

Model Personal Wireless Services Facilities Ordinance



**Kennebec Valley Council of Governments
July 2009**

Model Personal Wireless Services Facilities Ordinance

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Introduction

Demand for wireless service continues to increase. Nationwide telecommunication service providers have installed more than 80,000 transmission sites. Industry analysts predict that between 100,000 and 200,000 new cell sites will be needed to meet the growing demand of wireless service customers. Half of these sites will likely require new towers, especially in suburban and rural areas.

A new generation of wireless communications technology helps drive this demand. Cellular sites are converting from analog to digital, which carries more calls simultaneously and allows caller ID and voicemail. Personal Communication Services (PCS) is digital communication that provides higher quality reception and can also transmit data. PCS is being expanded across the State. PCS uses higher frequencies than cellular resulting in signals traveling shorter distances. This means PCS requires more towers. Wireless services will be expanding to wireless internet, wireless cable and wireless data. This trend will also require more Personal Wireless Service Facilities (PWSF) closer to each other.

Telecommunication technology and the companies providing it are protected to some degree under the federal Telecommunications Act of 1996. This act bars local regulations that have the effect of prohibiting the siting of telecommunication towers. Unreasonable discrimination among providers is also prohibited. Permit decisions must be made within a reasonable timeframe and must be based on a factual record e.g. findings of fact and conclusion of law. This act does not allow municipal regulation of radio frequency emissions.

Telecommunication towers can be controversial. The three big issues are typically visual impact, height, and location. An effective ordinance needs to address these issues and meet the requirements of the Telecommunications Act.

This model PWSF ordinance strives to address the visual impact, height and location of towers while meeting the requirements of the federal law. Primary sources for this model are PWSF ordinances developed in 1997 for Durham, New Hampshire and the Cape Cod Commission by Kreines and Kreines a legal firm specializing in towers. The same or similar ordinances were adopted in the late 1990s and are still being used by at least 47 municipalities in New Hampshire.

This model ordinance is concerned with permitting towers that meet signal coverage needs and blend into areas where visibility may be a particular concern such as residential areas, historic districts, and scenic areas. Ground-mounted towers are limited to 10 feet above the average tree canopy height of trees within 150 feet of proposed tower with a couple of exceptions. Building-mounted PWSF taller than 10 feet above the existing building are allowed, provided they are completely camouflaged. There is a provision for a PWSF overlay zone where tall towers are allowed. An assessment of alternative sites is required if the PWSF does not meet the standards of this ordinance. There is also a provision for professional services at applicant's expense to assist with municipality authority review.

This model ordinance is designed to fit into an existing local land use ordinance, which has a

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review structure. Application of this ordinance should be reviewed by a municipal attorney prior to its adoption.

This model ordinance is a product of reviewing numerous ordinances and reports related to telecommunication towers. Feedback from the Winslow Planning Board, which recently adopted this ordinance and from participants in a cell tower workshop was appreciated and useful. Appreciation also extends to Chris Huck and Jen Boothroyd respectively Planning Director and Community Planner at KVCOG for review comments. This ordinance was prepared by Fred Snow Community Planner at KVCOG.

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Section ____: Personal Wireless Services Facilities (PWSF)

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1. Purpose

These standards are designed and intended to balance the interests of the residents of [Municipality], wireless communications providers and wireless communication customers in the siting of wireless communications facilities within the town. Beyond the objectives described in other provisions of this Ordinance, these Personal Wireless Services Facilities (PWSF) standards are also intended to:

Note: A word(s) or a blank line in brackets [] indicates that this is suggested and/or that there are options or specifics to fill in.

- a. Implement a municipal policy concerning the provisions of wireless telecommunications services, and the siting of their facilities;
- b. Establish clear guidelines, standards and time frames for the town to regulate wireless communications facilities;
- c. Ensure that all entities providing PWSF within municipality comply with the ordinances of [Municipality];
- d. Permit [Municipality] to fairly and responsibly protect public health, safety and welfare;
- e. Encourage the carriers of PWSF to co-locate, thus minimizing adverse visual impacts on the community;
- f. Support the goals and policies of the Comprehensive Plan, especially the orderly development of [Municipality] with minimal impacts on existing residential uses;
- g. Protect [Municipality's] environmental resources and rural character as consistent with the goals and

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objectives outlined by the
[Municipality's] Comprehensive Plan;

- h. Provide for the removal of towers and associated structures that are no longer being used for wireless communications purposes;
- i. Minimize any potential adverse effect of PWSF on property values; and
- j. Protect the scenic and visual character of [Municipality].

2. Permits

- a. PWSF may be permitted as a [conditional use] upon compliance with this Section or other applicable provisions of this Ordinance.
- b. No construction, alteration, modification, or installation of any PWSF shall commence without a [conditional use] permit first being obtained from the Municipal Reviewing Authority except for antenna installations as per section 5.e.

Conditional use is in brackets because some municipalities may apply site plan review permits instead or may decide to require a special exception permit, which requires a higher level of review. In any case site plan review should be a requirement.

3. Dimensional Standards

- a. Height Outside A PWSF Overlay Zone
The vertical distance between the highest point of a PWSF (ground-mounted or building mounted) and the mean natural grade at the base of the structure or building shall not exceed one hundred (100) feet, provided, however,
 - 1. Height, Utility Structures. if antennas are located on an existing utility structure, including water tower, electrical transmission

This Ordinance's approach is to encourage the use of existing structures. The existing electrical utility distribution network offers the opportunity to co-locate many PWSF along

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tower, or utility pole, the vertical height of the existing structure may not be increased by more than ten (10) feet;

existing utility rights of way.

2. Height, Existing Buildings. the highest point of a building mounted PWSF on an existing building may not be ten feet higher than the existing building unless the PWSF is completely camouflaged as provided in subsection 4 (a) and (b); and

Examples of completely camouflaged include a facility within a flagpole, steeple, or chimney.

3. Height, Ground-mounted Facilities. the highest point of ground mounted PWSF shall not exceed ten (10) feet above the average tree canopy height of the trees located within an area defined by a one hundred fifty (150) foot radius or perimeter of the mount, security barrier, or designated clear area for access to equipment, whichever is greatest. Refer to subsection 7 (d) - Average Tree Canopy Height. In high density residential zone(s) (density is greater than 3 dwelling units per acre) and commercial zone(s) when there are buildings within 300 feet of the mount the highest point of ground-mounted PWSF shall not exceed ten (10) feet above the average building height within 300 feet of the mount.

The intention is to keep PWSF in scale with surrounding buildings and tree heights. This means there will be more wireless sites, spaced more closely together, but they will be less visually intrusive than taller facilities.

- b. Height, PWSF Overlay Zone: Where the municipality establishes a PWSF Overlay District (when designated on the municipality's zoning map), PWSFs of up to [____] feet in height may be permitted. Such structures must be monopoles and shall comply with all setback requirements set forth in this Ordinance.

Surrounding land use, viewsheds, environmental and historic resources should be identified and analyzed prior to establishing an overlay district. Industrial districts, some town-owned land and portions of existing electric utility rights of ways if these areas aren't predominately low lying should be considered for inclusion. Limiting height to 200' usually eliminates need for lighting per FAA.

- c. Reconstruction of Nonconforming

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PWSF - A non-conforming ground-mounted PWSF, removed or destroyed for any reason, may be reconstructed on the same site, provided that it complies with the height restrictions of this subsection.

- d. Setbacks: All PWSFs and their equipment shelters shall comply with the building setback provisions of the zoning district in which the facility is located. Fences shall comply with the setback provisions of the zoning district in which the facility is located.
- e. Fall Zone for Ground Mounts: In order to ensure public safety, the minimum distance from the base of any ground-mounted PWSF to any property line, public road, habitable dwelling, business or institutional use, or public recreational area shall be, at a minimum, the distance equal to the fall zone, as defined in paragraph 7 (m). The fall zone may cross property lines, so long as the applicant secures a fall zone easement from the affected property owner(s). The area of the easement shall be shown on all applicable plans submitted to the Town, and the terms of the easement shall be provided as part of the site plan review. Fall zones for PWSFs may overlap.
- f. Fall Zone for Mounts: In the event that an existing structure is proposed as a mount for a PWSF, a fall zone shall not be required, but the setback provisions of the zoning district shall apply. In the case of pre-existing nonconforming structures, PWSFs and their equipment shelters shall not increase any non-conformities.

A fall zone around ground-mounted PWSF is required to prevent hazards to people and neighboring property from potential facility collapse or falling debris. A 1996 study found that of 146 tower failures in the U.S. since 1959, only one free-standing tower (310 foot) has collapsed. In addition, the study determined that debris from tower failure is usually contained within a radius of 50% of the tower's height from its base.

4. Performance and Design Standards

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- a. Visibility - The applicant is encouraged to utilize enhancements to the property and must demonstrate that every reasonable effort has been made to cause the facility to have the least possible visual impact on the municipality.
 - i. Visual impacts are measured on the basis of:
 1. Change in community scale, as exhibited in relative height, mass or proportion of the PWSF within their proposed surroundings.
 2. New visible elements proposed on a contrasting background.
 3. Different colors and textures proposed against a contrasting background.
 4. Use of materials that are foreign to the existing environment.
 - ii. Enhancements are measured on the basis of:
 1. Conservation of opportunities to maintain community scale. e.g. buffering areas and low-lying building should not be compromised so as to start a trend away from the existing community scale.
 2. Amount and type of landscaping and/or natural vegetation.
 3. Preservation of view corridors, vistas, and viewsheds.
 4. Continuation of existing colors, textures, and materials.
 - iii. Visibility focuses on:
 1. Eliminating or mitigating visual

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impact.

2. Protecting, continuing, and enhancing the existing environment.

iv. Camouflage for Facilities on Roof of Existing Buildings:

PWSF shall be concealed or camouflaged within or behind existing or new architectural features to limit its visibility when PWSF extends above roof height of a building on which it is mounted. Facilities mounted on a roof of a building shall be stepped back from the front façade in order to limit their impact on the building's silhouette.

v. Camouflage for Facilities on Side of Existing Buildings:

PWSF mounted on a side of a building, shall blend with the existing building's architecture and the panels shall be painted or shielded with material consistent with the design features and materials of the building. All surfaces shall be non-reflective.

vi. Camouflage for Ground-Mounted Facilities:

Ground-mounted PWSF outside a PWSF Overlay Zone shall be surrounded by a buffer of dense tree growth that begins at and extends continuously from ten (10) feet beyond the security barrier and portion of equipment shelter outside security barrier for a minimum distance of one hundred and fifty (150) feet and screens views of the facility in all directions

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with an exception in High Density Residential and Commercial zones noted in subsection 3.a.3. These trees must be pre-existing (pre-existing trees are preferred) on the subject property, planted on site, or be within a landscape easement on an adjoining site.

The one hundred fifty (150) foot vegetative buffer area shall be protected by a landscape easement or be within the area of the PWSF owner's lease. The easement or lease shall specify that the trees within the buffer shall not be removed or topped, unless the trees are dead or dying and present a hazard to persons or property.

A treed buffer may not be required for a PWSF in High Density Residential or Commercial zones when there are buildings within 300 feet of the mount and when the PWSF is camouflaged.

- b. Color - To the extent that a PWSF extends above the height of the vegetation immediately surrounding it, it shall be of a color, which blends with the background or surroundings. All surfaces shall be non-reflective.
- c. Equipment Shelters – PWSF equipment shelters shall be designed consistent with one of the following design standards:
 - i. Equipment shelters shall be located in underground vaults; or
 - ii. Equipment shelters shall be designed so that the shelters are architecturally consistent, with respect to materials and

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appearance, to the buildings in the area of the PWSF; or

- iii. Equipment shelters shall be camouflaged behind an effective year-round landscape screen, equal to the height of the proposed building and/or fence. The Planning Board shall determine the style of fencing and/or landscape buffer that is compatible with the neighborhood; or
- iv. If mounted on the roof of a building, the equipment shelter shall be concealed or camouflaged so that the shelter either is not visible at grade or appears to be a part of the original structure.

d. Lighting, Signage, and Security

- i. Lighting: The mounts of PWSF shall be lighted only if required by the Federal Aviation Administration (FAA). Lighting of equipment structures and any other facilities on site shall be shielded from abutting properties. Foot-candle measurements at the property line shall be 0.5 initial foot-candles above ambient light conditions.

PWSF 200 feet or less in height aren't required to be lighted by the FAA unless near an airport, etc..

- ii. Signage: PWSF shall not contain any permanent or temporary signs, writing, symbols or any graphic representation of any kind except those needed to identify the property and the owner and warn of any danger. All signs shall comply with the requirements of this Ordinance.

- iii. Security Barrier: Ground-mounted PWSFs shall be enclosed by security fencing equipped with an anti-climbing mechanism.

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e. Historic Buildings and Districts

i. A PWSF located on or within an historic structure shall not alter the character-defining features, distinctive construction methods, or original historic materials of the building.

Some municipalities choose to prohibit PWSF in historic districts. They should consider the fact that towers, cupolas or spires on historic buildings may accommodate PWSF and be less visible than free-standing facilities.

ii. Any alteration made to an historic structure to accommodate a PWSF shall be fully reversible.

Applicant needs to insure that building's original materials, architectural design, or distinctive construction methods aren't threatened.

iii. PWSF within a historic district shall be concealed within or behind existing architectural features, or shall be located so that they are not visible from public roads and viewing areas.

Historical Commissions should be involved in the review of any PWSF located within an historic district or historic structure.

f. Scenic Landscapes and Vistas

Ground-mounted facilities outside a PWSF Overlay Zone shall not be located within open areas that are clearly visible from public roads, recreational areas, nearby or abutting properties unless these PWSF are hidden or disguised in such a way so as to blend in with their surroundings.

g. Driveways - If available, existing entrances and driveways to serve a PWSF shall be utilized, unless the applicant can demonstrate that a new entrance and driveway will result in less visual traffic, and environmental impact. New driveways to serve a PWSF shall not exceed twelve (12) feet in width. A gravel or crushed stone surface is required.

h. Antenna Types - Any antenna array placed upon an existing or proposed ground mount, utility pole, or transmission line mount shall have a diameter of no more than four (4) feet,

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exclusive of the diameter of the mount. A close mount may be required to minimize visual impacts.

i. Mounts - All ground mounts shall be of a mast or monopole type mount. Mounts affixed to the roof or side of a building shall be masts only. Lattice towers, guyed towers, and roof mounted monopoles are expressly prohibited, unless constructed as part of a reconstruction of a nonconforming structure permitted under subsection 2.b.

j. Hazardous Waste - No hazardous waste shall be discharged on the site of any PWSF. If any hazardous materials are to be used on site, there shall be provisions for full containment of such materials. An enclosed containment area shall be provided with a sealed floor designed to contain at least one hundred and ten percent (110%) of the volume of the hazardous materials stored or used on the site.

k. Noise - PWSF shall not generate noise in excess of limits permitted under the municipal noise ordinance.

l. Radio Frequency Radiation (RFR) Standards - All equipment proposed for a PWSF shall be fully compliant with the FCC Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation (FCC Guidelines), under *Report and Order*, FCC 93-326, published on August 1, 1996, and all subsequent amendments.

The federal Telecommunications Act is very clear that local governments may not regulate the placement, construction, and modification of PWSF on the basis of the environmental effects of radio frequency emission to the extent that such facilities comply with the FCC's regulations concerning such emissions. FCC requires a review under National Environmental Act to assure RFR has been addressed at federal level.

m. Federal and State Requirements - All PWSFs must meet or exceed current standards and regulations of the FAA, FCC and any other agency of the

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federal or state government with the authority to regulate PWSFs. If such standards and regulations are changed, then the owners of the facilities governed by this ordinance shall bring such facilities into compliance with such revised standards and regulations within six (6) months of the effective date of such standards and regulations, unless a more stringent compliance schedule is mandated by the controlling agency. Failure to bring a PWSF into compliance with such revised standards and regulations shall constitute grounds for removal of the PWSF as abandoned, in accordance with subsection 6, at the owner(s) expense through the execution of the posted security.

- n. Building Code - Safety Standards - To ensure the structural integrity of PWSFs, the owner of the facility shall ensure that it is constructed and maintained in compliance with the standards contained in applicable local building codes and the applicable standards for PWSFs that are published by the Electronics Industries Association, as amended from time to time. If, upon inspection, the Town concludes that a PWSF fails to comply with such codes and standards and constitutes a danger to persons or property, then upon notice being provided to the owner of the PWSF, the owner shall have thirty (30) days to bring such PWSF into compliance with such standards. If the owner fails to bring such PWSF into compliance within thirty (30) days, such action shall constitute abandonment and grounds for the removal of the facility as abandoned at the owner(s) expense through execution of the posted security.

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o. Balloon Test - The Planning Board may require a certified balloon test accurately simulating the height and location of the proposed PWSF. Public notice shall be given of the date and time of such test not less than 10 days prior thereto. The applicant shall provide photographs of such test from locations around the Town and within 20 miles from which the balloon(s) is visible.

p. Migrating Bird Protection - The applicant shall submit a plan indicating methods that it shall use to mitigate adverse impacts on migrating bird populations.

q. The owner of the PWSF, as a condition of approval, shall execute an agreement that it will indemnify and hold the Town, its officials and employees harmless from all claims against the Town for personal injury, property damages, and loss, including costs of defense and reasonable attorney's fees, arising from or related to the construction, operation repair and removal of the PWSF or any part thereof.

r. Alternative Tower Sites – If the proposed ground-mounted PWSF does not meet the standards of this Ordinance because of excessive height, insufficient camouflage or a lack of screening by existing trees or buildings then potential suitable alternative sites, where PWSFs can meet the standards and provide adequate signal coverage need to be inventoried and evaluated. More than one site each with a PWSF (that may be shorter than originally proposed) could be required. If the applicant determines that there are no suitable

While carriers may present proposals for tall facilities based on specific radio frequency (RF) engineering requirements, an independent RF engineer will be able to evaluate a carrier's proposal and will typically find that several (often two or sometimes three) of these short mounts will work just as well as one tall mount.

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alternative sites the municipality may hire at the applicant's expense a radio frequency engineer to independently assess if there are suitable alternative sites.

- s. Professional Services – The Planning Board may require that an independent radio frequency engineer be hired at the applicant's expense to substantiate the applicant's claim of technical necessity, the applicant's evaluation of proposed site(s) and alternative sites and to propose suitable alternative sites. An independent landscape architect may be hired at the applicant's expense to evaluate the applicant's visual impact analysis and proposed mitigation and to propose visual impact mitigation alternatives.

Tower review is complicated because of technical issues and because a local ordinance or Municipal Reviewing Authority decision can potentially be trumped by the federal Telecommunications Act. Civil engineers, municipal attorneys and some other consultants, which Boards normally rely on for advice are often ill-suited to assist in tower review particularly concerning the technical issues of PWSF. Should legal issues arise its useful to have the municipal attorney co-consult with or find an attorney with experience with PWSF.

- t. Average Tree Canopy Height (ATCH) ATCH shall be determined by a forestry or environmental consultant qualified to inventory tree height and determine the ATCH as defined in this Ordinance.

5. Conditions of Approval

- a. Maintenance - The owner of the facility shall maintain the PWSF in good condition. Such maintenance shall include, but shall not be limited to, painting, structural integrity of the mount and security barrier, maintenance of the buffer areas, landscaping, and camouflage materials. The Planning Board may direct the owner to perform maintenance that it determines to be required.
- b. Monitoring - The property owner and the owner of the PWSF shall agree that the Town and its appointed

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representative(s) may enter the subject property to obtain RFR measurements, noise measurements, and to perform maintenance and safety inspections at the expense of the carrier. In the case of taking RFR and or noise measurements, the municipality may enter without any advance notice to either the PWSF owner or the property owner. In all other cases, the municipality shall provide reasonable written notice to the carrier and landowner and provide them the opportunity to accompany the municipal representatives when the inspections are conducted.

- c. Certificate of Insurance - The applicant shall submit annually to the Municipal Reviewing Authority a Certificate of Insurance showing public liability insurance coverage of not less than \$1 million Combined Single Limit.

- d. Security for Removal - Recognizing the hazardous situation presented by abandoned and unmonitored telecommunications facilities, the Planning Board shall set the form and amount of security that represents the cost for removal and disposal of abandoned telecommunications facilities in the event that a facility is abandoned and the facility owner is unwilling or unable to remove the facility in accordance with Section 6. The amount of the security shall be based upon the removal cost plus, fifteen percent (15%) provided by the applicant and certified by a professional civil engineer licensed in Maine. No building permit may be issued until the applicant has deposited the just described amount of the security with the Town. The owner of the facility shall provide the

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Planning Board with revised removal cost estimate and structural evaluation prepared by a professional civil engineer licensed in Maine every five (5) years from the date of the Planning Board's approval of the site plan. If the cost has increased more than fifteen percent (15%) then the owner of the facility shall provide additional security in the amount of the increase.

- e. Antenna Installation - An antenna or antenna array may be located, without further approval, on any structure mounted PWSF legally existing prior to effective date of Section 6, and on any PWSF subsequently approved under the provisions of this Ordinance, provided that:
 - i. All carriers using the PWSF comply with provisions of this Ordinance including the requirements of co-location;
 - ii. All carriers using the PWSF comply with the terms and conditions of approval of the PWSF by the Planning Board; and
 - iii. There is no increase in the PWSF height, carrier capacity, or area of the security barrier.

Otherwise, site plan review and a [conditional use] permit is required.

6. Commencement, Abandonment, or Discontinuation of Use

- a. Commencement of Operation - Operation of a PWSF shall commence no later than nine (9) months from the date the application was approved. If the PWSF is not operating within this time period, the Planning Board, at its discretion, may revoke its approval,

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regardless of whether construction has begun.

- b. Notification of Continued Use - Beginning 12 months after Planning Board approval and continuing on an annual basis thereafter, the owner of a PWSF shall provide the Planning Board with written, signed certification that the PWSF is being used to provide Personal Wireless Services as defined. Failure to comply with this requirement shall constitute an admission that the PWSF is not in use and has been abandoned.
- c. Discontinuance - At such time that the owner plans to discontinue operation of a PWSF, the owner will notify the municipality by certified U. S. Mail of the proposed date of discontinuation of operations. Such notice shall be given no less than thirty (30) days prior to discontinuation of operations. In the event that the owner fails to give such notice, the PWSF shall be considered abandoned upon such discontinuation of operations.
- d. Removal - Upon abandonment or discontinuation of use, the owner of the facility shall physically remove the PWSF within ninety (90) days from the date of abandonment or discontinuation of use. "Physically remove" shall include, but not be limited to:
 - i. Removal of antennas, mount, equipment shelters and security barriers from the subject property.
 - ii. Proper disposal of the waste materials from the site in accordance with local and state solid waste disposal regulations.

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- iii. Restoring the site of the PWSF to its natural condition, except that any landscaping and grading shall remain in the after-condition.

- e. Failure to Remove - If the owner of the facility does not remove the facility upon the Planning Board's order, then the Municipal Reviewing Authority shall, after holding a public hearing with notice to the owner and abutters, issue a declaration of abandonment. The owner of the facility shall dismantle and remove the facility within ninety (90) days of receipt of the declaration of abandonment by the Municipal Reviewing Authority. If the abandoned facility is not removed within ninety (90) days, the municipality may execute the security to pay for this action.

- f. Failure to Maintain - If the owner of the facility fails to maintain the facility in accordance with the directions of the Municipal Reviewing Authority pursuant to paragraph 5(a), then the Municipal Reviewing Authority, shall after holding a public hearing with notice to the owner and abutters, issue a declaration of abandonment. The owner of the facility shall dismantle and remove the facility within ninety (90) days of receipt of the declaration of abandonment by the Municipal Reviewing Authority. If the abandoned facility is not removed within ninety (90) days, the Municipality may execute the security to pay for this action.

7. Definitions

- a. Adequate Signal Coverage. Coverage is "adequate" within that area surrounding a base station where the *Signal strength measured in dBm (See definition 7.i) is reported as a negative number. The lower the negative number the stronger*

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predicted or measured median field strength of the transmitted signal is such that the majority of 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 or Personal Communications Services (PCS) communications in a rural or non-urban environment, this would be a signal strength of at least – 92dBm. 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.

- b. Antenna. The surface from which wireless radio signals are sent and/or received by a PWSF.
- c. Antenna Array. A collection of antennas attached to a mount to send and receive radio signals.
- d. Average Tree Canopy Height. An average height found by inventorying the height, at above ground level (AGL) of all trees over twenty (20) feet in height within the area that extends for a distance of one hundred fifty (150) feet from the base of the mount, security barrier, or designated clear area for access to equipment whichever is greatest. Trees that will be removed for construction shall NOT be used in this calculation.
- e. Camouflaged. A PWSF that is disguised, hidden, part of an existing or proposed structure, or placed within an existing or proposed structure.

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the signal. – 85 dBm is stronger than -95 dBm, which is stronger than -102 dBM. This number represents signal strength outdoors. The - 92 dBM threshold was chosen because according to Broadcast Signal Labs in Medfield, Massachusetts up to - 93 dBm provides reliable service outside, in-vehicle, and in-building. Radiated-signal propagation studies or coverage plots are 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 whether the telecommunications equipment will provide adequate coverage for that site.

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- f. Carrier. A company that provides personal wireless services also sometimes referred to as a provider.
- g. Co-location. The use of a single mount by more than one carrier (vertical co-location), or the use of more than one mount on the same site by more than one carrier (horizontal co-location), or the use of several mounts on an existing building or structure by more than one carrier.
- h. Community Scale. Compatibility between the proposed PWSF and its surroundings in relation to the height, mass, materials, contrasts, and proportion of the proposed facility and its surroundings.
- i. dBm. Unit of measure of the power level of a signal expressed in decibels above 1 milliwatt.
- j. Environmental Assessment (EA). An EA is a document required by the Federal Communications Commission (FCC) and the National Environmental Policy Act (NEPA) when a PWSF is placed in certain designated areas.
- k. Equipment Shelter. An enclosed structure, cabinet, shed, vault, or box near the base of the mount within which are housed equipment for PWSF such as batteries and electrical equipment. Equipment shelters are sometimes referred to as base transceiver stations.
- l. Facility. See Personal Wireless Service Facility.
- m. Fall Zone. The area on the ground from the base of a structure mounted Personal Wireless Service Facility that

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forms a circle with a diameter equal to the height of the facility, including any antennas or other appurtenances.

The fall zone is the area within which there is a potential hazard from falling debris (such as ice) or collapsing material.

- n. Guyed Tower. A monopole or lattice tower that is secured to the ground or other surface by diagonal cables for lateral support.
- o. Height. The height above ground level (AGL) from the natural grade of a site to the highest point of a structure.
- p. Lattice Tower. A type of mount with multiple legs and structural cross-bracing between the legs that is self-supporting and freestanding.
- q. Mast. A thin pole that resembles a street light standard or a telephone pole. A dual-polarized antenna is typically deployed on a mast.
- r. Monopole. A thicker type of mount than a mast that is self-supporting with a single shaft of wood, steel or concrete, or other material that is designed for the placement of antennas and arrays along the shaft.
- s. Mount. The structure or surface upon which antennas are mounted. (interior or exterior) including the following two types of mounts:
 - i. Ground-mounted - A mount that is a structure affixed to the ground, other than a building, upon which one or more antennas are mounted.
 - ii. Building-mount - A mount that is:

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(1) the roof or side of a building upon which one or more antennas are mounted; or (2) a mount that is a structure affixed directly to the roof or side of a building and not part of the building, upon which one or more antennas are mounted.

- t. Personal Wireless Service Facilities (PWSF). Facility for the provision of personal wireless services, as defined by the Telecommunications Act of 1996, as amended and this Ordinance. PWSFs include a mount, antenna, equipment shelter, and other related equipment. A PWSF shall not include any of the following:
- i. Wireless communication facilities for emergency communications by public officials.
 - ii. Amateur (ham) radio stations licensed by the Federal Communications Commission (FCC)
 - iii. Parabolic Antennae less than seven (7) feet in diameter, that are an accessory use of the property.
 - iv. Temporary Personal Wireless Service Facilities in operation for one maximum period of one hundred eighty (180) days. Such temporary facilities shall be removed prior to 30 days following the maximum period.
 - v. An antenna that is an accessory use to a residential dwelling unit, provided that the PWSF is not used for commercial purposes.
- u. Personal Wireless Services. The three types of services covered by this

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Ordinance: commercial mobile radio services, unlicensed wireless services, and common carrier wireless exchange access services as described in the Telecommunications Act of 1996, as amended.

- v. Radio Frequency (RF) Engineer. An engineer specializing in electrical or microwave engineering, especially the study of radio frequencies.
- w. Radio Frequency Radiation (RFR). The emissions from PWSFs.
- x. Security Barrier. A wall, fence, or berm that restricts an area from unauthorized entry or trespass.

8. Additional Application Requirements for PWSFs.

In addition to the foregoing requirements contained in this section, applications for PWSFs shall include:

- a. For ground-mounted PWSFs that must be screened by trees a written report must be provided from a qualified forestry or environmental consultant that describes the Average Tree Canopy Height and the methodology used to determine it.
- b. A proposal to construct or modify a PWSF must include evidence of a commitment from a duly licensed carrier to utilize the tower to provide wireless communication services.
- c. Written approval by all applicable state and federal agencies, including but not limited to the FAA and FCC, including a description of any conditions or criteria for the approval, or a statement from the agency that no approval is required.

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- d. An inventory of all of the provider's existing and approved towers, antennae or sites within [Municipality] and locations in surrounding communities where wireless telecommunications are proposed to be utilized in conjunction with the facility proposed in the application. Service area maps or network maps of the applicant's existing and proposed facilities in [County].
- e. Identification of any other PWSFs existing or proposed on the site.
- f. Details of all existing or proposed accessory structures including buildings, parking areas, utilities, gates, access roads, etc.
- g. Evidence must be provided that written notice was sent, by pre-paid first class United States mail, to all other such tower and alternative tower structure owners and licensed wireless communication providers that could furnish service to the municipality utilizing existing towers and alternative tower structures and to owners of such towers. This notice shall state the applicant's siting needs and include a request for information of the co-location capabilities of the existing or previously approved facilities. Evidence that this notice requirement has been fulfilled shall include a name and address list, copy of the notice that was sent, and a return receipt request that the notices were sent as required.
- h. Evidence must be provided that existing or previously approved towers and alternative tower structures with the municipality cannot accommodate the communications equipment

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(antennae, cables, etc.) planned for the proposed tower. Such evidence shall include documentation from a qualified and licensed professional engineer that:

- i. Planned necessary equipment would exceed the structural capacity of existing and approved PWSF and alternative tower structures considering (1) the existing and planned use of those PWSFs and alternative tower structures, and (2) the existing and approved PWSFs cannot be reinforced or enlarged to accommodate planned or equivalent equipment at a reasonable cost.
 - ii. Planned equipment will cause electromagnetic frequency interference with other existing or planned equipment for that PWSF or alternative tower structure, and the interference cannot be prevented at a reasonable cost;
 - iii. Existing or approved PWSFs and alternative tower structures do not have space on which planned equipment can be placed so it can function effectively and at least in parity with other similar equipment in place or approved; or
 - iv. Other documented reasons make it technically or financially unfeasible to place the equipment planned by the applicant on existing and approved PWSFs and alternative tower structures.
- i. Evidence must be provided that the proposed PWSF cannot be co-located on existing or previously approved tower sites. Evidence should include

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an assessment of whether such PWSF sites could be changed to accommodate the proposed tower, and a general description of the projected cost of shared use of the existing or approved PWSF site.

- j. A report must be provided from a Registered Professional Engineer that describes the PWSF, the technical reasons for the PWSF design and the capacity of the PWSF, including the number(s), type(s), and volume(s) of antennae that it can accommodate and the basis for the calculation of capacity.
- k. When a proposed ground-mounted PWSF does not meet the standards of this Ordinance evidence must be provided demonstrating whether there are alternative sites that can meet the standards and provide adequate signal coverage. Using more than one site each with a shorter PWSF than was originally proposed must be considered.
- l. A letter of intent must be provided that commits the PWSF owner and its successors in interest to:
 - i. respond in a timely, comprehensive manner to a request for information from a potential co-location applicant;
 - ii. negotiate in good faith for shared use by third parties that have received an FCC license or permits; and
 - iii. allow shared use if an applicant agrees in writing to pay reasonable charges.
- m. Proof of financial capacity to build,

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maintain, and remove the proposed PWSF must be submitted.

- n. Photos showing site vegetation, existing and adjacent structures, views of and from the proposed site, topography, and land uses on the proposed parcel and on abutting properties must be provided.
- o. Landscaping plan reflecting location of proposed screening and fencing, planting areas, proposed plantings, existing plant materials to be retained and trees or shrubs to be removed must be submitted.
- p. Elevation drawings, cross-sectional area or silhouette, of the facility, drawn to scale, and showing all measurements, both linear and volumetric, showing front, sides and rear of the proposed facility including all fencing, supporting system for transmission cables running between the tower and accessory structures, control panels, antennae, and existing structures and trees. Reference any design characteristics that have the effect of reducing or eliminating visual obtrusiveness.
- q. Detail of the tower base or method of attachment to a structure. If the facility will be attached to an existing building or structure, provide measurements and elevations of the structure.
- r. An analysis of the visual impact of the proposed facility, including tower and supporting structures, which may include photo montage, field mock up, or other techniques, that identify the potential visual impacts, at design capacity, of the proposed facility. Consideration shall be given to views from roads, public areas, private

Photo simulations provide the Municipal Reviewing Authority with information to decide whether the application meets the standard for color, materials, and visual impact. Photo simulations, as part of the application should be relied on based on their representativeness, accuracy, visual clarity, and legitimacy. The National Environmental Protection Act (NEPA) review includes analysis of impacts on the

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residences, historic resources, including historic districts and structures listed in the National Register of Historic Places, and archaeological resources. The analysis of the impact on historical and archaeological resources shall meet the requirements of the Maine State Historical Preservation Officer in his/her review capacity for the FCC.

- s. The applicant shall submit written proof that the proposed use and the facility comply with the FCC regulations on radio (RF) frequency exposure guidelines and a propagation map showing the proposed radio frequency coverage.
- t. The applicant shall submit written proof that an evaluation has taken place, as well as the results of such evaluation, satisfying the requirements of the National Environmental Policy Act (NEPA) further referenced in applicable FCC rules. If an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) is required under the FCC rules and NEPA, submission of the EA or EIS to the Town prior to the beginning of the federal 30 day comment period, and the Town process, shall become part of the application requirement.
- u. The applicant will provide information as to whether any of the Personal Wireless Service carriers providing service to the municipality use the system known as cable micro-cell integrator/headend interface converter (CMI/HIC) which utilizes cable television lines and small transceivers mounted on utility poles to communicate with wireless telephones and whether there are any such carriers using CMI/HIC in [County].

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natural environment and historic places. The application requirement seeks to ensure that the NEPA review is performed prior to, or at the same time, as the submission of the application. Impacts on historic districts or structures are assessed by either the local Historical Society or the Maine Historic Preservation Commission.

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