

# Creating a Proactive Antenna Siting Protocol & Small Cell Licensing Agreement

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## Overview

Although antenna siting falls under federal jurisdiction in Canada, *Innovation, Science and Economic Development* (ISED) encourages local governments to create siting protocols that reflect and protect local interests. When there is no local protocol in place, the ISED policy found [here](#) becomes the default process.

In some instances, telecommunication providers are not required to consult with land use authorities or the public before they install small cell antennas. For example, if a telecom is installing 4G or 5G small cell transmitters on existing structures, and its equipment does not increase the height of that structure by more than 25%, the proponent is only required to request a local government's permission if it wants to put antennas on property owned by the town..

In preparation for 5G, providers are installing a growing number of small cell antennas on our streets. Clearly, it is prudent to have antenna siting protocols in place that include small cells and protect local interests to the degree federal regulations permit. To draft a siting protocol for your town, use the template found [here](#) as a guide. To create the most protective protocols and small cell licensing agreements possible, be sure to add the **Specific Content Suggestions** found on Pages 5 to 16 of this document.

**Please note:** To provide the fastest, safest and most secure Internet infrastructure possible for generations to come, and to avoid the risks associated with wireless and 5G, communities are strongly advised to build a sustainable fiber-to-the-premises last mile in place of installing small cells.

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## A Checklist for Municipal Antenna Siting Protocols

- The protocol requires applicants to document possession of liability insurance that does not exclude health claims due to radiofrequency (RF) radiation exposure.
- The protocol requires the applicant to document significant effort to place antennas in non-residential areas, and away from schools and daycare centers.
- The protocol requires applicant to provide to all homeowners within 500 feet of the proposed installation notification by certified mail.
- The protocol requires the applicant to document a significant gap in service, which will be remedied by the proposed small cell installation.
- The protocol requires the applicant to post conspicuous signs of pending applications at all proposed sites.
- The protocol establishes a scientifically-based radiation exposure limit and asks applicants to meet these standards. (Salt Spring, BC Canada has set limits at 2microW/cm<sup>2</sup> which is 500 times more protective than Health Canada's Safety Code 6.)
- The protocol requires that RF radiation emission limits apply to the aggregate emissions of all co-located equipment.
- The protocol permits the municipality to conduct random, unannounced RFR emission testing of any small cell installation at the expense of the operator, and provides for substantial penalties for violations.
- The protocol requires applications and permits for all small cell antennas including strand-mounted antennas.

## General Examples of Areas to Address

**Note:** While the terms “certain distances” and “certain districts” are used below, specific values are later provided

### LOCATION

- Prohibit small cell installations in residential areas and in certain districts.
- Require installations to be certain distances away from residences, schools, hospitals, and/or other installations. In its municipal code, the City of Malibu, California has adopted a “Front Door Rule” which states that cell antennas should not be visible from any home’s front door or window.

### AESTHETICS / ENVIRONMENT

- Establish aesthetic, design, and noise requirements such as co-location, camouflage, height and light limits, and more.

### TECHNICAL

- Require proponents to provide equipment that significantly reduces the amount of Effective Radiated Power (ERP) emitting from the face of the antenna shroud. Please see **section 3.1** on Page 13 of this document for suggested wording for this requirement.

### ADMINISTRATIVE / LEGAL

- Specify that residents within a certain distance of an installation be notified.
- Require annual recertification fees.
- Require permittees to defend and indemnify the city from any liabilities arising from permits and the installation, operation and maintenance of small cells.
- Require the proponent to have insurance that includes pollution liability with no electromagnetic field exclusions, as well as data privacy protection.
- Reserve the right to hire independent consultants at the applicant’s expense.
- Have the right to employ a qualified RF engineer to conduct an annual random and unannounced test of the small cell installations Permittee has in the Town, in order to certify compliance with Safety Code 6 or the Town’s Guideline, whichever of these two guidelines sets the lowest emission limit. Learn about creating local radiofrequency exposure guidelines in **Policy Suggestion 2** below.

## POLICY SUGGESTIONS

### 1. Appoint a committee to create a community-owned fiber optic network

Fiber optic cables wired directly to the premises are *always* faster, safer and more energy efficient and secure than wireless networks, including 5G. To learn more about the many economic and other benefits of community-owned fiber optics, please visit [Connected Communities ~ Wired fiber for Sustainable Last-Mile Solutions](#).

### 2. Establish a precautionary radiofrequency exposure guideline for your Town

Toronto has done it. So has Salt Spring Island, BC. These local governments assessed available health, environmental and technical data, concluded there are uncertainties in the science regarding the potential health risks associated with long-term exposures to radiofrequency radiation, and created exposure guidelines for their communities that are hundreds of times more protective than Safety Code 6. Although complying with these stricter municipal guidelines is voluntary, most telecommunication proponents do comply.

Salt Spring has incorporated its guideline - which at  $2\mu\text{W}/\text{cm}^2$  is 500 times more stringent than Health Canada's - right into the body of its antenna siting protocol. Here is the wording used:

"No cell phone antenna should be installed within 500 metres of any facility concerned with continuous human activity. A proponent wishing to install an antenna closer than this distance should demonstrate, using an independent consultant acceptable to the Islands Trust, that incident power density is less than 2 microwatts per square cm ( $2\mu\text{W}/\text{cm}^2$ ) at any facility concerned with continuous human activity within 500 metres of the proposed antenna. Additional antennae to be mounted on existing towers must also meet these standards, so that incident power density at any any facility where there is continuous human activity stays below 2 microwatts per square cm."

## 10 REASONS WHY LOCAL GOVERNMENTS ARE CREATING RADIOFREQUENCY EXPOSURE LIMITS THAT ARE MORE PROTECTIVE THAN SAFETY CODE 6

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1. Safety Code 6 is a *guideline* and not a *standard*. While *standards* are enforceable, *guidelines* are "recommendations" that are not mandatory to follow.
2. Safety Code 6 has not been updated for decades, despite the fact that the sources of exposure to radiofrequency radiation continue to increase.
3. Safety Code 6 is based on an out-dated thermal effect that tells us harm only occurs when heating happens. Although this theory has value when it comes to *non-living substances*, it does not adequately protect *living organisms*.
4. Instead, *biologically based guidelines* (often less than 1 microW/cm<sup>2</sup>) or the *precautionary principal* should be invoked when it comes to exposing living things to radiofrequency radiation.
5. Another critical aspect that makes Safety Code 6 inappropriate for living organisms is that it relies on a *6-minute average* (measured as root-mean-squared) rather than maximum exposures. *Extremes* are what instigate biological effects and not averages.
6. Furthermore, what this average fails to consider is exposure from all sources that may vary beyond a 6-minute timeframe, and thus not be captured by a 6-minute average.
7. Another issue – Safety Code 6 considers average exposure levels but does not recognize **peak values** for exposure, and it is peak emissions that do the most biological damage.
8. Also, because the millimetre waves that 5G will employ have not been tested for long-term exposure, it is critical that we establish limits that err on the side of caution.
9. Finally, cumulative exposure is not considered by Health Canada, and it is cumulative exposure that causes most of the adverse health effects.

Taking a small amount of arsenic once may not be lethal, but if taken daily, it will eventually poison the body. The same applies to radiofrequency radiation.

10. For these reasons, we need to be very careful what limits we use to protect vulnerable populations (children, pregnant women, those who are chronically ill). We need to protect the population not against a heating effect but rather against cancer, reproductive problems, and neurohormonal and immunological problems, all of which have been documented in scientific peer-reviewed studies to occur at levels well below Safety Code 6 guidelines.

## Specific Content Suggestions

### Section 1: PERMITTING PROCESS

**1.1 Permit Required.** No small cell installation shall be constructed, erected, modified, mounted, attached, operated or maintained within the Town on or within any public right-of-way without the issuance of a permit. No approval granted under this chapter shall confer any exclusive right, privilege, license or franchise to occupy or use the public right-of-way of the Town for delivery of telecommunications services or any other purpose.

**1.2 Application Content.** All permit applications must include:

A. Detailed site and engineering plans for each proposed small cell installation, including full address, GIS coordinates, a list of all associated equipment necessary for its operation, as well as a proposed schedule for the completion of each small cell installation covered by the application.

B. A master plan showing the geographic service area for the proposed small cell installation(s), and all of applicant's existing, proposed and anticipated installations in the Town.

C. Certification that the proposed small cell installation(s) addresses an existing and significant gap in coverage in the service area, such

certification to include a detailed map of the "gap areas" and documentation of such gaps causing an inability for a user to connect with the land-based national telephone network or maintain a connection capable of supporting a reasonably uninterrupted communication.

D. Photographs of proposed facility equipment.

E. Visual impact analyses with photo simulations including both "before" and "after" appearances, including simulations of the appearance of the equipment from the perspective of any property owner within 100 metres.

F. Certification by a certified radiofrequency engineer that the small cell installation will comply with Safety Code 6, or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit, including aggregate emissions for all co-located equipment.

G. Certification that the applicant has a right under federal law to install wireless telecommunications facilities in the public right-of-way.

H. Documentation demonstrating a good faith effort to locate the small cell installation in accordance with the preferred provisions of this protocol.

I. Documentation that owners of all properties within 200 metres of the proposed small cell installation have been notified in writing via certified mail of the proposed installation, including its exact location and that a blaze orange sign measuring at least 22 centimetres by 30 centimetres has been conspicuously placed at the proposed location of each small cell installation.

J. An executed indemnification agreement as set forth in section 1.7 hereof, and documentation that applicant and any third party on whose behalf the small cell facility is being constructed and any co-locator is in possession of General Liability Insurance that does not exclude claims of harm related to exposure to radiofrequency microwave radiation.

K. A disclosure of all related third parties on whose behalf the applicant is acting, including contracting parties and co-locaters.

L. If the small cell installation is proposed to be attached to an existing utility pole or wireless support structure owned by an entity other than the Town, sufficient evidence of the consent of the owner of such pole or wireless support structure to the proposed collocation.

M. Performance specifications and data that identify the maximum and minimum amount or level of radiofrequency emissions that are produced by the equipment when it is in full operating mode, and a monitoring plan for the Applicant's equipment capable of tracking and recording the daily amounts or levels of radiofrequency emissions that are produced by the equipment in order to verify that average emissions do not exceed the levels permitted either by Safety Code 6 or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit.

**1.3 Application Fee.** The Town shall assess a per-installation fee of \_\_\_\_\_ to cover the Town's costs of processing, reviewing, evaluating, conducting a public hearing, and other activities involved in consideration of the application, and conducting oversight of the construction of the small cell installation to ensure compliance with zoning requirements.

**1.4 Consultant Fee.** The Town shall have the right to retain an independent technical consultant to assist the Town in its review of the application. The reasonable cost of the review shall be paid by the applicant.

**1.5 Hydro Fees.** Permittee shall pay to the Municipality an annual hydro consumption surcharge of two hundred and fifty dollars (\$250) per Structure. This amount is due on January 2 of each year and is not pro-rateable or refundable.

**1.6 Compliance Bond.** Upon approval of the application, the Permittee shall be required to post a bond in the amount of \$50,000 for each small cell installation. Such bond is to be held and maintained during the entire period of Permittee's operation of each small cell installation in the Town as a guarantee that as



determined by a qualified independent RF engineer, as outlined in Section 1.11.2 below, no such installation, including any co-located equipment exceeds or will exceed the allowable Safety Code 6 limits for RF radiation or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit.

**1.7 Indemnification.** Permittee shall provide an executed agreement in the form provided by the Town, pursuant to which Permittee agrees to defend, hold harmless and fully indemnify the Town, its officers, employees, agents, attorneys, and volunteers, from (i) any claim, action or proceeding brought against the Town or its officers, employees, agents, or attorneys to attack, set aside, void, or annul any such approval of the Town or (ii) a successful legal action brought against the Town for loss of property value or other harm caused by the placement or operation of a small cell installation. Such indemnification shall include damages, judgments, settlements, penalties, fines, defensive costs or expenses, including, but not limited to, interest, attorneys' fees and expert witness fees, or liability of any kind related to or arising from such claim, action, or proceeding whether incurred by the Permittee, the Town and/or the parties initiating or bringing such proceeding. The agreement shall also include a provision obligating the Permittee to indemnify the Town for all of the Town's costs, fees and damages which the Town incurs in enforcing the indemnification provisions of this Section.

**1.8 Notice of Public Meeting.** Within ten business days of receipt of a full and complete application for the installation of a small cell facility in the public Right of Way, the Town shall schedule a public meeting to be held within 60 days. Notice of such meeting shall be sent by the applicant to all property owners within 200 metres of each proposed installation, such notice to be sent by certified mail. At the public meeting, members of the public shall be given an opportunity to comment regarding the proposed installation

**1.9 Hazardous Substances.** Permittee specifically acknowledges that the Town is not responsible for the escape, discharge or release of any hazardous substances from the Equipment, and specifically agrees to indemnify, protect and save the Town harmless from any and all actions, causes of actions, claims and demands regarding any such hazardous substance that has escaped, been

discharged or released from the Equipment unless caused by the gross negligence or willful misconduct of the Town, its elected officials, appointed officers, employees, agents, contractors or any person the Town is responsible for in law.

**"Hazardous Substance"** means any hazardous or toxic substance, and includes radiofrequency electromagnetic energy, or other radiation, petroleum products and byproducts, industrial wastes, contaminants, pollutants, dangerous substances, and toxic substances, as defined in or pursuant to any law, ordinance, rule, regulation, bylaw or code, whether federal, provincial or municipal.

**1.10 Environmental Liability.** Permittee agrees to assume all environmental liability under federal, provincial and local government laws in Canada, as a responsible person or otherwise, relating to its occupancy and use of the Facilities, including but not limited to any liability for clean-up of any Hazardous Substance in, on, under, along, across and around the Facilities, which are proven to result directly from:

(a) the installation, occupation, operation and removal by Permittee of the Equipment;

(b) any materials or goods brought to the Facilities by Permittee, or by any other person with the express or implied consent of Permittee.

Permittee shall not be responsible for, or required to remove or remediate any Hazardous Substances that have migrated onto or into a Facility or which existed at a Facility prior to Permittee's occupation or use of such Facility.

### **1.11 Annual Re-certification.**

**1.11.1** Each year, commencing on the first anniversary of the issuance of the permit, the Permittee shall submit to the Town an affidavit which shall list all active small cell wireless installations it owns within the Town by location, certifying that

(1) each active small cell installation is covered by liability insurance with no electromagnetic field exclusions in the amount of \$2,000,000 per installation, naming the Town as additional insured; and

(2) each active installation has been inspected for safety and found to be in sound working condition and in compliance with all federal safety regulations concerning radiofrequency exposure limits or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit.

**1.11.2** The Town shall have the right to employ a qualified RF engineer to conduct an annual random and unannounced test of the Permittee's small cell wireless installations located within the Town to certify their compliance with all Safety Code 6 radiofrequency emission limits or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit. The reasonable cost of such tests shall be paid by the Permittee.

**1.11.3** In the event that such independent tests reveal that any small cell installation or installations owned or operated by Permittee or its Lessees, singularly or in the aggregate, is emitting RF radiation in excess of Safety Code 6 exposure guidelines or the Town's radiation exposure guideline, whichever of these two guidelines sets the lowest emission limit, the Town shall notify the Permittee and all residents living within 500 metres of the small cell installation(s) of the violation, and the Permittee shall have forty-eight (48) hours to bring the small cell installation(s) into compliance. Failure to bring the small cell installation(s) into compliance shall result in the forfeiture of all or part of the Compliance Bond, and the Town shall have the right to require the removal of such installation(s), as the Town in its sole discretion may determine is in the public interest.

**1.11.4** Any small cell wireless installation which is no longer in use shall be removed by the Permittee within 30 days of being taken out of use.

**1.11.5** Any small cell wireless installation which is not removed within 30 days after being listed as no longer in use in the annual re-certification

affidavit shall be subject to a fine of \$100/day until such installation is removed.

**1.11.6** Where such annual re-certification has not been properly or timely submitted, or equipment no longer in use has not been removed within the required 30-day period, no further applications for small cell wireless installations will be accepted by the Town until such time as the annual re-certification has been submitted and all fees and fines paid.

**1.12 Non-Permitted Installations** Any small cell installation constructed, erected, modified or enhanced prior to the issuance of a site-specific permit from the Town shall be removed prior to the submission of any other application. No application for a small cell installation shall be considered, and no so-called "shot clock" for approval shall commence, while such unauthorized installations remain.

**1.13 Notice of Permit Filing.** Notice of the filing of any permit submitted pursuant to this protocol shall be sent to all property owners within 200 metres of each and every proposed small cell installation within five (5) days of such filing, such notice to be sent by certified mail at the expense of the Permittee.

**1.14 Public Availability of Permit Applications.** All permit applications submitted pursuant to this protocol, including all related documents, shall be made available for viewing and/or copying by any member of the public during normal business hours at the relevant office of the Town. Any charge for copies shall be limited to the Town's actual cost. No additional charges may be assessed against any member of the public for access to the entire permit and all of its related documents.

## **Section 2: LOCATION AND CONFIGURATION PREFERENCES**

**2.1 Siting Guidelines.** The purpose of this section is to provide guidelines to applicants and the reviewing authority regarding the preferred locations and configurations for small cell installations in the Town, provided that nothing in this section shall be construed to permit a small cell installation in any location that is otherwise prohibited by the Town code.

**2.2 Order of preference - Location.** The order of preference for the location of small cell installations in the Town, from most preferred to least preferred is:

1. Industrial zone
2. Commercial zone
3. Mixed commercial and residential zone
4. Residential zone

**Discouraged Locations:**

**1. Land use**

- Medium and high density residential areas
- Schools, daycare facilities, playgrounds and similar facilities
- Areas that adversely impact view corridors
- Heritage areas (unless visibly unobtrusive) or on heritage structures unless it forms an integrated part of the structure's overall design (i.e. through the use of stealth structures).
- Nature protection areas
- Environmentally sensitive ecosystems

**2. Other considerations, irrespective of land use designation**

- Locations directly in front of doors, windows, balconies or residential frontages. (Please see Section 3.7 for specific setback requirements)
- Community gathering places such as community halls, churches, commercial eating & drinking establishments
- Sites of topographical and geographic prominence  
( *See Note 1* )

**Section 3: INSTALLATION SPECIFICATIONS**

**3.1** For any Wireless Telecommunications Facility (WTF) that is

- installed in the public rights-of-way, or
- attached to any building , or
- has antennas installed at a height that is lower than 100 feet off the ground,

The Permittee must install only antennas, radios and other supporting equipment that have no chance of exceeding a total of **X milliwatts of Effective Radiated Power (ERP)** from the face of the antenna shroud, for all of the equipment operating at or connected to this WTF.

**X** is defined by the Town's due diligence that defines the **minimum ERP needed** to provide three to five bars on a cell phone for telecommunications service at 2,500 feet away from the antenna.

**3.2** The Permittee must construct, install and operate the small cell installation in strict compliance with the plans and specifications included in the application.

**3.3** Where feasible, as new technology becomes available, the Permittee shall replace larger, more visually intrusive facilities with smaller, less visually intrusive facilities, after receiving all necessary permits and approval required by the Town.

**3.4** The Permittee shall submit and maintain current at all times basic contact and site information on a form to be supplied by the Town. The Permittee shall notify the Town of any changes to the information submitted within seven days of any change, including the name or legal status of the owner or operator.

**3.5** At all times, all required notices and signs shall be posted on the site as required by ISED and federal law, and as approved by the Town. The location and dimensions of a sign bearing the emergency contact name and telephone numbers shall be posted pursuant to the approved plans.

**3.6** The Permittee shall maintain current at all times liability and property insurance including pollution liability with no electromagnetic field exclusions for each small cell installation in the Public Right of Way in the amount of \$2,000,000 (Two Million dollars) naming the Town as additional insureds.

**3.7** The proposed small cell installation shall have an adequate fall zone to minimize the possibility of damage or injury resulting from pole collapse or failure, icfall or debris fall, and to avoid or minimize all other impacts upon adjoining properties.

**3.8** Every effort shall be made to locate small cell installations no less than 650 metres away from the Permittee's or any Lessee's nearest other small cell installation, or within 500 metres of any school (nursery, elementary, junior high, and high school), trail, park or outdoor recreation area, sporting venues, and residential zones. ( *See Note 2* )

**3.9** A single or co-located small cell installation must be mounted on an existing structure such as a utility or lighting pole that can support its weight and the weight of any existing co-located equipment. All new wires needed to service the small cell installation must be located within the width of the existing structure so as to not exceed the diameter and height of the existing utility pole.

**3.10** All equipment not to be installed on or inside the pole must be located underground, flush to the ground, within one metre of the utility pole. Each installation is to have its own dedicated power source to be installed and metered separately.

**3.11** If a Permittee proposes to replace a pole in order to accommodate a small cell installation, the pole shall match the appearance of the original pole to the extent feasible, unless another design better accomplishes the objectives of this section. Such replacement pole shall not exceed the height of the pole it is replacing by more than two metres.

**3.12** Each small cell installation facility shall be designed to be resistant to, and minimize opportunities for, unauthorized access, climbing, vandalism, graffiti and other conditions that would result in hazardous situations, visual blight, or attractive nuisances. The Town may require the provision of warning signs, fencing, anti-climbing devices, or other techniques to prevent unauthorized access and vandalism when, because of their location or accessibility, a small cell installation has the potential to become an attractive nuisance.

**3.13** The Permittee shall repair, at its sole cost and expense, any damage including, but not limited to, subsidence, cracking, erosion, collapse, weakening, or loss of lateral support to Town streets, sidewalks, walks, curbs, gutters, trees, parkways, street lights, traffic signals, improvements of any kind or nature, or utility lines and systems, underground utility line and systems, or sewer systems

and sewer lines that result from any activities performed in connection with the installation or maintenance of a small cell installation in the public right-of-way. The Permittee shall restore such areas, structures and systems to the condition in which they existed prior to the installation or maintenance that necessitated the repairs. In the event the Permittee fails to complete such repair within the number of days stated on a written notice by the permitting authority, the permitting authority shall cause such repair to be completed at Permittee's sole cost and expense.

**3.14** Prior to issuance of a building permit, the applicant shall obtain the permitting authority's approval of a tree protection plan prepared by a certified arborist if the small cell installation will be located within the canopy of a street tree, or a protected tree on private property, or within a 5-metre radius of the base of such a tree. Depending on site-specific criteria (e.g., location of tree, size, and type of tree, etc.), a radius greater than 5 metres may be required by the permitting authority. If there is evidence that the radiation from nearby antennas is causing trees to weaken or die, these antennas must be removed by the Permittee at the Permittee's sole cost and expense.

**3.15** Applicant shall abide by all local, provincial and federal laws regarding design, construction and operation of the small cell installation, including all provincial and federal Occupational Health and Safety Regulations for worker safety in, around and above power lines and near radiation-emitting devices.

**Note 1:**

The Town may also wish to include preference for the *configuration* of small cell installations, from most preferred to least preferred.

Configuration preferences might be: (1) Co-located with existing wireless facilities, (2) Mounted on existing utility poles, (3) Mounted on new poles or towers.

Considerations include the structural integrity of existing utility poles, the fact that mandating co-located equipment could result in an unfair aesthetic burden on some residents or neighborhoods, and the possibility that new poles might be bigger, heavier and more obtrusive.



**Note 2:**

Every effort should be made to avoid placing small cell installations in close proximity to residences. Viable and defensible setbacks will vary based on zoning.

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