTER · PREMIER MINISTRE

I am pleased to convey my warmest greetings to everyone celebrating World Amateur Radio Day.

Since its invention at the beginning of the 20th century, amateur radio has been a source of friendship, recreation, cultural awareness and personal growth for many people, while providing vital emergency communication services in times of local and national distress. I am sure that this year's theme, "Amateur Radio Supporting Technology Education in the Classroom," will offer all participants the opportunity to explore the history and practical uses of amateur radio.

Please accept my best wishes for a most memorable day, as well as every success in the years ahead.

Je suis heureux de présenter ici mes chaleureux compliments à tous les participants à la Journée des Radio Amateurs du Monde.

Depuis son apparition à l'aube du XX^{ème} siècle, tout en assumant des services de communications vitaux de sauvegarde de la vie humaine durant certains épisodes tragiques de notre vie nationale et locale, le radio-amateurisme s'est vite révélé pour de nombreuses personnes une source féconde de relations amicales, de divertissement, de contacts culturels et d'épanouissement de la personnalité. Nul doute que le thème d'action "Soutien du radio-amateurisme à l'enseignement des technologies à l'école" adopté cette année donnera aux participants l'occasion de se familiariser à la fois avec l'histoire et les applications pratiques du radio-amateurisme.

Tous mes vœux de succès vous accompagnent, autant pour cette mémorable journée que pour les années futures.

Jean Chrétien

OTTAWA
2003



antenna or support structure for aesthetic or other purposes.² Amateur radio operators in Canada are required to follow Industry Canada's Client Procedure Circular "Environmental Process, Radio Frequency Fields and Land Use Consultation", CPC-2-0-03, hereinafter referred to as the "CPC". It is the CPC which dictates the current process for amateur radio operators to install a tower.

RAC notes that the applicability of the CPC to Type 2 installations is unclear. The Review is being conducted, in part, because of increasing concern about antenna tower installations in urban residential areas. Non-transmitting antenna systems, such as those for TV, FM and satellite reception have not, as far as is known, had to follow the CPC notification. While there is no RF safety problem with these installations, there is a concern about the physical safety of the installations and the aesthetics aspects. The Review will consider the current process for the installation of all antenna support structures, including these "personal-use" Type 2 installations.

The requirements specifically for the Amateur Service are as follows:

A. Environment

Under the CPC, Type 2 stations are exempt from compliance with the *Canadian Environmental Assessment Act* ("CEAA"). RAC takes the position that given the minimal visual impact a Typical Structure will have on the environment that the Amateur Service should continue to be exempt from the provisions of the CEAA.

B. Radio Frequency Fields

Industry Canada presently requires all users of the radio communication equipment in Canada to comply with Health Canada's *Safety Code 6 Guidelines*. RAC agrees with the Amateur Service complying with these guidelines. In nearly all cases, given the maximum RF power levels authorized for the Amateur Radio Service, amateur radio emissions will not exceed the *Safety Code 6 Guidelines*.

D. Land Use Consultations

The present requirement for the Amateur Service as expressed by Industry Canada is:

"Members of the second group [Type 2 stations] are not required to inform Industry Canada of their plans. However, it is the responsibility of the owner of the station to consult with the local municipality if it is felt that the installation of an antenna tower may raise community concern. Since no license is required or one has already been issued, no licensing decision need be taken by Industry Canada. The responsibility remains with the station owner and the municipality to resolve their concerns."³

² Townsend, David, *Canadian Municipalities and the Regulation of Radio Antenna and Their Support Structures* (1987).

³ IPC 2-0-03

There is no formal consultation process stated for amateur radio operators (or other Type 2 tower proponents) to guide them in meeting the consultation requirement. The process varies among land use authorities and in some cases the land use authority may attempt to impose onerous consultation requirements on users of the Amateur Radio Service in an effort to impede the installation of a tower. RAC is of the view that the nature of the Amateur Service requires a simple consultation process that has the support of Industry Canada and can be applied uniformly across the country. The present consultation requirements imposed on the Amateur Service are open to varying degrees of interpretation and have had the unintended effect of restricting the installation of towers.

D. Aeronautical Obstruction Clearance

Industry Canada requires the Amateur Service to comply with all Transport Canada regulations restricting tower height. Given the nature of the Amateur Service and the height of a typical amateur radio antenna structure, it would be very rare that an amateur radio operator would have to limit the height of an installation due to such regulations. However, RAC is of the view that amateur radio operators should continue to comply with all Transport Canada guidelines.

PERSPECTIVE OF RADIO AMATEURS OF CANADA ON THE CONSULTATION PROCESS FOR RADIO AMATEUR ANTENNA STRUCTURES

RAC is of the view that the consultation process with land use authorities for Type 2 stations is not as clearly defined as it should be. RAC considers that the CPC-2-0-03 procedure for Type 2 installations should be clarified. As previously noted, there is increasing concern about antenna tower installations in urban residential areas. Non-transmitting antenna systems, such as those for TV, FM and satellite reception have not, as far as is known, had to follow the CPC notification. While there is no RF safety problem with these installations, there is a concern about the physical safety of the installations and the aesthetics aspects. Some of these receive-only installations are taller than amateur transmitting antenna structures. Industry Canada indicates that CPC-2-0-03 has been applicable to these personal use installations, but that compliance generally has not been enforced. The wording of the CPC is not specific for personal use antenna systems. RAC takes the position that if aesthetics is to remain a consideration, the consultation process must be applicable to all Type 2 installations.

RAC perceives that land use authorities and Industry Canada do not always take into account the unique nature of the Amateur Service and the important service to the community that amateur radio operators can contribute to public service and emergency communications.

It is RAC's experience that a straightforward, workable, consultation process for Amateur Service antenna support systems can be achieved with municipalities. An example of such a process is outlined in Annex A. In 1998, the City of Calgary, Industry Canada and RAC agreed to a number of guidelines that would satisfy the consultation process in the CPC and would meet the concerns of the local authority (the "Calgary Guidelines").⁴

⁴ "Policy Guidelines for the Development of Amateur Radio Antenna Structures in Residential Areas" OE 98-61.

It should be noted that RAC does not agree with the height limit imposed by the City of Calgary (presently 18 meters) as it is below the height of what RAC defines as a Typical Structure and is not efficient for the Amateur Service. However, the process in the Calgary Guidelines is acceptable and, practically speaking, does work. Under the Calgary Guidelines, Industry Canada has approved all installations made by operators of the Amateur Service, albeit in some cases reducing the height of the installation or directing changes to the siting of the tower.

A "Typical Structure" for an amateur radio antenna system may be defined as:

- (a) For urban areas, a free-standing tower at a height of 21 meters (68.25 feet), which would support a rotatable Beam antenna for HF frequencies and rotatable Beam antenna for VHF/UHF frequencies;
- (b) For rural areas, a free-standing or guyed tower to a maximum height of 31 meters (100 feet), which would support two rotatable Beam antennae for HF frequencies; and two rotatable Beam antennae for VHF/UHF frequencies.

It is important to note that under the Calgary Guidelines the City can raise concerns with respect to the tower (as expressed by members of the community), but cannot decline or "veto" the proposed installation. The final arbiter remains Industry Canada. In RAC's view jurisdiction over matters affecting the design and siting of radiocommunication antenna support structures for all radio services must remain exclusively within the federal domain and all Canadians must be treated equally, consistently and fairly under the Radiocommunication Act. This is addressed in the responses to the Questions. A detailed discussion on jurisdiction is provided in Annex B. RAC strongly endorses the position of the Radio Advisory Board of Canada that any delegation or derogation of this federal authority would constitute bad public policy and would result in very serious negative consequences for the improvement and expansion of Canada's wireless infrastructure for all radio services.

Unfortunately, land use authorities in other municipalities have not followed a consultation process for amateur radio towers similar to that of Calgary. Further, some Industry Canada Regional Offices have denied the right of some operators in the Amateur Service to install any tower or have severely limited the height at which the tower may be installed. Despite the vast majority of amateur radio operators requesting authorization for a tower do so for a system that approximates a Typical Structure, there has been no consistency by Industry Canada in allowing or denying such installations.

For example, despite the overwhelming technical evidence that a minimum height for an antenna used in the HF frequency range should be 21 meters (Annex E), some amateur radio operators have been directed to install the tower as low as 13 meters. Quite often this has been due to opposition voiced by the local authority and is seen as a compromise and arbitrary decision by Industry Canada to satisfy the concerns of that authority. The installation of a tower at the 13 meter level is hardly efficient for HF systems and can cause a host of other problems including radio frequency interference (RFI).

RAC submits that Industry Canada's present inconsistent approach to granting amateur radio operators the right to install a Typical Structure is causing confusion for both amateur radio

operators and land use authorities. It conflicts with Industry Canada's mandate to ensure that all Canadians are treated equally, consistently and fairly under the Radiocommunication Act.

A PROPOSAL FOR THE CONSULTATION PROCESS FOR THE AMATEUR RADIO SERVICE

Radio Amateurs of Canada is of the opinion that an adequate, basic framework of policies, protocols, standards, measurement methods, etc for land use consultation and public safety already exists, but also that it is clear that some elements need to be clarified and most need to be better publicized. In particular, there is a need for clarification of the applicability of any consultation process under CPC-2-0-03 to Type 1 and Type 2 stations.

With respect to antenna support structures for the Amateur Service, RAC takes the position that:

- (a) Operators in the Amateur Service must be entitled to install an antenna and tower at a height that is efficient for communication purposes but which is reasonable in all circumstances while considering the visual impact such an installation may have in an urban area. A national policy must be implemented with the support of Industry Canada for the Amateur Radio Service that takes into account the unique nature of the service. To that end, the consultation process for Type 2 installations within CPC-2-0-03 must be clearly defined and streamlined while avoiding placing an undue burden on Type 2 tower proponents. A successful model for a consultation process for amateur towers that is consistent with the CPC has been developed (Annex A), however RAC considers that the maximum height permitted under the Calgary Guidelines in that model is inadequate;
- (b) Guidelines are needed that define for the public, LUAs and Industry Canada the Typical Structures that radio amateurs should be allowed to install. The Typical Structures that should be included are:
 - (i) For urban areas, a free-standing tower at a height of 21 meters (68.25 feet), which would support a rotatable Beam antenna for HF frequencies and rotatable Beam antenna for VHF/UHF frequencies;
 - (ii) For rural areas, a free-standing or guyed tower to a maximum height of 31 meters (100 feet), which would support two rotatable Beam antennae for HF frequencies; and two rotatable Beam antennae for VHF/UHF frequencies.
- (c) Any consultation process must be developed and implemented nationally with the support of Industry Canada;
- (d) Adherence to established national protocols by radiocommunication antenna proponents and Land Use Authorities must include recognition of the Federal Government's exclusive jurisdiction and that antenna structures should be reviewed by land use authorities based upon land use impact only;

- (e) Reservation of approval authority and responsibility for technical matters, including the applications of Safety Code 6 to radio stations for the protection of the public, and siting, site design and construction matters must remain with Industry Canada;
- (f) The Amateur Service must continue to comply with Health Canada's *Safety Code 6* and regulations on height restrictions near airports imposed by Transport Canada; and
- (g) The consultation process should recognize that Canadians rely on radiocommunications services, particularly in times of crisis and emergency, and should take into account the unique nature of the Amateur Service and its proven record as a community communications resource in emergencies.

RAC RESPONSE TO QUESTIONS

QUESTION 1

How can the local consultation process regarding the siting of a specific tower be improved?

Under the current antenna tower approval policy, detailed in Industry Canada's document CPC-2-0-03, **antenna/tower proponents**⁵ must inform local land-use authorities (LUAs) whenever a "significant antenna structure" is to be built. The filing process under CPC-2-0-03 depends whether the station involved is classed as a Type 1 or Type 2 installation, i.e., site-specific or non site-specific. Amateur radio stations are deemed to be Type 2 stations.

Radio Amateurs of Canada considers that the CPC-2-0-03 process has generally worked satisfactorily for the amateur radio community. Across Canada, the number of amateur radio antenna tower installations in a given year is small. Most approvals have been granted with few or no problems, and in general, negotiations have satisfactorily resolved issues. Recently, however, there have been some contentious cases which have not been resolved in the consultation process and the amateur and the LUA have had to resort to the courts for a decision. In some of these very contentious cases, the height of the tower indeed has been a central issue, but it has been RAC's experience that in general, the majority of complaints from neighbours centre on the tower itself and very few are concerned about the actual height.

The public is expressing increased concern over the siting of antenna support structures, particularly in urban residential areas. Perceptions and concerns about the effects of radiofrequency fields and about the aesthetics of towers have played a role in contentious cases surrounding Type 1 installations. Media reports about the medical effects of electromagnetic radiation from power transmission lines and from cellular telephones have captured the public's attention and have heightened concerns. RAC understands that Land Use Authorities (LUAs) are

⁵ Antenna/tower proponents are the applicants referred to in CPC-2-0-03, on Page 4, in the Process Overview section. See: <http://strategis.ic.gc.ca/pics/sf/cpc2003e.pdf>

increasingly concerned about the proliferation of Type 1 antenna support structures needed to support the rapidly developing wireless communications technologies that are informing and connecting Canadians and their businesses. Balancing all these concerns against the technical requirements for the height of support structures to assure communication effectiveness must be carefully weighed and decisions must be carefully made. Radiocommunications systems can cover the entire radio spectrum, with heights at the lower end depending on electrical height above ground⁶ and heights at the upper end depending on the line-of-sight (LOS) requirements or the need to clear physical obstructions. This is very true for the amateur service which currently has frequency band allocations throughout the spectrum from 1.8 MHz to 300 GHz. One rule for heights cannot be made to fit all cases in a municipality. Large centres can have both densely populated urban residential and sparsely populated rural sectors in which different antenna heights may be permissible for the same application depending on the considerations.

Because it has worked satisfactorily for the most part, RAC considers that no major changes are required in the basic elements of the current notification and consultation process in CPC-2-0-03. RAC considers however, that clarification and additional detail are required in the section for Type 2 installations. RAC accepts that it is the responsibility of each LUA to act as the representative of its residents (as it is authorized to do) on such issues and to negotiate with tower proponents as may be appropriate, provided they respect the exclusive jurisdiction of the Federal government. RAC is concerned that LUAs treat all applicants in a consistent manner within their Type 1 or Type 2 category.

RAC submits that there is a need to provide the public and LUAs with guidelines as to what defines a "Typical Structure" that amateurs would require in a residential setting. Such information also would also be useful to Industry Canada for arbitration when size and height are issues.

RAC submits as general guideline, that the following two "Typical Structures" approximate the installations that radio amateurs should be entitled to install:

- (c) For urban areas, a free-standing tower at a height of 21 meters (68.25 feet), which would support a rotatable Beam antenna for HF frequencies and rotatable Beam antenna for VHF/UHF frequencies;
- (d) For rural areas, a free-standing or guyed tower to a maximum height of 31 meters (100 feet), which would support two rotatable Beam antennae for HF frequencies; and two rotatable Beam antennae for VHF/UHF frequencies.

There will, of course, be variations, but these Typical Structures generally describe the installations of many amateurs. The number of amateurs requesting larger installations would be minimal.

⁶ Electrical height above ground is an important consideration in antenna design. The electrical height above ground is not always the same as the physical height above ground; the characteristics of the ground (moisture content, salinity, conductivity, etc) are factors which can be calculated. See e.g. <http://www.fcc.gov/Bureaus/MB/Databases/pre-cdbs-before-2000/amtext.txt> and <http://murray.newcastle.edu.au/users/staff/eemf/ELEC351/SProjects/Fitzsummons/growav.htm> for more information.

The foregoing tower heights could also be appropriate as guidelines for other Type 2 installations, observing that GRS antennae are about the same size as many amateur radio antennae , but TV and FM antennae are smaller.

RAC also recommends that Industry Canada should establish clear guidelines about what constitutes a *de minimus* change to an existing tower facility and should clearly and unequivocally exempt any such proposals from the requirements for LUA notification. It is especially appropriate to do this with respect to the addition of receive-only antennae and low-power transmitting antennae that are incapable of producing strong RF signals in areas external to the site and to the addition of antennae to an existing antenna support structure. Maintenance of towers, which may involve the removal of antennae, their relocation or augmentation and the partial or complete dismantling of a tower or other support structure, should neither require further consultation nor prevent reinstallation as a matter of right. CPC-2-0-03 is silent on this for both Type 1 and Type 2 stations.

RAC recommends that the applicability of CPC-2-0-03 procedure for Type 2 installations be clarified. Non-transmitting antenna systems, such as those for TV, FM and satellite reception have not, as far as is known, had to follow the CPC notification. While there is no RF safety problem with these installations, there is a concern about the physical safety of the installations and the aesthetics aspects. Some of these receive-only installations are taller than Type 2 transmitting structures. Industry Canada indicates that CPC-2-0-03 has been applicable to these personal-use installations, but that compliance generally has not been enforced. The wording of the CPC is not specific for personal-use antenna systems. If aesthetic considerations are going to be applied to amateur radio towers in residential areas, in fairness they should also be applied to other Type 2 towers, including General Radio Service, TV, FM and satellite installations.

RAC therefore considers that all communications antenna support structures should be subject to the notification process in keeping with Industry Canada's mandate to ensure that all Canadians are treated equally, consistently and fairly under the Radiocommunication Act.

QUESTION 2

What are the most appropriate time frames for the processes of approving and resolving debates surrounding specific tower placements?

Currently, CPC-2-0-03 stipulates that Land Use Authorities should provide all tower applicants with responses within 60 days of receiving a notification and that all consultations on a particular project should be completed within 120 days. RAC considers that these time-lines have worked fairly well for consultations on amateur radio towers, but are really most appropriate for consultation on Type 1 installations. Type 2 installations are not site-specific and Industry Canada does not approve the siting of the installation within the existing radio environment, and therefore it is considered that it should be possible to shorten the timeframe for consultation on Type 2 installations.

RAC considers that for amateur radio and other Type 2 installations, the consultation process in the CPC can and should be amended to 45 days. RAC is concerned that a lack of response to an

applicant might be used to delay or even to deny the applicant a review of his request, effectively preventing him from erecting an antenna. In most parts of Canada, there is a very limited window in which amateurs can install towers. Attempts by LUAs to delay the consultation process could effectively block the installation of a tower. RAC also is concerned that protracted negotiations also could have the effect of effectively denying an applicant a decision. 45 days is the suggested timeframe in the Calgary Guidelines outlined in Annex A.

CPC-2-0-03 requires that prior to the installation of an antenna support structure for which it is felt that community concerns could be raised, owners of Type 2 stations must consult with their land-use authority. There is no specific procedure for this consultation nor is there any requirement to receive prior approval from Industry Canada to construct the antenna or its supporting structure. The owner of the Type 2 station therefore is left to come to an agreement with the LUA. If the owner does not hear from the LUA, he may proceed with the installation of the structure but must accept any consequences of this decision. For private individuals such as radio amateurs, such independent action could have significant financial legal and cost implications. RAC recommends that specific procedures for Type 2 stations be included in the CPC.

At present there are no guidelines and timelines for actions to be taken when the consultation process for a Type 2 installation fails. It is recommended that a process and timeline be developed and included in the CPC.

In summary, RAC recommends that general procedures be established for consultations on Type 2 station antenna support structures and that guidelines and times lines be established for actions to be taken if the tower consultation process fails. RAC recommends that the timeline for Type 2 installations be amended to 45 days. RAC agrees with the Radio Advisory Board of Canada that any timelines published in CPC-2-0-03 must be adhered to by LUAs and tower proponents in all cases. If the parties cannot make a decision within the established timelines then the final decision regarding tower location and characteristics **must** remain with Industry Canada (see Annex A) and the Department, in its turn, must make timely decisions.

QUESTION 3

What means are available to readily identify whether a proposed installation may create radiofrequency fields in excess of established exposure limits in areas where people live and work?

With the exception of transmitting equipment used in the Amateur Service, Industry Canada, through its radio authorization process, approves all equipment and facilities (both Type 1 and Type 2 stations) that emit radiofrequency fields. The Amateur Service permits experimentation using radio transmitters, and the Canadian Radio Regulations authorize radio amateurs with appropriate qualifications to install and operate amateur-constructed equipment that does not require Industry Canada approval. In fact, however, the great majority of Canadian radio amateurs today use commercially manufactured equipment. Whether or not the amateur equipment is homebuilt or commercially manufactured, amateurs must work within the

maximum power levels authorized for the amateur service under the Radio Regulations and must comply with regulations on exposure limits to radiofrequency fields.

Industry Canada relies on Health Canada for advice on safe levels of radiofrequency fields. Consequently, Industry Canada requires that all radio transmitting installations (amateur, general radio service, broadcast, cellular telephone, etc.) be operated within the guidelines promulgated by Health Canada's Consumer and Clinical Radiation Protection Bureau in its publication, *Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz*. This document is also known as Safety Code 6, and its frequency range encompasses all the bands currently allocated to the amateur service. It applies to all fixed, portable and mobile radio installations.

Safety Code 6 sets limits for safe public exposure to radiofrequency fields. The Code also outlines safety guidelines for the installation and use of devices that emit radiofrequency fields. Biomedical studies in Canada and in other countries indicate that there is no scientific or medical evidence that a person will experience adverse health effects from exposure to radiofrequency fields, provided that exposure is within Safety Code 6 guidelines. Further, the Royal Society of Canada⁷ examined Health Canada's Safety Code 6 in 1999 and confirmed that it protects both workers and the general public from adverse health effects associated with whole body thermal exposure to radiofrequency fields.

Safety Code 6 establishes safe exposure limits for members of the general public who could be exposed for 24 hours per day. The lowest level of safe exposure (called a threshold) was based on results of experiments of biological organisms. The limit for 24-hour exposure is 1/50 of the threshold.

Safety Code 6 was developed in 1979 and updated in 1991 and 1999 by Health Canada, an independent Ministry of the federal government, using the best available science. It is reviewed and updated periodically by Health Canada by incorporating findings of new domestic and international research, and by adopting relevant portions of similar codes from other countries. Canada's requirements are consistent with those adopted by most other developed countries.

Canadian radio amateurs are required to comply with Safety Code 6. RAC concurs with the Radio Advisory Board of Canada's position that questions regarding the adequacy or interpretation of Safety Code 6 in the course of local consultations are, properly, matters for consideration by the appropriate national agencies. RAC considers that for Type 2 transmitting stations in particular, concerns related to Safety Code 6 should not interfere with or delay the local land use consultation process. If on-site measurements are required to confirm compliance with Safety Code 6, they can be carried out using test methodologies developed by experts and approved by Industry Canada.

Industry Canada may audit a transmitting site at any time to verify radiofrequency power levels and, in fact, does so from time to time as required. For example, in June of 2002, Industry Canada conducted an extensive study of radiofrequency levels found at 61 locations in Toronto,

⁷ See: <http://www.rsc.ca/english/RFreport.html>

in the range of 150 kHz to 3 GHz. The audit confirmed that all of the measured sites were substantially less than the recommended limits specified in Safety Code 6 guidelines. The highest level measured was 5.93% of the threshold level, and residential locations on average measured 0.0139% of threshold levels, all well within the Safety Code 6 limits and mere fractions of the threshold levels.

Antenna height is an important radio station design parameter when considering the requirements of Safety Code 6. In general, from a Safety Code 6 perspective, where a tower is used as a support structure (for both Type 1 and Type 2 stations) and to elevate antennae, the higher the antennae, the less the radio frequency field exposure to humans on the ground.

Considering the foregoing, it is the position of RAC that there should be no issue regarding RF levels associated with Type 2 amateur radio installations that needs to be addressed through local land use consultations. Type 2 radio transmitting stations must comply with Safety Code 6, which provides adequate protection for humans from radiofrequency radiation. RAC recommends that applications for antenna support structure approval for Type 2 stations be exempt from a review of RF field strengths during LUA consultation proceedings

QUESTION 4

What information would most benefit concerned members of the public and how should it be provided?

RAC perceives that the Canadian public generally is not aware of the consultation process for antenna support structures. For amateur radio stations, most of an amateur's neighbours learn that there is a process when the amateur contacts them in accordance with CPC-2-0-03 concerning his desired antenna tower.

Industry Canada has advised that CPC-2-0-03 applies to all Type 2 installations and this includes towers for the general radio service (GRS), and TV and FM radio reception. Industry Canada also admits that the requirement for consultation and approval of GRS and personal use TV and FM towers generally has not been enforced. If tower aesthetics are to be a consideration, then RAC considers that all Type 2 installations should undergo the same approval process, including consultation with the LUA, if required.

An amateur seeking the agreement of his neighbours for him to erect a tower often meets resistance, yet there may be in the same neighbourhood a GRS station or many TV towers that have not been made to go through a consultation process. There may be some question whether the problem is the tower, the tower height or the antenna. Amateur antennae range from large rotary HF beam arrays (large relative to a TV antenna) to VHF/UHF/SHF beam antennae that are smaller than TV antennae. As previously noted, it is RAC's experience that the concern is usually the tower itself, and not the height or the antenna. As discussed in Question 1, there is a need to establish guidelines that inform the public, LUAs and Industry Canada on the Typical Structures that radio amateurs must be permitted to install.

RAC considers that the public should be made aware who must obtain approval to erect an antenna support structure of any sort for a Type 2 installation and that the requirement for approval is clear. The process for Type 2 approval in the current edition of CPC-2-0-03 is considered inadequate.

It appears that public concern revolves around two issues:

- Property ‘value’ – both real, resale value and the perceived value of the homeowners right to the quiet enjoyment of property – which includes views and vistas; and
- Health and safety.

Radio antenna support structures are one of many things that may be perceived to affect property values. While one might object to the aesthetics of a fire station’s radio antenna tower all sorts of real ‘values’ are enhanced by having a fire station in the neighbourhood.

The Canadian commercial radiocommunications community has developed considerable experience in presenting information to the public as part of its consultation with LUA’s concerning antenna support structures for Type 1 installations. The proponents routinely are required to hold public information meetings on tower proposals. It is understood that by and large the meetings are poorly attended even though invitations are sent by mail to residents located around the proposed facility. Those members of the public who do attend appear to be interested in matters related to the appearance of the tower, how the site came to be selected, what steps are required to approve the structure and whether they are at risk as a result of their exposure to additional electromagnetic waves. Rarely is the question of property values raised at these meetings.

For Type 2 installations such as amateur radio stations, the number of persons to be notified per CPC-2-0-03 is generally small. Those members of the public who do express objections usually complain on the basis of aesthetics (implying an adverse effect on property values), safety and damage should the tower and antenna fall on their property, and sometimes, the risk of adverse effects of exposure to electromagnetic radiation from the antenna.

In the past two decades, urban dwellers have become increasingly concerned about the possible adverse effects of exposure to electromagnetic radiation. While the media has given much space to the possible medical effects of radiation, particularly from power transmission lines and cellular telephones, there is much misunderstanding and suspicion among the public. There is a large, well-substantiated, peer-reviewed body of knowledge regarding health and safety issues and radiofrequency emissions. Unfortunately this large body of knowledge is often overwhelmed by misinformation such as the now infamous Liburdy ‘report’ on power line radiation which was proven, in 1999, to have been falsified⁸.

RAC agrees with the Radio Advisory Board of Canada's position that it is incumbent on Industry Canada – as the national licensing authority – to gather the best available information and to

⁸ See e.g. <http://grants1.nih.gov/grants/guide/notice-files/not99-111.html> <http://www.ncpa.org/ba/ba304.html> and http://www.osoinc.com/Health9907/23_cancer.html for details of the Liburdy case

incorporate it into guidelines, recommendations and, when necessary, regulations. Industry Canada must also explain these guidelines and regulations to Canadians, especially the municipal land use authorities and the tower users. This may require both time and money – the guidelines, recommendations and regulations may need to be revised to make them clear to those who are not radio engineers. A public information strategy should be developed to educate Canadians in general, and LUAs in particular – to ensure they understand that the Government of Canada uses the best available science to determine limits for health and safety.

Matters related to the siting, design and construction of the specific tower under consideration should continue to be addressed by proponents and LUA's based upon local expectations and requirements.

QUESTION 5

How and to what extent can tower sharing be utilized in order to reduce the overall number of towers?

The issue of tower sharing rarely comes into play for Canada's radio amateur community because amateur stations belong, primarily, to individual licensees and the stations, including their antennae, normally exist at private residences. Some radio amateur antennae do share towers with broadcast and public safety stations by special arrangements, usually because those radio installations are established for and are regularly used by amateurs participating in emergency operations.

Many radio amateurs use their towers to support multiple antennae needed for the various operations of their station over a broad range of frequencies. For example a typical amateur tower could hold a rotatable beam antenna for HF frequencies and a smaller, rotatable beam antenna for VHF/UHF/SHF frequencies. Amateurs living in urban residential areas do this for practical reasons such as the physical limitations of a typical city lot, tower cost, and aesthetics.

RAC observes that the foregoing generally is true for the towers of many other Type 2 stations such as the general radio service, and receive-only TV, FM and satellite TV installations. These stations can be considered as "personal use" installations on private residential lots and sharing is impractical. There may be some Type-2 commercial receive-only installations for which antenna sharing may be feasible.

RAC recommends that tower sharing not be a consideration in land use consultations for antenna support structures for the Amateur service and for other private, personal use Type 2 stations.

QUESTION 6

Can protocols be arranged between local land use authorities and antenna proponents regarding the planning and siting of antenna structures, visual guidelines and dispute resolution mechanisms?

RAC considers that a protocol for dealing with antenna siting issues already exists, in the form of CPC-2-0-03 **Environmental Process, Radio-frequency Fields and Land-Use Consultation** but, as discussed in Question 4, above, it needs to be revised, clarified and applied consistently by Industry Canada to all radio service providers and users.

There are existing *standards* such as Health Canada's **Safety Code 6**⁹ and guidelines such as Industry Canada's **Guidelines for the Measurement of Radiofrequency Fields at Frequencies from 3 kHz to 300 GHz, August 2000**¹⁰ which provide a sound, scientific base for assessing likely risks to the health of persons. There are, also, *licensing procedures (which amplify regulations)* such as **Antenna Structure Clearance (CPC-2-0-02)**¹¹ which are designed to ensure that antenna towers do not pose dangers to aircraft. These (and other) guidelines, recommendations and regulations are all brought together in Industry Canada's **Environmental Process, Radio-frequency Fields and Land-Use Consultation (CPC-2-0-03)**¹².

This is not to say that the procedures in CPC-2-0-03 cannot be improved. There is always room for improvement, but any such procedure or protocol must rest firmly on sound, scientific, measurable standards that aim to protect the health and safety of Canadians. As noted in Question 4, above, guidelines, recommendations, procedures and regulations must be clear and comprehensible to a wide audience – including people who are not radio engineers – if it is to be expected that they will be understood and used. As well as improving CPC-2-0-03, it is noted that both CPC-2-0-03 and CPC-2-0-02 need to be updated. CPC-2-0-03, for example, refers to the former *General Radio Regulations Part II*, which have been replaced by the current Radio Regulations. In addition, the internal procedures used by Industry Canada staff to amplify the CPCs, IPC-2-0-03 and IPC-2-0-01, are out of date and should be revised in conjunction with the revision of the CPCs. A review and revision of the documents for updating also would provide an opportunity for both clarification and improvement.

RAC perceives that alone of Type 2 stations, amateur radio tower proponents have been required to participate in the consultation process under CPC-2-0-03 for antenna support structures. CPC-2-0-03 is not clear on this point. Although Industry Canada has indicated that all Type 2 stations (including General Radio Service, TV and FM and satellite receiving stations) are subject to CPC-2-0-03, generally the requirements for non-amateur installations have not been enforced. RAC considers that the technical and aesthetic considerations pertinent to radio amateur towers also are applicable to these other personal use Type 2 stations. RAC takes the position that all Type 2 tower proponents must be treated equally and consistently by both the Department and the LUAs.

RAC is concerned that some LUAs might, from time to time, impose pre-conditions, such as prohibitively high fees and overly stringent technical requirements, for consultations on Type 2 antenna support structures, which would have the effect of discouraging applications and thus

⁹ Safety Code 6 can be found at: <http://www.hc-sc.gc.ca/hecs-sesc/ccrpb/publication/99ehd237/toc.htm>

¹⁰ Industry Canada's Measurement Guidelines can be found at <http://strategis.ic.gc.ca/SSG/sf01451e.html#GuidelinesfortheMeasurementofRadioFrequencyFields>

¹¹ The rules protecting aircraft are at <http://strategis.ic.gc.ca/SSG/sf00017e.html>

¹² The land use process is at <http://strategis.ic.gc.ca/SSG/sf01031e.html>

precluding good faith consultations. Type 2 tower proponents are in general, private individuals who have limited financial resources. Protocols and procedures must meet the needs of the tower proponents and the LUA; protocols that aim to make consultations impossible do more harm than good.

The amateur community and the City of Calgary have worked out an arrangement for consultation on amateur radio towers that in general has been successful. This arrangement provides that amateur installations under a certain height are exempt from going through the consultation process. RAC suggests that LUAs might find it suitable and convenient to exempt all Type 2 antenna support installations less than or equal to a selected height; this would reduce the administrative and cost burdens for both the LUA and the Type 2 tower proponent. This should not be construed as agreement that a selected exemption height is "good enough" to be an imposed solution for tower height; it is simply an artificial line above which consultation would be required. The height needed for any proposed installation is use-related and for which communications efficiency is a technical consideration that should be reviewed with Industry Canada and must not be determined by an LUA.

RAC is also concerned that an Industry Canada decision on tower height be made on technical grounds and not be an arbitrary decision as has appeared to happen in some recent cases in western Canada. In keeping with its mandate, the Department must treat all tower proponents fairly, equally and consistently.

Radio Amateurs of Canada recommends that revisions to CPC-2-0-03 and the IPCs should:

- a) verify that the content and terminology is in agreement with the current Radio Regulations and relevant, current Transport Canada Air Traffic regulations;
- b) emphasize that the mandate of the Department is to ensure that all classes of applicants are treated equally, consistently and fairly under the Radiocommunication Act and that the Department must remain the sole arbiter on the radiocommunication technical and safety parameters concerning antennae and their support structures (see Annex B);
- c) provide Guidelines defining Typical Structures for amateur radio antenna support systems;
- d) clarify the requirement that the consultation process is applicable to all personal use installations (generally Type 2 stations) and should recommend that LUAs establish suitable antenna support structure heights under which a Type 2 tower proponent would be exempt from consultation;
- e) clarify and expand on those considerations that are the purview of the Department (see comments in Question 2) and make it clear that Industry Canada has exclusive authority over radiocommunication issues and is the final authority for determining the necessary characteristics of antennae and their supporting structures;
- f) provide amplifying information on safety considerations for avoiding danger to aircraft, such as tower siting distances and height restrictions in the vicinity of airports;

- g) specify that the height requirements of antenna support structures should be a technical consideration and not based solely on aesthetic concerns;
- h) provide expanded guidance on what is considered to be a "significant" change to an existing tower installation and have minor electrical and mechanical changes exempt from reapplication;
- i) provide for tower maintenance, including disassembly and same site re-erection being exempt from reapplication;
- j) include notification process timelines, (as outlined in Question 2); and
- k) make clear that local LUAs cannot impose consultation pre-conditions, including fees and technical issues, which would have the effect of making the actual consultation process pointless.

RAC considers that when CPC-2-0-03 is being revised Industry Canada should invite all interested parties to join the Department in the revision process. RAC would participate both directly and as a sponsor member of the Radio Advisory Board of Canada

QUESTION 7

What evidence exists that property values are impacted by the placement of antenna towers?

One claim that is often made by neighbours with respect to installation of amateur radio antenna support structures is that they will substantially lower property values in the neighbourhood. It is submitted that such a concern is unwarranted and, in fact, has been proven to be patently untrue.

In the United States, property value assessments prepared for some American radio amateurs have shown that there is no reduction in property values because of their antenna tower installations. It is noted that studies of property values in the vicinity of amateur installations in the United States have been accepted by the courts in that jurisdiction. Annex D contains summaries of local-area property assessments for four amateur radio stations in the US. RAC is unaware of any amateur radio tower installation in Canada that has had a negative impact on property values. While it has been evident that some real estate agents (as opposed to qualified appraisers) may submit opinions that amateur support structure installations will have a negative effect on property values, it is considered that none of these opinions are well grounded or supported by evidence.

RAC is aware of litigation in Ontario over an amateur support structure installation where the issue of property values was raised. In the decision of *Page et al v. Mangaroo*, Ont. S.C. 883/87) a number of neighbours opposed an amateur erecting a 72 foot support structure in a residential neighbourhood in the City of Burlington, Ontario. The neighbours commenced legal proceedings seeking an injunction preventing the amateur from erecting his support structure.

The neighbours filed an Affidavit from a real estate agent who opined that the erection of the structure would lower property values. The amateur filed an Affidavit from an Accredited Appraiser of the Canadian Institutes (AACI) who opined that construction of the support structure would have no effect whatsoever on the value of surrounding properties. Annex C contains the court decision and the affidavit for this case. The Court rejected the application for an injunction, in part by not accepting the evidence of the neighbours with respect to property values.

RAC is not aware of any other Type 2 station (General Radio Service, TV and FM, Satellite receiver) tower or support structure installations in Canada that have had negative impacts on property values. Indeed, in many residential neighbourhoods one frequently may see many different antenna structures, some of which are higher than amateur towers. RAC is not aware of any particular reason that amateur radio antenna support systems seem to be singled out for consideration, other than the reason that CPC-2-0-03 requires that radio amateurs contemplating a tower installation must consult with their neighbours and municipal authorities. RAC submits that this should be necessary for all Type 2 antenna support installations, especially now that aesthetics seem to be a significant consideration.

In conjunction with its RABC member colleagues, RAC has reviewed literature concerning the effect of antenna support structures on Real Estate property studies for some Type 1 (e.g. commercial cellular communications) installations. Three such studies are the “The Impact of Cellular Phone Base Station Towers on Property Values¹³”, “The Communication Town Site Impact Study” done for a site in the State of Massachusetts and a study prepared for Bell South Mobility for Shelby County, Tennessee. All show no impact on property values. Summaries of the last two of these studies are contained in Annex D

In summary, while neighbours may certainly have a concern with respect to property values, RAC submits that there is simply no persuasive case for considering that the erection of an antenna support structure will have a negative impact on property values or the resale of residential properties. A few problem cases – a tiny minority – have driven this discussion. The existing CPC-2-0-03 processes have worked for the overwhelming majority of antenna towers. Tower proponents and LUAs have, generally, found ways to accommodate each other's concerns but there is increasing public concern re: safety and aesthetics.

CONCLUSION

RAC's major areas of concern in the antenna support structure consultation and approval process are:

- (a) Operators in the Amateur Radio Service must be entitled to install an antenna and tower at a height that is efficient for communication purposes but which is reasonable

¹³ *The Impact of Cellular Phone Base Station Towers on Property Values*, Sandy Bond, Si-Yeoul Mun, Pornsiri Sakornvanasak and Nick Mahon, University of Auckland, New Zealand, presented to the Ninth Pacific-Rim Real Estate Society Conference, Brisbane, Australia, 19-22 January, 2003. The study was based on a hypothesis that public concerns about antenna stations would lead to an impact on residential property values. The results from surveys in two neighbourhoods confirmed that there are public concerns, but did not show that those concerns affect purchase decisions.

- in all circumstances while considering the visual impact such an installation may have in an urban area. A successful model for a consultation process for amateur towers that is consistent with the CPC has been developed;
- (b) There need to be Guidelines for the public, LUAs and Industry Canada concerning Typical Structures that radio amateurs must be permitted to install to ensure effective and efficient communications;
 - (c) Any consultation process applicable to the Amateur Service must be developed and implemented nationally with the support of Industry Canada that takes into account the unique nature of the Service;
 - (d) Adherence to established national protocols (i.e. CPC-2-0-03) by radio antenna proponents and Land Use Authorities;
 - (e) Adherence to established national protocols by radiocommunication antenna proponents and Land Use Authorities must include recognition of the Federal Government's exclusive jurisdiction and antenna structure siting should be reviewed by Land Use Authorities based upon land use impact only, recognizing that each antenna structure site application is unique and must be considered on its individual merits;
 - (f) Reservation of approval authority and responsibility for technical matters, including the applications of Safety Code 6 to radio stations for the protection of the public, and siting, site design and construction matters must remain with Industry Canada. RAC supports the position of the Radio Advisory Board of Canada that any delegation or derogation of this federal authority would constitute bad public policy, including having international implications regarding the applicability of standards and guidelines, and would result in very serious negative consequences for the improvement and expansion of Canada's radiocommunications infrastructure;
 - (g) Clarification of the applicability of any consultation process to all Type 2 stations;
 - (h) Consistency of application of a Type 2 station consultation process to users; and
 - (i) Industry Canada's present inconsistent approach to granting amateur radio operators the right to install a Typical Structure be revised to provide equal, fair and consistent treatment of all amateur tower proponents throughout Canada.

The Amateur Service is unique user of the radio spectrum. Amateur radio is a community resource that plays an important role in emergency and disaster communications and will continue to play that role in the future. Current world events have made it clear that a trained cadre of individuals skilled in the art of communications possessing their own equipment that may be used to support or replace existing commercial communications methods is a critical.

In order to operate effectively, the Amateur Service must be entitled to install towers at a reasonable height in order to allow efficient communications in such an emergency. Two "Typical Structures" have been proposed. RAC is of the view that these Typical Structures and

the other proposals in this submission to the Review will meet the requirements of the Amateur Service and at the same time satisfy the concerns of local land-use authorities. RAC recommends that they be used as Guidelines that will support the majority of amateur tower applications.

Radio Amateurs of Canada hopes that the foregoing comments, recommendations and proposals will aid the Review in advising the Minister of Industry and his officials in the development of effective, streamlined, and complete procedures for amateur radio antenna tower placement, that embrace community involvement while meeting the needs of the Amateur Service, Land Use Authorities and Industry Canada.

Yours sincerely,

William J. Gillis, VE1WG
President,
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