

Tower Siting Resource Guide



EORN

EASTERN ONTARIO
REGIONAL NETWORK



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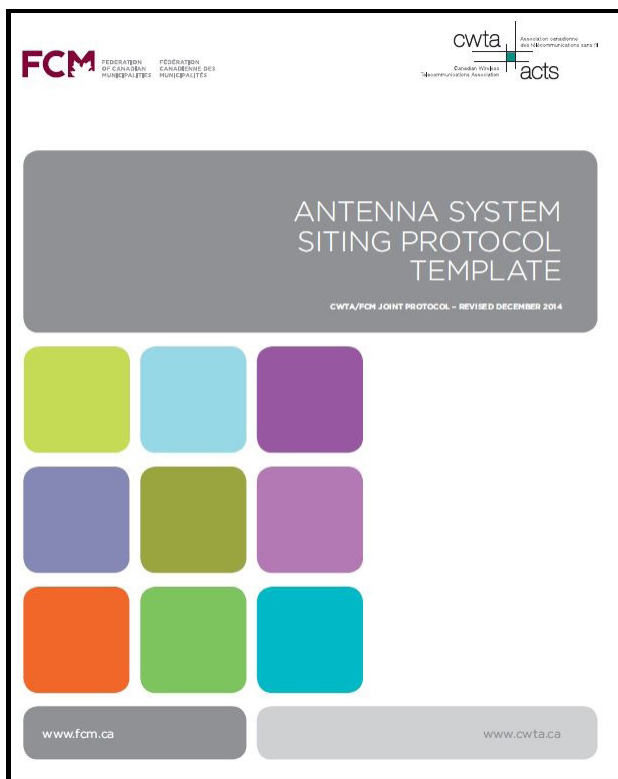
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Highlights

Should my municipality have a tower siting protocol?

If a municipality doesn't have its own tower siting protocol, a telecom service provider (TSP) will revert back to Innovation, Science and Economic Development Canada (ISED) minimum requirements for public consultation.



Resources such as the Federation of Canadian Municipalities' *Antenna Systems Siting Protocol Template* can help you develop your own protocol so you are ready when a TSP comes knocking with a plan for a proposed tower.

30 days As a minimum, TSPs must provide a notification package to the local public (including nearby residences, community gathering areas, public institutions, schools, etc.) located within a radius of three times the tower height. It is the responsibility of the TSP to ensure that the notification provides at least 30 days for written public comment.

Introduction

The Eastern Ontario Regional Network (EORN) is committed to making eastern Ontario one of the best connected regions in the world. We understand that connectivity plays a critical role in ensuring a community's development and prosperity.

EORN has secured funding for a project designed to improve cell phone coverage and capacity in the region (the Cell Gap Project). Construction associated with the Cell Gap Project will begin in 2021. Part of the project is construction of cell phone towers. It is expected that more than 300 new towers will be built across eastern Ontario related to the Cell Gap Project over the next five years*.

Municipalities manage land use compatibility (good land use planning) to serve the public interest and set development goals while keeping social, economic and environmental factors in mind. In this project, the designated land use authority (LUA) is responsible to ensure the proposed tower aligns with regional and municipal policy. Because municipalities act as LUA, a telecom service provider (TSP) or their representatives will be coming to you with their proposals for tower construction. Some of these towers will be built on municipal land while others might go onto private property. Regardless, you as the LUA will be involved.

Improved cell phone coverage and capacity is on everyone's mind, especially of those people who live in areas with poor reception. It will improve the safety of all citizens of eastern Ontario, but the network will take time to develop. As with all infrastructure projects of this magnitude, it is not just a matter of flicking on a switch. Municipalities can play an important role in the speedy roll out of the Cell Gap Project. This document is meant to provide you with an overview of what municipal staff can do to prepare.

* Note that towers are not unique to projects meant to improve cell phone service. Between 2010 and 2015, EORN built a \$175 million network that improved broadband access to about 90 per cent of eastern Ontario and towers were constructed during that project as well.

** Note that website links to resources are embedded in the written text throughout the document and then repeated in Appendix A for easy copying and pasting.

*** Note that in some official ISED documentation the terms "antenna system" and "structure" are used rather than "tower" and that sometimes these terms are interchanged, we have chosen the term "tower" throughout this document, mainly to provide some consistency.

EORN's role

EORN has been preparing for the Cell Gap Project ever since it completed its initial broadband project (2010-2015). At that point, the Eastern Ontario Wardens' Caucus (EOWC) and others asked us to look at solving the gaps in cell coverage and capacity around the region.

Since then, we have conducted research and technical analysis and identified the gaps in service in eastern Ontario. All but one of the counties and separated cities in eastern Ontario helped fund that research and have since committed to the Cell Gap Project. Through a private-public partnership (PPP) between all levels of government and the private sector, \$300 million of funding has been secured. The Cell Gap Project will start with making improvements to cell towers -also known as augmentations or uplifts- to existing towers (replacing radios, etc.). However, it is expected at least some new towers will be constructed in 2021 with production ramping up in the years to follow.

EORN's role during the construction phase is one of oversight. We hold the TSP accountable and make sure they deliver on parameters set out in the transfer payment agreement and the contract. While we are not actively participating in the construction of infrastructure, we do have the experience and understand what municipalities should expect. During our initial broadband project, more than 300 towers were built and at times EORN helped facilitate discussion between municipalities and TSPs. This time around we are here again to assist, and this resource document is one way to do so.



Key collaborations

Municipalities

Municipalities can allow TSPs to install equipment such as towers on their property. Municipalities are the land use authority (LUA) and are expected to govern over land use issues. When a TSP plans to build a tower in your municipality, they have to notify you. Departments in your municipality or community that can be affected by cell tower applications include planning, economic development and public works. Also, municipalities and council are the enforcing authority when it comes to building codes, which are bound to come into play when towers are constructed.

Indigenous communities and organizations

As part of the Cell Gap Project, EORN is consulting with 18 Indigenous communities and organizations about towers around reserves and in traditional territories. The duty to consult has been delegated to EORN by the Crown. The Cell Gap Project will improve the capacity and reach of cell services across the territories of the Anishinaabe, the Haudenosaunee and the Huron-Wendat peoples. It is important that this work be done in collaboration with Indigenous communities located in the region.

Telecommunications service providers (TSPs)

TSPs are companies, such as Rogers, Bell and Telus that provide one or more telecommunications services including internet and (mobile) phone service. To deliver their services, TSPs need to develop infrastructure that can go on private or municipal property

Innovation, Science and Economic Development Canada (ISED)

Here is how ISED describes itself: “ISED works with Canadians in all areas of the economy and in all parts of the country to improve conditions for investment, enhance Canada’s innovation performance, increase Canada’s share of global trade and build a fair, efficient and competitive marketplace. We are the federal institution that leads the Innovation, Science and Economic Development portfolio.”

ISED governs over the [Radiocommunications Act](#)¹, designed to ensure “the orderly establishment or modification of radio stations and the orderly development and efficient operation of radiocommunication in Canada.” As such, it deals with the placement and installation of towers.

ISED requires that the installation and modification of tower systems be done in a manner that complies with appropriate environmental legislation. This includes the [Canadian Environmental Assessment Act](#)² (CEAA) and local environmental assessment requirements where required by the CEAA.

ISED also established a protocol for public consultation with regards to tower siting. See the public consultation section on pages 12, 13 and 14 of this document for more details.

ISED manages the radio communications spectrum in Canada and requires that all TSP facilities comply with guidelines established by Health Canada.

Key collaborations

Canadian Radio-television and Telecommunications Commission (CRTC)

The CRTC is an administrative tribunal that operates at arm's length from the federal government. This is how the CRTC describes itself: "We are dedicated to ensuring that Canadians have access to a world-class communication system that promotes innovation and enriches their lives. Our role is to implement the laws and regulations set by Parliamentarians who create legislation and departments that set policies. We regulate and supervise broadcasting and telecommunications in the public interest."

Amongst other statutes and regulations, the CRTC is responsible for the [Telecommunications Act](#)³. A high-level [video presentation of the Telecommunication Act](#)⁴ is available on the CRTC website. In part, the Telecommunications Act provides procedures that govern the use of public property, such as roads and rights of way by telecommunications carriers. The procedures encourage agreements between carriers and municipalities.

Private landowners

Private landowners can make arrangements with TSPs to host telecommunications equipment on their land. They can sell their land or lease it for a fee or other considerations.

Private sector intermediates

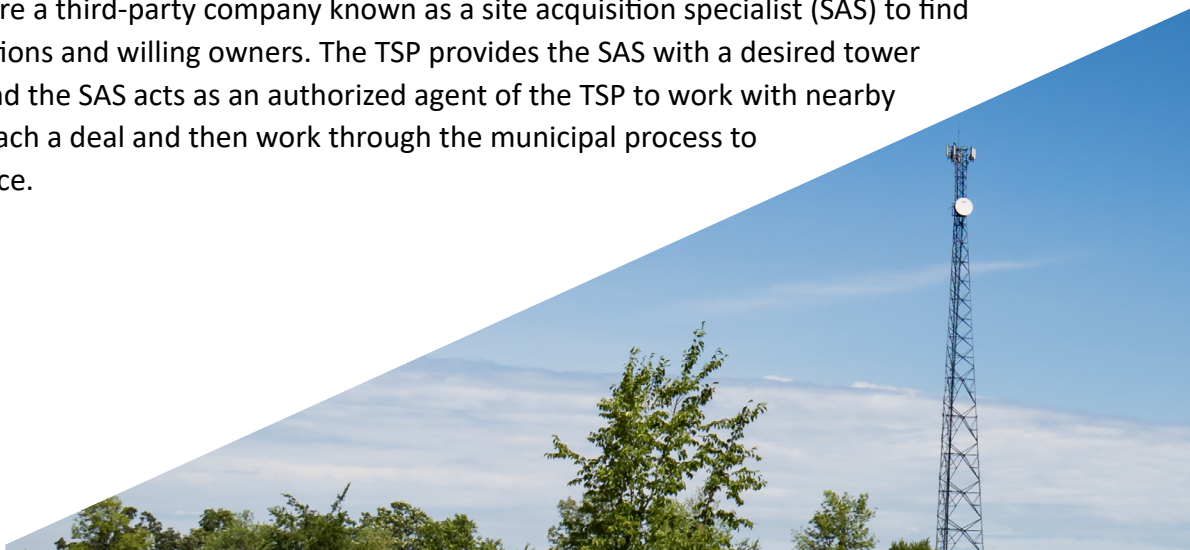
Some TSPs hire the services of private sector companies that act on their behalf.

Public consultation

Some municipalities work with third-party companies to look after the public consultation process associated with planning the construction of a tower.

Real estate

A TSP may also hire a third-party company known as a site acquisition specialist (SAS) to find suitable site locations and willing owners. The TSP provides the SAS with a desired tower location radius and the SAS acts as an authorized agent of the TSP to work with nearby landowners to reach a deal and then work through the municipal process to obtain concurrence.



Tower construction: the basics

Government of Canada infographic

Rules around cell tower construction can be hard to navigate. However, in essence it should be a simple process. According to an infographic published by the [Government of Canada](#)⁵, the process can be described in these steps:

1. Determine if a tower is necessary. Rules require TSPs to share towers when possible, something known as co-location, in part to minimize proliferation of towers.
2. If a tower is necessary, TSPs must submit their plan to the local municipality.
3. The TSP must then notify residents near the proposed tower site.
4. The TSPs must consult with residents in accordance with rules set by ISED.
5. Following consultation, and once the TSP and the local municipality agree, the proposed tower must be built within three years.

It is ISED's expectation that steps two to four will normally be completed within 120 days. (Source: [CPC-2-0-03 -Radiocommunication and Broadcasting Antenna Systems](#)⁶).

There needs to be a certain measure of flexibility in the placement of tower systems, which is constrained to some degree by the need to achieve acceptable coverage for the service area, the availability of sites, technical limitations and safety.

Ultimately it is ISED who has the authority under the Radiocommunication Act to approve each site on which radio apparatus, including towers, may be located and to approve the erection of all masts, towers and other antenna-supporting structures.

ISED generally favours having the TSP, the local public and the LUA work together toward a solution which takes each other's interests into consideration. However, under ISED procedures, if either the LUA or TSP believes discussions have reached an impasse, either can formally request departmental intervention concerning a reasonable and relevant concern. (Source: [Guide to Assist Land-use Authorities in Developing Antenna System Siting Protocols](#)⁷).

Tower construction: the basics



CELL TOWERS IN YOUR COMMUNITY: HOW THE DECISION IS MADE

The Government of Canada regulates tower siting decisions, settles disputes, and sets health and safety standards.

New towers give wireless customers better, more reliable mobile service.

1 SHARE

Is a new tower necessary? Rules require companies to share towers, whenever possible, instead of building new ones

2 PROPOSE

Companies must submit a plan to the local municipality.

3 NOTIFY

Once a company has a plan, it must notify local residents of the upcoming consultation following ISED's or the municipality's consultation process.

4 CONSULT

The company must consider the community's views

* Impasses are rare. <0.1% of cases require Industry Canada's decision.

BUILD 5

Following the consultation, and once the company and local municipality agree, the tower must be built within three years.

Canada

Tower construction: the basics

Aeronautical safety - lights and paint on towers

Some towers (not just telecommunications towers) require lighting to guarantee aeronautical safety. Aerodrome safety is under the exclusive jurisdiction of NAV Canada and Transport Canada and all TSPs need to comply with the rules established by these government bodies. Transport Canada performs an assessment of a proposal with respect to the potential hazard to air navigation and notifies the TSP if there are any painting and/or lighting requirements for the tower. Painting and/or lighting might be required when a tower is deemed an obstacle. Paint marking on towers is also known as day marking.

- When is an object an obstacle? [According to the Canadian Aviation Regulations \(CARs\) 601.23⁸](#), an object is an obstacle if:
- Higher than 90 meters above ground level (AGL) and located within six kilometers of the geographical centre of an aerodrome.
- Higher than 90 meters AGL and is located within 3.7 kilometers of the centreline of a recognized visual flight rules (VFR) route.
- Higher than 150 meters AGL.
- In the case of any catenary wires crossing over a river, any portion of the wires or supporting structures is higher than 90 meters AGL.

It is the obligation of a TSP putting up an obstacle (tower) to:

- Notify the regional office of Transport Canada by filing the aeronautical assessment form for obstruction marking and lighting.
- Notify NAV CANADA's Land Use Program, primarily for communication and radar interference concerns mark and light the object in accordance with the requirements of [Standard 621 - Obstruction Marking and Lighting - Canadian Aviation Regulations \(CARs\)⁹](#).

Tower construction: the basics

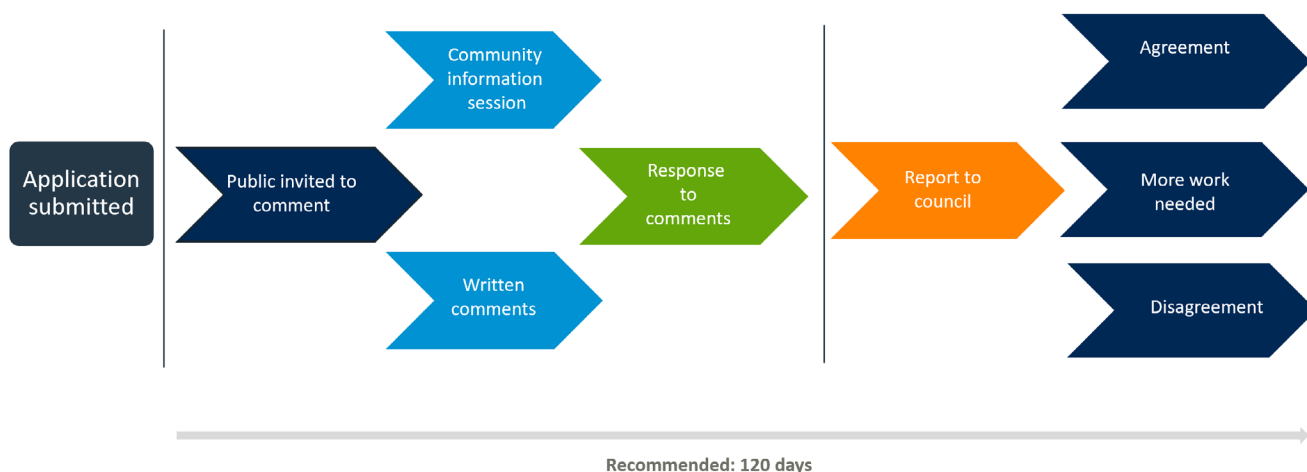
Public consultation

ISED, in section 4 of [CPC-2-0-03 — Radiocommunication and Broadcasting Antenna Systems](#)⁶, sets the rules for public consultation when it comes to tower siting. As a minimum, TSPs must provide a notification package to the local public (including nearby residences, community gathering areas, public institutions, schools, etc.), neighbouring land-use authorities, businesses, and property owners, etc. located within a radius of three times the tower height. It is the responsibility of the TSP to ensure that the notification provides at least 30 days for written public comment.

If the local public or land-use authority raises a question, comment or concern relating to the tower as a result of the public notification process, then the TSP is required to:

- Respond to the party in writing within 14 days acknowledging receipt of the question, comment or concern and keep a record of the communication.
- Address in writing all reasonable and relevant concerns within 60 days of receipt or explain why the question, comment or concern is not, in the view of the TSP, reasonable or relevant.
- In the written communication referred to in the preceding point, clearly indicate that the party has 21 days from the date of the correspondence to reply to the TSP's response. The TSP must provide a copy of all public reply comments to the local ISED office.

Public Consultation Process



Tower construction: the basics

Public consultation: reasonable or relevant comments and concerns

As mentioned above, TSP must address in writing all reasonable and relevant concerns that come from the public consultation period.

Here are examples of what ISED does and doesn't consider as reasonable and relevant.

Concerns considered relevant include:

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

Concerns that are not relevant include:

- Disputes with members of the public relating to the TSP's service, but unrelated to tower installations.
- Potential effects that a proposed tower system will have on property values or municipal taxes.
- Questions whether the Radiocommunication Act, CPC-2-0-03 — Radiocommunication and Broadcasting Antenna Systems, Safety Code 6, locally established by-laws, other legislation, procedures or processes are valid or should be reformed in some manner.

All Canadian telecommunication providers must build their mobile networks based on established industry standards and safety guidelines set out by Health Canada. Both Health Canada and the World Health Organization (WHO) say that the exposure to radio frequency from cell towers is well below any health risk. EORN is addressing matters of health and safety regarding 5G technology in its [5G Resource Guide](#)¹⁰ published on the EORN website.

Tower construction: the basics

Towers excluded from public consultation

There are towers and antennas that are excluded from public consultation. They are listed in detail in section six of ISED's [CPC-2-0-03 — Radiocommunication and Broadcasting Antenna Systems](#)⁶.

A few examples include:

- New antennas where the height is less than 15 metres above ground level.
- Existing antennas being upgraded where the cumulative height increase is no greater than 25 per cent of the height of the initial antenna.
- Antennas on buildings, water towers, lamp posts, etc. provided that the height is not increased by more than 25 per cent.

Consultation with Indigenous communities and organizations

The Crown has given EORN the responsibility to consult with Indigenous communities and organizations on the construction of new cellular infrastructure as part of its Cell Gap Project. EORN is committed to working with Indigenous communities to ensure that new cell infrastructure is built with respect for Indigenous priorities, Rights and heritage. This dialog is ongoing through meetings, letters and phone calls and will continue throughout the course of the Cell Gap Project. Based on input from several First Nations, EORN has committed to exceeding industry practice, and is conducting archaeological assessments on most new tower sites.



Tower construction from a TSP's point of view

In working with TSPs, EORN has collected notes about how they view the full cycle of tower development. TSPs generally expect the period from their initial land acquisition order to the tower being in service to be approximately 18 to 26 months.

Finding the perfect tower location

Tower site selection is a very technical process. To ensure coverage across the region, towers need to be within certain distances of each other. The distance between them and their location depends on many variables such as tree coverage, rocks and hills just to name a few, as these variables have the potential to impact signal strength. TSP network engineers need to provide their real estate team with a specific location in which they need to find a suitable site. This location is known as a “search ring” and this ring is generally only a few kilometres in diameter. Once the real estate team receives the search ring coordinates, they will often use land ownership records to identify who to talk to.

Eventually they will visit the desired location and knock on the doors of potential landowners. TSPs generally look for sites that are close to existing roads and have hydro nearby in an effort to keep costs and impact on the land to a minimum. They also look at “the lay of the land” since the location of a tower will have significant effect on how far its signal travels.

Note that EORN is currently (2021-2025) implementing the Cell Gap Project for which approximately 300 new towers will be build across eastern Ontario. EORN has published a “[Land Availably Form](#)”¹¹ its website were landowners (including municipalities) can list their property as a potential site for a new tower.

Municipal approval

After a suitable site is found and a deal has been reached with the landowners (most often private or municipal) the TSP will seek municipal approval for development on the proposed site. Municipal approval is granted based on the application's ability to receive satisfactory comments from all stakeholders such as conservation authority and utility services. The application must also meet the local Official Plan, economic development goals and zoning by-law policies. The application is then assessed by the public works department to ensure the tower follows the building code, transportation use and any other technical studies. After the initial approval from the LUA, a public consultation must be held to discuss the proposed tower. At a minimum, the TSP must provide a notification package to the local public (including nearby residences, community gathering areas, public institutions, schools, etc.), neighbouring land-use authorities, businesses, and property owners, etc. located within a radius of three times the tower height (source: section 4.2 of [CPC-2-0-03 — Radiocommunication and Broadcasting Antenna Systems](#)⁶).

Tower construction from a TSP's point of view

Engineering and construction

Following the municipal approval process, TSP engineers will finalize the tower design and costs. The necessary permits including the access to rights-of-ways will be requested, and materials will be ordered. Construction will start and once completed, the tower will go into service.



Tower siting protocols

While ultimately tower siting is a federally regulated process, municipalities can take some control it by developing their own tower siting protocol.

A tower siting protocol can contain the municipality's preference for public consultation, establish timelines, identify areas of historic or environmental importance to the community and identify other local preferences for tower siting. For example, if a municipality has reasons to have the TSP consult with the local public in a larger radius than that of three times the tower height this could be stipulated in the tower siting protocol.

While drafting and maintaining a tower siting protocol could be a bit of a daunting task, especially for a small municipality with limited resources, there are many examples available online as well as several handy templates, some of which are summarized below.

If a municipality's doesn't have its own tower siting protocol, then the TSP will be required to follow ISED's default public consultation process.

Here are some other examples of what can be included in a municipal tower siting protocol:

- Encourage TSP to share existing infrastructure and minimize visual impact in high profile and sensitive areas.
- Discourage TSP from locating on natural or heritage areas and respect applicable zoning regulations.
- Integrate local public consultation processes.
- Opportunity to include antenna structures (small cells) that would be excluded from the consultation.
- Detailed tower siting protocol could lead to more development barriers for the TSP
- It can take a considerable amount of time and resources to develop a tower siting protocol.
- If a municipality's protocol doesn't address the issue of public consultation, or if there is no protocol, then the TSP will be required to follow ISED's default public consultation process.

Do keep in mind however that if the TSP believes the local consultation requirements are unreasonable, they may contact the local ISED office in writing for guidance.

Tower siting protocols

ISED guide to tower siting protocols

ISED encourages LUAs to develop local protocols to manage the process of identifying their own concerns, as well as those of the public they represent, regarding tower system modifications or installations. These protocols can inform TSPs, amongst other things, of established and documented local requirements and consultation procedures and advise the TSP of historic and environmental land use sensitivities including any related to potential Aboriginal or treaty rights or land claim. These protocols can then be shared with TSPs in preliminary discussions.

A useful document in the development of tower siting protocols is the “[Guide to Assist Land-use Authorities in Developing Antenna System Siting Protocols](#)”⁷. This guide is intended to assist LUAs in ensuring effective local participation in decisions regarding proposals to build towers and their supporting structures within their communities.

The government also published [CPC-2-0-03 -Radiocommunication and Broadcasting Antenna Systems](#)⁶ on its website and municipalities are encouraged to read it to better understand the roles and responsibilities when it comes to LUAs and tower siting procedures.

Federation of Canadian Municipalities (FCM) tower siting protocol template

One of the main resources for municipalities when it comes to their interactions with TSPs is a document titled “[Telecommunications and rights-of-way, a handbook for municipalities](#)”¹² published in 2018 by FCM.

In the document there is mention of an [Antenna System Siting Protocol Template](#)¹³, which FCM developed in collaboration with the Canadian Wireless Telecommunications Association (CWTA).

Publicly available tower siting protocols

A simple Google search for “Tower System Siting Protocol” will return results of multiple municipalities. Below are links to a few examples, both urban and rural.

City of Mississauga

[City of Mississauga Telecommunications Antenna/Tower Siting Protocol](#)¹⁴

Township of North Dumfries

[Telecommunication Tower and Telecommunication Antenna Preferred Location Protocol](#)¹⁵

Township of Seguin

[Township of Seguin Telecommunication Tower/Antenna System Siting and Consultation Protocol](#)¹⁶

Appendix A - Summary of links

1. ISED – Radiocommunications Act
<https://laws-lois.justice.gc.ca/eng/acts/r-2/>
2. Canadian Environmental Assessment Act
<https://laws-lois.justice.gc.ca/eng/acts/C-15.21/>
3. CRTC – Telecommunications Act
<https://laws.justice.gc.ca/eng/acts/T-3.4/>
4. CRTC - A high-level video presentation of the Telecommunication Act
<https://www.ic.gc.ca/eic/site/110.nsf/eng/00006.html>
5. Government of Canada – Infographic - Cell towers in your community: How the decision is made
<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11443.html>
6. ISED - CPC-2-0-03 - Radiocommunication and Broadcasting Antenna Systems
<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html>
7. ISED - Guide to Assist Land-use Authorities in Developing Antenna System Siting Protocols
<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10860.html>
8. Canadian Aviation Regulations (CARs) 601.23
<https://laws-lois.justice.gc.ca/eng/regulations/SOR-96-433/page-81.html>
9. Standard 621 - Obstruction Marking and Lighting - Canadian Aviation Regulations (CARs)
<https://tc.canada.ca/en/corporate-services/acts-regulations/list-regulations/canadian-aviation-regulations-sor-96-433/standards/standard-621-obstruction-marking-lighting-canadian-aviation-regulations-cars>
10. EORN's 5G Resource Guide
<https://www.eorn.ca/en/resources/5G-Resource-Guide.pdf>
11. EORN's Land Availability Form
<https://forms.eorn.ca/Land-Availability-Form>
12. FCM - Telecommunications and rights-of-way, a handbook for municipalities
<https://data.fcm.ca/documents/resources/guide/handbook-telecommunications-row.pdf>
13. FCM - Antenna System Siting Protocol Template request form
<https://fcm.ca/en/resources/antenna-system-siting-protocol-template>
14. City of Mississauga - Completed Antenna System Siting Protocol
http://www7.mississauga.ca/documents/pb/main/2018/TelecommunicationAntennaProtocol_June_2017.pdf
15. Township of North Dumfries Telecommunication Tower and Telecommunication Antenna Preferred Location Protocol
<https://www.northdumfries.ca/en/doing-business/resources/Documents/Communication-Tower-Protocol.pdf>
16. Township of Seguin Telecommunication Tower/Antenna System Siting and Consultation Protocol
<https://www.seguin.ca/en/business-development/resources/PLANNING/Telecommunication-Protocol/FINAL-PROTOCOL.pdf>



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