PURPOSE

- To review the Town of Innisfil Protocol for Telecommunication Facilities.

- To assist staff in seeking direction for potential changes to the protocol.

- To suggest possible directions of a protocol appropriate to the diversity of conditions and requirements in the Town.
WIRELESS TECHNOLOGY

Today, wireless technology is responsible for delivering many much relied upon communications services such as:

- EMS response
- Police & Fire
- Voice (Cellular phone, Conferencing)
- Data (Text, E-mail)
- Internet Service (Web-browsing)
- Paging
- Video Streaming

In Canada today, there are a limited number of wireless service providers each with a wireless network (e.g. Rogers, Bell & TELUS).
WIRELESS NETWORKS

- Wireless network communications have become a primary method of communication and information exchange.
- Increasing public acceptance of, and huge demand for wireless communications.
- Preferred way for emergency services, conduct of business and interaction with friends and family.
- Base (cell) station site growth is necessary to provide coverage and capacity to areas experiencing high levels of public demand.
- Networks seamless and continuous wireless coverage.
WHAT IS A WIRELESS NETWORK?

- Each wireless provider needs to create a network to transmit and receive radio signals for wireless devices for uses such as making telephone calls, e-mail and web browsing.

- Networks are comprised of interconnected base station sites with line-of-sight to another.

Source: Rogers Wireless
WIRELESS NETWORKS

Each wireless provider is licensed to operate a limited number of radio frequencies in their network. This is an important design constraint.

Source: Rogers Wireless
WIRELESS NETWORKS

Mapping a wireless voice call or data signal.

Source: Rogers Wireless
TECHNICAL REQUIREMENTS FOR BASE (CELL) STATION SITE SELECTION

Wireless network service providers must take into consideration the following factors when planning for new base station sites:

- Existing network sites (proximity, interference)
- Line of sight to surrounding base station sites
- Physical topography and current development
- Antenna height for optimal service coverage
- Proximity to necessary utilities (hydro, fibre-optic network)
- Land use (surrounding vicinity)
- Availability of existing infrastructure for use or sharing
- Willing landlord or site vendor
- Access
ROOF TOP AND OTHER TYPES OF INSTALLATIONS

Roof-top mounted base station sites and sites which take advantage of existing infrastructure are a preferred solution for providing coverage.
TOWERS AND POLES

Guyed  Self Support  Tripole  Monopole  Street Pole
CO-LOCATION

Single Provider

Multiple providers
INDUSTRY CANADA PROCESS FOR NEW INSTALLATIONS

• Industry Canada is responsible for managing the use of the radio frequency spectrum, including antenna towers.

• Federal jurisdiction overrides traditional municipal land-use planning controls such as zoning by-laws, site plan control, and development approvals.

• Industry Canada requires providers to work together with local municipalities in order to gain municipal concurrence.

• The municipal consultation process established by Industry Canada allows local land-use authorities the opportunity to address land-use concerns.
CPC-2-0-03

Process must be followed to install or modify antenna systems. Key components:

- Investigating sharing or using existing infrastructure before proposing new antenna-supporting structures.

- Contacting the land-use authority to determine local requirements regarding antenna systems.

- Public notification and addressing relevant concerns, whether by following local land-use authority requirements or Industry Canada's default process.
CREATING A MUNICIPAL PROTOCOL

Industry Canada encourages land-use authorities to establish consultation processes which consider:

• The designation of suitable contacts or responsible officials;

• Proposal submission requirements;

• Public consultation;

• Documentation of the concurrence process; and,

• The establishment of milestones to ensure consultation process completion within 120 days.
RELEVANT CONCERNS

• Justification for a new antenna-supporting structure instead of the use of an existing tower or structure.

• Justification for the proposed site.

• Requirements to integrate the antenna into the local surroundings.

• Compliance with aeronautical obstruction marking requirements (under the jurisdiction of Transport Canada and Nav Canada), CPC-2-0-03, the Canadian Environmental Assessment Act, Safety Code 6, etc.
JURISDICTION AND ‘GUIDANCE’

• Municipalities do not have jurisdiction to regulate anything that would control the location, siting, height or type of antenna structure.

• If a land-use authority process contains requirements which are unclear or are significantly more burdensome than the processes and responsibilities set out in CPC-2-0-03, the applicant may request guidance from Industry Canada to determine whether the land-use authority process or Industry Canada’s default process should be followed.

• Policies which effectively prohibit new installations (such as prohibiting new installations within 300m of residential areas) could also be struck down by proponents through a guidance request.
PROTOCOL CONSIDERATIONS

Define preferences for location and siting of new facilities, such as:

- Co-location on existing telecommunication facilities or other structures.
- Preference for new towers located in industrial or commercial areas.
- New towers to be located on municipal and public utility lands, where possible.
- The decision to provide concurrence or non-concurrence may be delegated to a municipal official.
- A preference for monopole, tripole, flagpole, shrouded, or other forms of installations.
- Provide an encouragement for proponents to propose installations in certain areas because of the certainty and speed of approval.
**PROPOSALS EXEMPT FROM CONSULTATION**

Land-use authorities may exclude any antenna system installation from consultation in addition to those identified by Industry Canada's own consultation exclusion criteria.

Some installations are excluded from the consultation requirement:

- Maintenance of existing radio apparatus;
- Addition or modification of an antenna system (but does not increase the height by 25% above the original structure's height);
- Maintenance of an antenna system's painting or lighting;
- Installation of an antenna system for a limited duration (less than 3 months) for a special event; and
- New antenna systems with a height of less than 15 metres above ground level.
PRELIMINARY CONSULTATION

• Municipal Review and Submission Requirements

• Public Consultation Procedures

  • Many municipal protocols go beyond the general CPC-2-0-03 requirements (mailed notification and newspaper notice and public open house).

  • Industry Canada consultation radius is proportional to the size of the proposed structure and its potential direct impact on the local surroundings.
MUNICIPAL DECISION-MAKING PROCESS

• Where municipal consultation is required, Industry Canada will require a decision of concurrence or non-concurrence for the proposal from the municipality to conclude local consultation.

• Where a decision cannot be reached by the municipality, or a decision of non-concurrence is issued, the proponent may bring the issue to Industry Canada to be considered through their process for resolving an impasse.

• Industry Canada is the final authority.
PUBLIC HEALTH AND SAFETY

Health Canada’s Safety Code 6

- Industry Canada has adopted Safety Code 6 for the protection of the general public.

- Installations and apparatus must comply with Safety Code 6 at all times.

- Industry Canada does not consider health and safety as an issue where the guidelines and standards are satisfied with respect to radio frequency exposure.
OTHER EXPERT OPINION ONTARIO/CANADA

- The Medical Officer of Health in York Region (2009) “the weight of evidence has not identified that Safety Code 6 is inappropriate, in the protecting the public from exposure to RF fields.”

- The City of Hamilton the Medical Officer of Health (2008) “there is no scientific basis to support a conclusion that individuals living in communities with more stringent exposure standards than those in Safety Code 6, receive a greater level of protection.”

- The City of Vancouver the Chief Medical Officer of Health (2005) reported that “the installation of cellular antennas in the community do not pose an adverse health risk and Safety Code 6 provides an appropriate level of protection”
TOWN OF INNISFIL OFFICIAL PLAN POLICY AND TELECOMMUNICATIONS

• Allows for public uses including telecommunications in all land use designations except for the Natural Environmental Area designation and Greenbelt Plan area.

• Policies provide a basis or direction for a protocol to discourage these facilities in the Natural Environmental Area designation and the Greenbelt Plan area.

• Provides a policy basis for a protocol to introduce a range of considerations for telecommunications, without directly imposing prohibitions contrary to the federal legislation.
INNISFIL PROTOCOL 2008 OBSERVATIONS

• Does not establish preferences for siting (discourages).

• The tower location criteria refer to separation distances from residential zones and uses regardless of whether the location is in an urban or rural area.

• The design and location of a tower installation has no influence on the need to consult with the public.

• Design criteria for building mounted/roof top installations should be considered as these opportunities may become more available.

• There is no delegation of approval to municipal staff.
CONCLUSIONS AND RECOMMENDATIONS

• Amend the existing protocol based on Industry Canada’s process with modifications consistent with the Town’s interests and preferences.

• Assess and define priority areas for facilities and actively communicate with the industry to establish if these areas will work.

• Establish different notification standards for the urban settlements and other areas.

• Establish a guidance to allow for and encourage colocation of facilities.
CONCLUSIONS AND RECOMMENDATIONS

- Establish and define design parameters for new facilities, including building mounted and roof top facilities.

- Consider delegation to staff of municipal concurrence in either all circumstances or with limitations based on height, type and design of the new facilities.

- Establish a protocol for regular contact and information to carriers with respect to new development and opportunities for potential siting of facilities.

- Add requirements in notification materials and materials to be provided to the Town from applicants.
NETWORK GROWTH

Continuous coverage being provided to a fixed and limited number of users through line-of-sight base station site locations.

Source: Rogers Wireless
Telecommunications Facilities Protocol Review

Source: Rogers Wireless
In order to ensure coverage spread, antenna height must be above neighbouring obstacles to avoid ‘radio shadowing’

- Antennae mounted on roof-tops must be installed at the edge of the parapet to provide coverage at ground level.

- Surrounding buildings, trees or other objects will contribute to radio shadowing.

Source: Rogers Wireless
NETWORK QUALITY

Radio frequency signals are similar to light and sound; obstacles will block their penetration necessitating additional sources to ensure coverage.

Source: Rogers Wireless
SAFETY CODE 6 – POWER EMISSION COMPARISON

Power Density Limits (W/m²)

10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0

100%
(5.83 W/m²)

80%
(4.66 W/m²)

60%
(3.09 W/m²)

40%
(2.33 W/m²)

20%
(1.17 W/m²)

0%
(0.0 W/m²)

Safety Code 6 Limit
(5.83 W/m²)

Cordless Phone
5%

TV
4%

Computer Monitor
2%

Clock Radio
1%

Wireless Service
0.01%

Telecommunications Facilities Protocol Review