

**MARSHFIELD WIRELESS  
TELECOMMUNICATIONS FACILITIES  
BYLAW**

Adopted March 4, 2003

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## 1.1 Title

This bylaw shall be known as the Wireless Telecommunications Facilities Bylaw of the Town of Marshfield. Wireless telecommunication facilities shall include all wireless telecommunication providers, licensed and/or regulated by the Federal Communications Commission, and associated equipment and buildings. Nothing in this bylaw shall be construed to restrict amateur ham radio operators and town municipal services, beyond that already covered by the Marshfield Zoning Regulations.

## 1.2 Purposes

The purpose of this bylaw is to protect the public health, safety and general welfare of the Town of Marshfield while accommodating the communication needs of residents and businesses. This bylaw shall:

- A. Preserve the character and appearance of the Town of Marshfield while allowing adequate wireless telecommunications services to be developed.
- B. Protect the scenic, historic, environmental, and natural resources of the Town of Marshfield.
- C. Provide standards and requirements for the operation, siting, design, appearance, construction, monitoring, modification, and removal of wireless telecommunications facilities and towers.
- D. Minimize tower and antenna proliferation by requiring the sharing of existing communications facilities, towers, and sites where possible and appropriate.
- E. Promote the use of existing structures to provide these services.
- F. Facilitate the provision of telecommunications services to the residences and businesses of the Town of Marshfield.
- G. Minimize the adverse visual effects of towers and other facilities through careful design and siting standards.
- H. Encourage, through performance standards and incentives, the location of towers away from higher density residential areas and from other sensitive areas such as schools, hospitals and childcare facilities.
- I. Follow the guidelines and regulations set forth in the Marshfield Town Plan and Zoning Regulations.

### **1.3 Authority**

Pursuant to 24 V.S.A. §4401 et seq. the Development Review Board of the Town of Marshfield is authorized to review, approve, conditionally approve, and deny applications for wireless telecommunications facilities, including sketch, preliminary and final plans, and installation. Pursuant to 24 V.S.A. §4407, the Board is authorized to hire qualified persons to conduct an independent technical review of applications and to require the applicant to pay for all reasonable costs thereof.

### **1.4 Consistency With Federal Law**

In addition to other findings required by this bylaw, the Board shall find that its decision regarding an application is intended to be consistent with federal law, particularly the Telecommunications Act of 1996. The bylaw does not:

- A. Prohibit or have the effect of prohibiting the provision of personal wireless services;
- B. Unreasonably discriminate among providers of functionally equivalent services; or
- C. Regulate personal wireless services on the basis of the environmental effects of radio frequency emissions to the extent that the regulated services and facilities comply with the Federal Communications Commission (FCC) regulations concerning such emissions.

### **1.5 Definitions**

[See Glossary of Terms included with this packet .]

### **1.6 Permitted and Prohibited Locations**

Wireless telecommunications towers or facilities may be permitted as conditional uses upon compliance with the provisions of this bylaw in the following zoning districts:

Village Residential  
Agricultural and Rural Residential

In addition, within the Village Residential district, only small scale facilities will be allowed as defined below.

Additionally, freestanding telecommunications towers or antennas not defined as small scale facilities, may not be located in any of the following locations:

- A. Within 100' or the height of the tower, which ever is greater, of a State or Federally designated wetland.
- B. The habitat of any State listed Rare or Endangered Species.

- C. Within 300' horizontally from any Historic District or property eligible to be listed on the Federal Historic Register.
- D. Closer than 200' horizontally to the boundary of the property on which the tower is located.
- E. Closer than 500' horizontally to any structure existing at the time of the application which is used as either a primary or secondary residence, to the property of any school, or to any other building.
- F. Within 100' or the height of the tower, which ever is greater, horizontally of any river or perennial stream.
- G. Within 500' horizontally of any known archeological site.
- H. Within 1,000' horizontally of a designated scenic road or highway.

### **1.7 Small Scale Facilities**

The placement of wireless telecommunications antennas, repeaters or microcells on existing buildings, structures, roofs, or walls, and not extending more than 10 feet from the same, or the installation of ground based facilities less than 30 feet in height, may be approved by the Development Review Board, provided the antennas meet the applicable requirements of this bylaw, upon submission of:

- A. A final site and building plan.
- B. A report prepared by a qualified engineer indicating the structure's suitability for the telecommunications facility, and that the proposed method of affixing the antenna or other device to the structure complies with standard engineering practices. Complete details of all fixtures and couplings and the exact point(s) of attachment shall be indicated, as well as any additional supporting equipment or facilities.
- C. For a facility to be installed on or within an existing structure, a copy of the applicant's executed contract with the owner of the existing structure.
- D. However, no such device may be located closer than 50' to an existing residence.

### **1.8 Application Requirements for Wireless Telecommunications Facilities not Covered Under Section 1.7**

An applicant for a permit must be a personal wireless service provider or FCC licensee, or must provide a copy of its executed contract to provide land or facilities to such an entity, to the Development Review Board at the time that an application is submitted. A permit shall not be granted for a tower or facility to be built on speculation.

No construction, alteration, modification (including the installation of antennas for new uses) or installation of any wireless telecommunications tower or facility shall commence without a conditional use permit first being obtained from the Development Review Board.

In addition to information otherwise required in the Town of Marshfield's Town Plan and Zoning Regulations, applicants for wireless telecommunications towers or facilities shall include the following supplemental information:

- A. The name and address of the applicant, the record landowners and any agents of the landowners or applicants as well as an applicant's registered agent and registered office. If the applicant is not a natural person, the name and address of the business and the state in which it is incorporated and has its principal office shall be provided.
- B. The name, address and telephone number of the person to be contacted and who is authorized to act in the event of an emergency regarding the structure or safety of the facility.
- C. The names and addresses of the record owners of all abutting property.
- D. A report from qualified engineers that:
  - i. Describes the facility height, design and elevation, from a structural engineer.
  - ii. Documents the height above grade for all proposed mounting positions for antennas to be collocated on a telecommunications tower or facility and the minimum separation distances between antennas, from a radio frequency engineer.
  - iii. Describes the tower's proposed capacity, including the number, height and type(s) of antennas that the applicant expects the tower to accommodate, from a structural engineer.
  - iv. In the case of new tower proposals, demonstrates that existing telecommunications sites and other existing structures, or other structures proposed by the applicant within 5 miles of the proposed site cannot reasonably provide adequate coverage and adequate capacity to the Town of Marshfield. The documentation shall include, for each facility site or proposed site within such radius, the exact location, ground elevation, height of tower or structure, and sufficient additional data to allow the independent reviewer to verify that other locations will not be suitable.

- v. Demonstrates that the applicant has analyzed the feasibility of using "repeaters" or micro-cells in conjunction with all facility sites listed in compliance with Section 1.8. D. iv (above) to provide coverage to the intended service area.
  - vi. Describes potential changes to those existing facilities or sites in their current state that would enable them to provide adequate coverage.
  - vii. Describes the output frequency, number of channels, sector orientation and power output per channel, as appropriate for each proposed antenna.
  - viii. Includes a written explanation for use of the proposed facility, including reasons for seeking capacity in excess of immediate needs if applicable, as well as plans for additional development and coverage within the Town.
  - ix. Demonstrates the tower's compliance with the municipality's structural standards and setbacks for towers and support structures.
  - x. Provides assurance that at the proposed site the applicant will establish and maintain compliance with all FCC rules and regulations, particularly with respect to radio frequency exposure. The Development Review Board may hire independent engineers to perform evaluations of compliance with the FCC regulations, standards and requirements on an annual basis at unannounced times.
  - xi. Includes other information required by the Board that is necessary to evaluate the request.
  - xii. Includes an engineer's stamp and registration number, where appropriate.
  - xiii. A letter of intent committing the facility owner and his or her successors to permit shared use of the facility if the additional user agrees to meet reasonable terms and conditions for shared use.
- E. For a facility to be installed on an existing structure, a copy of the applicant's executed contract including option agreements with the owner of the existing structure (to be provided to the Development Review Board at the time an application is submitted).
- F. To the extent required by the National Environmental Policy Act (NEPA) as administered by the FCC, a complete Environmental Assessment (EA) draft or final report describing the probable impacts of the proposed facility.
- G. A copy of the application or draft application for an Act 250 permit, if applicable.

The permit application shall be signed under the pains and penalties of perjury.

### **1.9 Site Plan Requirements for Wireless Telecommunications Facilities not Covered Under Section 1.7**

In addition to site plan requirements found elsewhere in the Town of Marshfield's Zoning Regulations, site plans for wireless telecommunications facilities shall include the following supplemental information:

- A. Location Map: a copy of a portion of the most recent USGS Quadrangle map showing the area within at least a two-mile radius of the proposed facility site.
- B. Vicinity Map showing the entire vicinity within a 2500-foot radius of the facility site, including the facility or tower, topography, public and private roads and driveways, buildings and structures, water bodies, wetlands, landscape features, historic sites and habitats for endangered species. It shall indicate the property lines of the proposed facility site parcel and all easements or rights of way needed for access from a public way to the facility.
- C. Proposed site plans of the entire development indicating all improvements including landscaping, utility lines, guy wires, screening and roads.
- D. Elevations showing all facades and indicating all exterior materials and color of towers, buildings and associated facilities.
- E. Computer generated photo simulations of the proposed facility showing the facility from all public rights-of-way and any adjacent property from which it may be visible. Each photo must be labeled with the line of sight, elevation and with the date taken imprinted on the photograph. The photos must show the color of the facility and method of screening.
- F. In the case of a proposed site that is forested, the approximate average height of the existing vegetation within 200 feet of the tower base.
- G. Construction sequence and time schedule for completion of each phase of the entire project.

Plans shall be drawn at a minimum at the scale of one (1) inch equals fifty (50) feet.

### **1.10. Collocation Requirements**

An application for a new wireless telecommunications facility shall not be approved unless the Development Review Board finds that the facilities planned for the proposed structure cannot be accommodated on an existing or approved tower or structure due to one of the following reasons:

- A. The proposed antennas and equipment would exceed the structural or spatial capacity of the existing or approved tower or facility, as documented by a qualified engineer licensed to practice in the State of Vermont. Additionally, the existing or approved tower cannot be reinforced, modified or replaced to accommodate planned or equivalent equipment, at a reasonable cost, to provide coverage and capacity comparable to that of the proposed facility.
- B. The proposed antennas and equipment would cause interference materially impacting the usefulness of other existing or permitted equipment at the existing or approved tower or facility as documented by a qualified engineer and such interference cannot be mitigated at a reasonable cost.
- C. The proposed antennas and equipment, either alone or together with existing facilities, equipment or antennas, would create excessive radio frequency exposure.
- D. Existing or approved towers and structures cannot accommodate the planned equipment at a height necessary to function reasonably or are too far from the area of needed coverage to function reasonably as documented by a qualified engineer.
- E. Aesthetic reasons make it unreasonable to locate the planned telecommunications equipment upon an existing or approved tower or building.
- F. There is no existing or approved tower in the area in which coverage is sought.
- G. Other unforeseen specific reasons make it unreasonable to locate the planned telecommunications equipment upon an existing or approved tower or building.

Towers must be designed to reasonably provide for future placement of antennas upon the tower and to accept antennas mounted at varying heights when overall permitted height allows. Towers shall be designed structurally and in all other respects to reasonably provide for both the applicant's antennas and additional antennas when overall permitted height allows.

### **1.11 Access Roads and Above Ground Facilities**

Where the construction of new wireless telecommunications towers and facilities requires construction of or improvement to access roads, to the extent practicable, roads shall take into consideration the contour of the land, and be constructed or improved within forest fringe areas, along the edge of open fields, and not in open fields. Utility or service lines shall be designed and located so as to minimize or prevent disruption to the scenic character or beauty of the area. The Town may require closure of access roads to vehicles following facility construction where it is determined that site conditions warrant the same and where maintenance can reasonably access the facility site on foot.

## 1.12 Tower and Antenna Design Requirements

Proposed facilities shall not unreasonably interfere with the view from any public park, natural scenic vista, historic building or district, or major view corridor. Height and mass of facilities shall not exceed that which is essential for the intended use and public safety.

- A. Towers, antennas and any necessary support structures shall be designed to blend into the surrounding environment through the use of color camouflaging and architectural treatment, except in cases in which the Federal Aviation Authority (FAA), state or federal authorities have dictated color. Use of stealth design, including those which imitate natural features may be required in visually sensitive locations, and are highly recommended for all installations.
- B. In order to protect public safety and to preserve the scenic character and appearance of the area, the height limit for towers, antennas and tower-related fixtures shall be not more than 20 feet above the average height of the tree line measured within 100 feet of the highest vertical element of the telecommunications facility. Notwithstanding the above, additional height may be approved upon a finding by the Development Review Board that the additional height is necessary in order to provide adequate coverage in the Town of Marshfield or to accomplish collocation of facilities and that the additional height will not cause an undue visual impact on the scenic character or appearance of the area.
- C. Towers, antennas and any necessary support structures shall be designed to avoid having an undue adverse aesthetic impact on prominent ridgelines and hilltops. In determining whether a tower's aesthetic impact would be undue and adverse, the Board will consider:
  - i. the period of time during which the proposed tower would be viewed by the traveling public on a public highway;
  - ii. the frequency of the view experienced by the traveling public;
  - iii. the degree to which the tower would be screened by existing vegetation, the topography of the land, and existing structures;
  - iv. background features in the line of sight to the proposed tower that obscure the facility or make it more conspicuous;
  - v. the distance of the proposed tower from the view point and the proportion of the facility that is visible above the skyline;
  - vi. the sensitivity or unique value of a particular view affected by the proposed tower;
  - vii. significant disruption of a viewshed that provides context to a historic or

scenic resource.

The Board shall have the authority to impose conditions consistent with the purpose of this section in approving a proposed facility. Furthermore, the Board may designate an alternative location for the tower to be evaluated by the applicant if it is determined that the proposed location would result in undue adverse aesthetic impacts. In consideration of this, the applicant may revise its application to include such a site, assuming it is available to the applicant and reasonably technically feasible to meet the applicant's communication objectives.

- D. All buildings and structures accessory to a tower (except for electric power poles where specifically exempted by the Board) shall meet the minimum setback requirements of the underlying zoning district or setback requirements specified in this bylaw. If the minimum setbacks of the underlying zoning district are less than the height of the tower, including antennas or other vertical appurtenances, the minimum distance from the tower to any property line shall be no less than the height of the tower, including antennas and other vertical appurtenances.
- E. Ground mounted equipment or antennas as well as buildings and structures accessory to a tower shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better complements the architectural character of the surrounding neighborhood. A planted or vegetative screen shall be a minimum of ten feet in depth with a minimum height of six feet and shall have the potential to grow to a height of at least 15 feet at maturity. Existing on-site vegetation outside the immediate site for the wireless facility shall be preserved or improved. Disturbance to existing topography shall be minimized unless the disturbance is demonstrated to result in less visual impact of the facility from surrounding properties and other vantage points.

### **1.13 Amendments to Existing Wireless Telecommunications Facility Permit**

An alteration or addition to a previously approved wireless telecommunications facility shall require a permit amendment when any of the following are proposed:

- A. Change in the number of buildings or facilities permitted on the site;
- B. Addition or change of any equipment resulting in greater visibility or structural windloading, or additional height of the tower, including profile of additional antennas, not specified in the original application.

### **1.14 Tower Lighting and Signage; Noise Generated by Facility**

Unless required by the Federal Aviation Administration ("FAA"), no lighting of towers is permitted. In any case where a tower is determined to need obstruction marking or lighting, the applicant must demonstrate that it has or will request the least visually obtrusive marking and/or lighting scheme in FAA applications. Copies of required FAA applications shall be submitted by the applicant. Heights

may be reduced to eliminate the need for lighting or another location selected.

No commercial signs or lettering shall be placed on a tower or facility. Signage shall be limited to that required by federal or state regulation.

The Board may impose conditions to minimize the affect of noise from the operation of any machinery or equipment upon adjacent properties.

### **1.15 Temporary Wireless Communication Facilities**

Any wireless telecommunications facility designed for temporary use is subject to the following:

- A. Use of a temporary facility is permitted only if the owner has received a temporary use permit from the Town of Marshfield.
- B. Temporary facilities are permitted for no longer than five days use during a special event.
- C. The maximum height of a temporary facility is 50 feet from grade.
- D. Temporary facilities must comply with all applicable portions of these regulations.

### **1.16 Continuing Obligations**

Prior to operation, the applicant's licensed engineer must certify to the Development Review Board that the facility was built as permitted by the Town of Marshfield, and the applicant's licensed engineer must annually thereafter certify to the Development Review Board that the facility is in compliance with its permit issued hereunder. Upon receiving a permit, the permittee shall annually demonstrate that he or she is in compliance with all FCC standards and requirements regarding radio frequency exposure, and provide the basis for his or her representations. The permittee shall annually demonstrate that the bond for facility removal is adequate, meets the approval of the Select Board, and the premiums have been paid for. The permittee shall annually demonstrate that the insurance policy is active, and that the premiums have been paid.

### **1.17 Facility Removal**

Abandoned, unused, obsolete, or noncompliant towers or facilities governed under this bylaw shall be removed as follows:

- A. The owner of a facility/tower shall annually, on January 15, file a declaration with the Town of Marshfield's Administrative Officer certifying the continuing safe operation of every facility/tower installed subject to these regulations. Failure to file a declaration shall mean that the facility/tower is no longer in use and considered abandoned.
- B. Abandoned or unused towers or facilities shall be removed within 180 days of

cessation of operations at the site unless a time extension is approved by the Development Review Board. In the event the tower or facility is not removed within 180 days of the cessation of operations at a site, the municipality shall notify the owner and may remove the tower or facilities. Costs of removal shall be assessed against the property or tower owner.

- C. Towers and facilities which are constructed in violation of permit conditions or application representations shall be removed within 180 days of notification of such a violation unless a time extension or negotiated solution is approved by the Development Review Board. In the event the tower or facility is not removed within 180 days of notification of such a violation, the municipality may remove the tower or facilities. Costs of removal shall be assessed against the property or tower owner.
- D. An owner who has failed to file an annual declaration with the Administrative Officer by January 15 may, by February 15, file a declaration of use or intended use and may request the ability to continue use of the facility/tower.
- E. The Applicant shall, as a condition of the conditional use permit, provide a financial surety bond payable to the Town of Marshfield and acceptable to the Select Board to cover the cost of removal of the facility and remediation of the landscape, should the above clauses be invoked.

### **1.18 Maintenance Requirements**

The Applicant shall maintain all facilities. Such maintenance shall include, but not be limited to painting, structural integrity and landscaping. In the event the applicant fails to maintain the facility, the Town of Marshfield may undertake such maintenance at the expense of the applicant or landowner.

### **1.19 Insurance Requirements**

The facility owner shall maintain a liability policy on all facilities, naming the Town of Marshfield as the beneficiary. The amount of the policy shall be \$2 million dollars in 2001 dollars, to be adjusted annually according to the consumer price index.

### **1.20 Fees**

Fees for filing an application to build or alter a wireless telecommunications facility shall be five hundred dollars (\$500.00) for each small scale facility (see Section 1.7) and one thousand dollars (\$1,000.00) for each other facility. Additional fees may include the reasonable costs of an independent technical assessment of the application that may be incurred during the review and permitting process.

### **1.21 Enforcing Agent**

The Administrative Officer shall be the agent to enforce the provisions of this bylaw.

### **1.22 Severability**

If any portion of this bylaw is held unconstitutional or invalid by a court of competent jurisdiction, the remainder of this bylaw shall not be affected.

### **1.23 Effective Date**

This bylaw shall be effective on August 1, 2001.

## GLOSSARY OF TELECOMMUNICATIONS TERMS SOURCE LIST FOR DEFINITIONS SECTION OF MODEL BYLAW

Vermont League of Cities and Towns

June 1998

Revised by CVRPC

April 2001

***Adequate Capacity:*** Capacity for wireless telephony is considered to be "adequate" if the grade of service ("GOS") is p.05 or better for median teletraffic levels offered during the typical busy hour, as assessed by direct measurement of the facility in question. The GOS shall be determined by the use of standard Erlang B calculations. As call blocking may occur in either the land line or radio portions of a wireless network, Adequate Capacity for this regulation shall apply only to the capacity of the radio components. Where capacity must be determined prior to the installation of the personal wireless services facility in question, Adequate Capacity shall be determined on the basis of a 20% busy hour (20% of all offered traffic occurring within the busiest hour of the day), with total daily traffic based on aggregate estimates of the expected traffic in the coverage area.

***Adequate Coverage:*** Coverage for wireless telephony is "adequate" within that area surrounding a base station where the predicted or measured median field strength of the transmitted signal is such that most of the time, transceivers properly installed and operated will be able to communicate with the base station without objectionable noise (or excessive bit-error-rate for digital) and without calls being dropped. In the case of cellular communications in a rural environment, this would be a signal strength of at least -90 dBm. It is acceptable for there to be holes within the area of adequate coverage as long as the signal regains its strength further away from the base station. The outer boundary of the area of adequate coverage, however, is that location past which the signal does not regain.

***Affiliate:*** When used in relation to an operator, another person who directly or indirectly owns or controls, is owned or controlled by, or is under common ownership or common control with the operator, or an operator's principal partners, shareholders, or owners of some other ownership interest. When used in relation to the municipality, any agency, board, authority or political subdivision affiliated with the municipality or other person in which the municipality has legal or financial interest.

***Alternative Design Tower Structure:*** Artificial trees, clock towers, bell steeples, light poles, silos and similar alternative-design mounting structures that camouflage or conceal the presence of antennas or towers (see also Stealth Facility).

***Antenna:*** A device for transmitting and/or receiving electromagnetic waves, which is attached to a tower or other structure.

***Antenna Height:*** The vertical distance measured from the base of the antenna support structure at grade to the highest point of the structure. If the support structure is on a sloped grade, then the average between the highest and lowest grades shall be used in calculating the antenna height.

**Antenna Support Structure:** Any pole, telescoping mast, tower tripod, or any other structure which supports a device used in the transmitting and/or receiving of electromagnetic waves.

**Applicant:** A person who applies for a telecommunications facility siting. An applicant can be the telecommunications service provider or the owner of the property.

**Available Space:** The space on a tower or structure to which antennas of a telecommunications provider are both structurally able and electromagnetically able to be attached.

**Base Station:** The primary sending and receiving site in a telecommunications facility network. More than one base station and/or more than one variety of telecommunications provider can be located on a single tower or structure.

**Bulletin 65:** Published by the Federal Communications Commission (FCC) Office of Engineering and Technology specifying radiofrequency radiation levels and methods to determine compliance.

**Cell Site:** A tract or parcel of land that contains a cellular communication antenna, its support structure, accessory building(s), and parking, and may include others uses associated with and ancillary to cellular communications transmission.

**Cellular Service:** A telecommunications service that permits customers to use wireless, mobile telephones to connect, via low-power radio transmission sites called cell sites, either to the public switched network or to other mobile cellular phones.

**Cellular Telecommunications:** A commercial Low Power Mobile Radio Service bandwidth licensed by the FCC to providers in a specific geographical area in which the radio frequency spectrum is divided into discrete channels which are assigned in groups to geographic cells within a service area and which are capable of being reused in different cells within the service area.

**Cellular Telecommunications Facility:** Consists of the equipment and structures at a particular site involved in receiving telecommunication or radio signals from mobile radio communications sources and transmitting those signals to a central switching computer which connects the mobile unit with the land-based telephone lines.

**Channel:** The segment of the radiation spectrum to or from an antenna which carries one signal. An antenna may radiate on many channels simultaneously.

**Collocation:** Locating wireless communications equipment from more than one provider on a single site.

**Common Carrier:** An entity licensed by the FCC or a state agency to supply local and/or long distance telecommunications services to the general public at established and stated rates.

**Communication Equipment Shelter:** A structure located at a base station designed principally to enclose equipment used in connection with telecommunications transmissions.

**Communication Tower:** A guyed, monopole, or self-supporting tower, constructed as a free

standing structure or in association with a building, other permanent structure or equipment, containing one or more antennas intended for transmitting and/or receiving television, AM/FM radio, digital, microwave, cellular, telephone, or similar forms of electronic communication.

**Communications Facility:** A land facility supporting antennas and/or microwave dishes that sends and/or receives radio frequency signals. Communications facilities may include structures, towers or accessory buildings.

**dBm:** Unit of measure of the power level of a signal expressed in decibels above 1 milliwatt.

**Directional Antenna:** An antenna or array of antennas designed to concentrate a radio signal in a particular area.

**Dish Antenna:** A dish-like antenna used to link communications sites together by wireless transmission of voice or data. Also called microwave antenna or microwave dish antenna.

**Facility Site:** A property, or any part thereof, which is owned or leased by one or more telecommunications facility(s) and where required landscaping is located.

**FCC:** Federal Communications Commission. The government agency responsible for regulating telecommunications in the United States.

**Frequency:** The number of cycles completed each second by an electromagnetic wave measured in hertz (Hz).

**GHz:** Gigahertz. One billion hertz

**Hertz:** (Hz) One hertz is the frequency of an electric or magnetic field which reverses polarity once each second, or one cycle per second.

**Location:** References to site location shall be the exact longitude and latitude, to the nearest tenth of a second. Bearing or orientation should be referenced to true North.

**MHz:** Megahertz, or one million hertz.

**Micro-Cell:** A low power mobile radio service telecommunications facility used to provide increased capacity in high call-demand areas or to improve coverage in areas of weak coverage.

**Microwave Antenna:** A dish-like antenna manufactured in many sizes and shapes used to link communication sites together by wireless transmission of voice or data.

**Monitoring:** The measurement, by the use of instruments in the field, of radiofrequency exposure from telecommunications facilities, towers, antennas or repeaters.

**Monopole:** A single self-supporting vertical pole with no guy wire anchors, usually consisting of a galvanized or other unpainted metal or a wooden pole with below grade foundations.

**Omnidirectional Antenna:** An antenna that is equally effective in all directions and whose size varies with the frequency and gain for which it is designed.

**Permit:** Embodies the rights and obligations extended by the municipality to an operator to own, construct, maintain, and operate its facility within the boundaries of the municipality.

**Personal Communications Services or PCS:** Digital wireless telephone technology using higher frequency spectrum than cellular.

**Personal Wireless Services:** Commercial mobile services, unlicensed wireless exchange access services. These services include: cellular services, personal communications services, specialized mobile radio services, and paging services.

**Preexisting Towers and Antennas:** Any tower or antenna for which a permit has been issued prior to the effective date of these regulations.

**Radiated-Signal Propagation Studies or Coverage Plots:** Computer generated estimates of the signal emanating, and prediction of coverage, from antennas or repeaters sited on a specific tower or structure. The height above ground, power input and output, frequency output, type of antenna, antenna gain, topography of the site and its surroundings are all taken into account to create these simulations. They are the primary tools for determining a need and whether the telecommunications equipment will provide adequate coverage for that site.

**Repeater:** A small receiver/relay transmitter and antenna of relatively low power output designed to provide service to areas which are not able to receive adequate coverage directly from a base or primary station.

**Roof and/or Building Mount Facility:** A facility in which antennas are mounted to an existing structure on the roof (including rooftop appurtenances) or a building face.

**Scenic View:** A scenic view is a wide angle or panoramic field of sight and may include natural and/or manmade structures and activities. A scenic view may be from a stationary viewpoint or be seen as one travels along a roadway, waterway, or path. A view may be to a far away object, such as a mountain, or a nearby object.

**Self-Supporting Tower:** A communications tower that is constructed without guy wires.

**Spectrum:** Relating to any transmissions or reception of electromagnetic waves.

**Stealth Facility:** Any communications facility which is designed to blend into the surrounding environment. Examples of stealth facilities may include architecturally screened roof-mounted antennas, building-mounted antennas painted to match the existing structure, antennas integrated into architectural elements, antenna structures designed to look like light poles, and structures designed to resemble natural features such as trees or rock outcroppings. (See also Alternative Design Tower Structure.)

**Structurally Able:** The determination that a tower or structure is capable of carrying the load imposed by the proposed new antenna(s) under all reasonable predictable conditions as determined by professional structural engineering analysis.

**System:** The communications transmission system operated by a telecommunications service provider in the municipality or region.

**Telecommunications Facility:** All equipment (including repeaters) and locations of equipment with which a telecommunications provider transmits and receives the waves which carry their services. This facility may be sited on one or more towers or structure(s) owned and permitted by the provider or another owner or entity.

**Telecommunications Provider:** An entity licensed by the FCC to provide telecommunications services to individuals or institutions.

**Temporary Wireless Communication Facility:** Any tower, pole, antenna, etc., designed for use while a permanent wireless facility is under construction, or for a special event or conference.

**Tower:** A vertical structure for antenna(s) that provide telecommunications services.

**View Corridor:** A three dimensional area extending out from a viewpoint. The width of the view corridor depends on the focus of the view. The focus of the view may be a single object, such as a mountain, which would result in a narrow corridor, or a group of objects, such as a downtown skyline, which would result in a wide corridor. Panoramic views have very wide corridors and may include a 360-degree perspective. Although the view corridor extends from the viewpoint to the focus of the view, the mapped portion of the corridor extends from the viewpoint and is based on the area where base zone heights must be limited in order to protect the view.

**Whip Antenna:** A vertical antenna that normally transmits signals in 360 degrees. Whip antennas are typically cylindrical in shape, narrow (less than 6 inches in diameter) and long (often measure 18 inches in height or more)