



Thinking outside the sphere

To: Gwen Miller, Town Land Use Director

From: David Maxson

Re: Disclosure of conversation

October 18, 2022

I received a call on October 13 from a person identifying cryptically as “Paul G” and claiming to be a consultant to some Lenox residents on the bylaw revision matter. I do not charge for short courtesy calls from residents or their agents and generally point them to resources for information on the record. I avoid providing any information not on the record.

The narrow focus of the caller was to obtain more details about the drive tests, under the presumption that without fully disclosed methodology there could be “inaccuracies.” As we described on the record, our drive test simply benchmarked the behavior of contemporary models of good quality cell phones on their respective networks. This is the most appropriate way to benchmark service levels for regulatory planning. The town might be presented with a rebuttal to this approach.¹

The caller described some ideas about how to design for wide-area low-band coverage by keeping the sources farther from the users, while ignoring the benefits of having the higher frequencies available for capacity purposes. (This is the essence of what will be discussed when we see the coverage from Lenox Mountain.) The premise is that low-band telephone-only coverage is all that is necessary to satisfy the Telecommunications Act. Even if the caller’s theory is correct,² the Board has shown its interest in the principles of good planning that may outweigh the TCA. In this case a strong public benefit is seen in managing the responsible deployment of wireless services for the greater good. A key factor is to find ways to respectfully place facilities closer to the centers of activity for the greatest public benefit. This planning principle is agnostic to what the minimum requirement of the TCA might be.

¹ A rebuttal could include minutiae about things like antenna “accuracy,” lack of detailed frequency utilization data, and no details on things like the signal strength tabulation rate and method. These are red herrings. We are not designing the carriers’ networks for them.

² The distinction between data services and phone services in FCC regulation is a source of contention that is the subject of some case law. If its goal is to stall deployment of facilities near centers of activity, the town could exploit this ambiguity and bear this shield until it crumbles.



Your drive test maps are fit for purpose and the town need not doubt them.

After the drive-test-specific questions, we embarked on a wide-ranging and spirited discussion of RF safety matters not solely about Lenox. We have very different views. The town may hear more of these other views in future meetings. This topic is tangential to the Board's objective of having a more effective bylaw to regulate wireless facility placement.

As I said at the last meeting, opponents might derail the proceedings by bogging the town in efforts to parse each of the following: the basis of the current standards, efforts to discredit the current standards, and efforts to interpret recent court action as giving the town permission to wait until a court remand to the FCC is complete.

The town will continue to be asked to ignore the established science as read by competent, expert public health agencies and favor sanctimonious pronouncements by well-read individuals posing under a veneer of impartiality and expertise.

The Board is in no position to create or adopt its own RF safety standards or wait for new ones to appear. Pursuit of these issues will delay completion of the board's important work. Moreover, such delays invite unintended consequences. I encourage the Board to maintain its current laser focus on bylaw revisions that best balance the competing interests of the townspeople.

You may also find materials working into the record that suggest my perspective is captured by sinister industry forces. Moreover, my informal opinion about my confidence in current RF safety standards is often mistaken as needing detailed, footnoted scientific analysis from me to back it up. I am not a scientist. I rely on the impartial, expert analyses produced by and for respected public health agencies. I encourage the town to continue to do the same.

##

Status Summary 7-13-21: This draft includes updates from earlier PB discussions. The PB has not reviewed this document, since it is first working to complete the bylaw (8.18) that this “Manual” will support as a reference for Town administration. **9-14-2021:** PB agreed to post this latest draft online to accompany the update announcement about the planned Needs Analysis and Wireless Communications Master Plan; as such, certain sections (noted in document) that will be decided as a part of the Needs Analysis and Wireless Master Plan have been left blank for the time being.

Maxson Notes added 10/17/2022

TOWN OF LENOX LAND
USE DEPARTMENT
STANDARD SPECIFICATIONS & DESIGN MANUAL
WIRELESS COMMUNICATIONS FACILITIES (WCF)

Section 100 – Wireless Communications Facilities.

Item 101 - New wireless communications facilities.

- (1) Scope of Work – the work under this section shall consist of installing wireless communications facilities either on a new communications tower or base station; or an existing communications tower or base station, and shall be performed in accordance with the provisions herein and those contained in Subsection 8.16 of the Town of Lenox Zoning Bylaw, which contains definitions for the terms used herein.

Item 102 - All new communications towers shall be subject to the following standards:

1. Performance Criteria for Concealed Towers. To ensure wireless communications facilities integrate well with the Town of Lenox’s landscape, concealed towers shall meet the following performance criteria:
 - a). The concealed tower shall either be inconspicuous from the perspective of surrounding views and from viewsheds (such as a monopine design that is well integrated with the natural vegetation as seen from various vantage points), or be architecturally presentable with respect to such views (such as a faux carillon tower artfully placed on an institutional parcel or a unipole inconspicuously placed near the rear of a lot).

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- b). New concealed towers shall not present a new visual experience that dominates the visual field of sensitive points of view. Landscaping and existing vegetation shall be employed to minimize such impacts.

- c). Viewsheds are not significantly impacted by the proposed concealed facility. Not significantly impacted shall mean for this purpose that a proposed “slick stick” concealed facility occupies more than ten percent of the field of vision of a person from a distance of 100 feet from the concealed facility using 120 degrees of arc as an average. Applicants shall provide photosimulations with their application to demonstrate compliance with this requirement using as a reference a 45mm lens on a full frame sensor (24mm x 36mm) SLR camera. Other concealment methodologies shall not be subject to this requirement.
 - d). A concealed tower should be designed to be a “slick stick” monopole with all transmission lines and antenna contained within the pole as the first desired option. Other options that may be proposed for concealment include mimicking a manmade or natural object that is consistent with the surrounding landscape; for example, field light stanchions for athletic and recreational facilities or developed park areas, clock tower for commercially developed areas, fire watch tower or “monopine” evergreen tree native to Berkshire County for rural or undeveloped areas. The foregoing is meant to be illustrative and not an exhaustive list of possible options. For any proposed facility that is not a “slick stick” monopole an applicant and any subtenants, licensees, and customers shall use antenna wraps/socks on all panel antennas and shall not permit installation of RRUs, RACAPs or any other non-panel type antenna or other equipment without first demonstrating to the Town the concealment elements that will be used for such antenna types. Applicant shall provide design sketches to Town with its application for prior approval by Town of the concealment technology meeting the above parameters at a minimum.
2. Determination of Need. No new tower shall be permitted unless the applicant demonstrates that no existing structure or tower can

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accommodate the applicant's proposed use without increasing the height of the existing tower or structure or otherwise creating a greater visual impact; or that use of such existing facilities would prohibit or have the effect of prohibiting personal wireless services in the search area to be served by the proposed tower.

3. Height. New concealed towers shall be limited to the maximum height of 100 feet. If an applicant demonstrates through RF engineering evidence that a proposed facility requires additional height to meet the minimum elevation necessary for effective functioning of the provider's network, the applicant may seek a variance to exceed the maximum height allowed.
4. Setbacks. New freestanding towers and equipment compounds shall be subject to the setbacks described below:
 - a). If the tower has been constructed using breakpoint design technology, the minimum setback distance to the nearest residential or commercial structure shall be equal to [*Recommendation to come pending completion of needs analysis and wireless communications master plan.*]
 - b).

EXAMPLE: TBD

- c). If the tower is not constructed using breakpoint design technology, the minimum setback distance to the nearest residential or commercial structure shall be [*Recommendation to come pending completion of Needs Analysis and Wireless Communications Master Plan.*]
5. Equipment Compound and Cabinets. Cabinets may be

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provided within the principal building, underground, behind a screen on a rooftop, or on the ground with landscape screening as required below. Equipment compounds and cabinets shall be designed to be visually compatible with adjoining terrain and structures. Equipment compounds shall not be used for the storage of any excess equipment or hazardous materials. No outdoor storage yards shall be allowed in a tower equipment compound. The equipment compound or cabinets shall be designed, located, and concealed in a manner compatible with the wireless support structure portion of the wireless facility. Ground equipment shall be located within a cabinet or shelter, to the maximum extent practicable. Antennae, cables, and related appurtenances shall be enclosed, concealed, screened, or obscured so that they are not readily apparent to a casual off-site observer.

6. Landscaping. The equipment compound shall be landscaped with a minimum of one plant unit per [REDACTED] square feet of floor area, pursuant to the standards specified in [REDACTED]. Where the landscaping requirement is not achieving the intent of screening and buffering, the landscaping requirement may be reduced or waived by the Zoning Board of Appeals.
7. Signage. Commercial messages shall not be displayed on any tower. Required noncommercial signage shall be restricted to ASR (Antenna Structure Registration Number as required by the FAA and FCC), party responsible for operation and maintenance of the facility, and any additional security and/or safety signs as applicable.
8. Lighting. Lighting shall be prohibited on all towers unless required by the Federal Aviation Administration (FAA). Lighting required by the FAA shall not exceed minimum standards and shall be of minimum intensity and number of flashes per minute allowed by the FAA, or shall be a dual lighting system.
9. Visibility

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- a). New towers shall be configured and located in a manner that shall minimize adverse effects including visual impacts on the landscape and adjacent properties and is designed to be contextual in size, shape and color with the scenic content immediately adjacent to its location. Small wireless facilities meeting the size parameters in Subsection 8.17 of the Zoning Bylaw but not located within a Town right of way shall utilize a “slick stick” concealment plan so that all equipment and antenna are contained within the interior of the vertical pole.
- b). Lattice towers and guyed towers are prohibited.
- c). All new freestanding towers shall be designed to blend with adjacent structures and/or landscapes with specific design considerations such as architectural designs, height, scale, color, and texture.
- d). If a monopine concealed wireless communications facility is proposed the applicant shall demonstrate through photo-simulations the proposed facility mirrors an evergreen tree indigenous to Berkshire County with sufficient number of “faux” branches and foliage to conceal all external antenna, panels, trays, cables, support rods, crossbars, port holes, splitters, couplers and attenuators and any other equipment external to the tower mast, which shall be painted or have applied material to simulate the color of tree bark indigenous to the area. “Faux” branches shall commence at 20 feet above ground level (AGL) and surround the tower in a multi-dimensional pyramid shape pattern to the top of the tower, with branches and foliage material in length, width and depth sufficient to obscure physical view of the tower, antenna elements and brackets. Antenna wraps shall be used on all type of antenna. Panel antennas, remote radio units or any other non-panel type antenna or

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other equipment may not be used without first
demonstrating the concealment elements that will be
used for such antenna.

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- e). Other concealment methods shall be demonstrated through photo-simulations, including the number of proposed antennas and potential collocations. All antenna shall be covered with concealment material.
 - f). New antenna mounts shall be flush-mounted, unless it is demonstrated through radio frequency (RF) propagation analysis that flush-mounted antennas will not meet the network objectives of the desired coverage area, will not allow for concealed design, is inconsistent with the proposed design, or reduces the ability to collocate future antenna arrays.
 - g). Towers shall be constructed to accommodate collocation of as many antenna arrays as feasible, based on the approved size and design of the tower .
10. Mailed Notice to Neighbors. All new towers shall require that mailed notice, meeting the standards of M.G.L. C. 40A, Section 11, be sent to all property owners within 600 feet of the land subject to the application.

Item 103 - Application Submittal Requirements: The following requirements apply to all proposed personal wireless facilities:

(1) Drawings

- i. One set of plans at 24" x 36" and two sets of plans at 11" x 17" and an electronic original (not scanned) of plans that constitute a customary package of "Zoning Drawings," including, without limitation, locus information, area parcel plans showing abutting lots and a 300 and 600 foot radius, details including property line and other relevant setbacks, proposed easements, utilities, driveways, site improvements, etc; and detailed site plans as necessary to illustrate site development, wetland/river buffers, landscaping, tree cover, etc; elevation drawings and details about the ground equipment and the tower-mounted equipment; any other information the applicant or the Town determines is appropriate for showing the proposed development.
- ii. The maximum height of the proposed facility and any appurtenances, proposed and future mounting elevations of future antenna, including individual measurement of the base, the tower, and lightning rods, if applicable.

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- iii. Access to the facility and a plan for winter access if access is not maintained in winter.

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- (2) If applicable, a signed, notarized statement from the tower owner or tower owner's agent, agreeing to allow the future collocation of wireless equipment of other carriers on the proposed tower, to the extent required by the approved design.
- (3) : the applicant shall certify through a written technical statement prepared by an individual qualified to do so the measurements and/or calculations consistent with the guidance of FCC Office of Engineering and Technology Bulletin 65, demonstrating the facility will be in compliance with FCC and Commonwealth of Massachusetts standards for limiting public exposure to electromagnetic energy.
- (4)
- (5) No antenna shall be permitted to interfere with the Town's public safety communications equipment. Unless waived by the Board based on the technical showing in the record, after transmitter and antenna system optimization, but prior to unattended operations of the facility, applicant or its representative must

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conduct on-site post-installation RF emissions testing to demonstrate actual compliance with the 47 CFR §1.1310 and OET Bulletin 65 RF emissions safety rules for general population/uncontrolled RF exposure in all sectors.

- (6) Statement certifying that no unusual sound emissions such as alarms, bells, buzzers, or the like will be operated. Emergency Generators are permitted and are exempt from noise requirements during emergencies. Sound levels contributed by facility operations including generators shall not exceed 40 dbA measured at the property lines of the parcel containing the wireless communications facility and operations when no generator is running shall not exceed 30 dbA measured at said property lines
- (7) Photosimulations showing what the (a) impact is on viewsheds as described above and (b) how the design, including concealment, landscaping, topography, existing cover, etc. contribute to minimizing visual impacts. Photos shall be taken from representative locations where the tower is or is expected to be visible or partially visible in any season. Before the photos are taken, applicants shall consult with the Land Use Department to identify sensitive locations that should be added to the photographer's list of locations to photograph.
- (8) All other documentation, evidence, or materials necessary to demonstrate compliance with the applicable approval criteria set forth in this Section.

Item 104 - Additional Requirements for New Communications Towers:

- (1) A report and supporting technical data shall be submitted, demonstrating the following:
 - a) All potential antenna attachments, collocations, and alternative antenna configurations on existing elevated structures, including all usable utility distribution towers within the proposed service area have been examined, and found unacceptable.

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- b) Reasoning as to why the adequacy of alternative existing facilities or the replacement of existing facilities are not acceptable or available in meeting the applicant's need,

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indicating that no existing communications facility could accommodate the applicant's proposed facility, shall consist of any of the following:

- 1). No existing towers located within the geographic area meet the applicant's engineering requirements without increasing the height of the existing tower or structure or otherwise creating a greater visual impact, and why.
 - 2). Existing towers do not have sufficient structural integrity to support the applicant's proposed wireless communications facilities and related equipment, and the existing facility cannot be sufficiently improved.
 - 3). Other limiting factors that render existing wireless communications facilities unsuitable.
- (2) Technical data included in the report shall include certification by a qualified professional, which qualifications shall be included, regarding service gaps, service expansions, and/or system capacity that are addressed by the proposed tower, and accompanying maps and calculations demonstrating the need for the proposed tower.
- (3) A balloon test shall be required subsequent to the receipt of the photo simulations in order to demonstrate the proposed height and concealment solution of the proposed tower. If the location is accessible by crane, a crane test with the balloon shall be conducted to ensure the balloon is at the proper position and height. The applicant shall arrange to raise a red or orange colored balloon no less than three (3) feet in diameter at the maximum height of the proposed tower, and within twenty-five (25) horizontal feet of the center of the proposed tower. A second balloon 20 feet below the first (or at some other height requested by the town) shall also be raised. The applicant shall meet the following for the balloon test:
- a. Applicant must inform the Land Use Department and abutting property owners in writing of the date and times, including alternative date and times, of the test at least fourteen (14) days in advance. Notice to

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abutting property owners shall be pursuant to
subsection 102 (10) above.

- b). A three-foot by five-foot (3' by 5') sign with lettering no
less than three (3) inches high stating the purpose of the

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balloon test shall be placed at closest major intersection of proposed site.

- c) The date, time, and location, including alternative date, time and location, of the balloon test shall be advertised in a locally distributed paper by the applicant at least seven (7) but no more than fourteen (14) days in advance of the test date and applicant shall provide notice to neighbors of the balloon test date and alternate date pursuant to subsection 102 (10) above.
 - d) The balloon shall be flown for at least four (4) consecutive hours during daylight hours on the date chosen. The applicant shall record the weather, including wind speed during the balloon test. Photographs taken of the balloon test shall be timed to capture the balloon at its apex during wind-induced motion. The height of the balloon shall be measured, and tether length shall not be relied upon.
 - e) Re-advertisement will not be required if inclement weather occurs.
- (4) A radio frequency propagation plot indicating the coverage of existing antenna sites, coverage prediction of the proposed site. The original location of the search ring should be presented. The applicant's radio frequency (RF) engineer shall provide a statement explaining how the proposed facility's coverage or capacity benefits cannot be substantially achieved by the use of one or more of any higher ranked alternatives. .
- (5) Prior to the submittal of a permit application, the applicant shall notify other wireless service providers, via certified mail, of the proposed freestanding tower to encourage collocation and coordination among providers. The Town Land Use Department will make available a list of wireless service providers and the letter format for applicants.
- (6) Prior to issuance of a building permit, proof of FAA compliance with Subpart C of the Federal Aviation Regulations, Part 77, and "Objects Affecting Navigable Airspace," if applicable.

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Item 105 – Collocations on Existing Wireless Communications Facilities

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Collocations that do not constitute Eligible Facility Requests as defined in Subsection 8.16 of the Bylaw shall otherwise meet the performance standards set forth in Item 102 above.

Item 106 – All Wireless Communications Facilities – Insurance

The owner of a wireless communications facility, whether a wireless infrastructure provider or wireless services provider, shall carry, at their own cost and expense, the following insurance and provide evidence of same to Town upon request:

- (1) occurrence basis commercial general liability coverage for bodily injury and property damage, including but not limited to its property's replacement cost against all risks;
- (2) workers' compensation insurance, as required by Massachusetts law;
- (3) The applicant shall maintain not less than such required coverage unless and until the wireless facility and all related equipment and appurtenances have been fully removed.

Item 107 – Compliance with Other Regulations Regarding Installation, Construction and Maintenance.

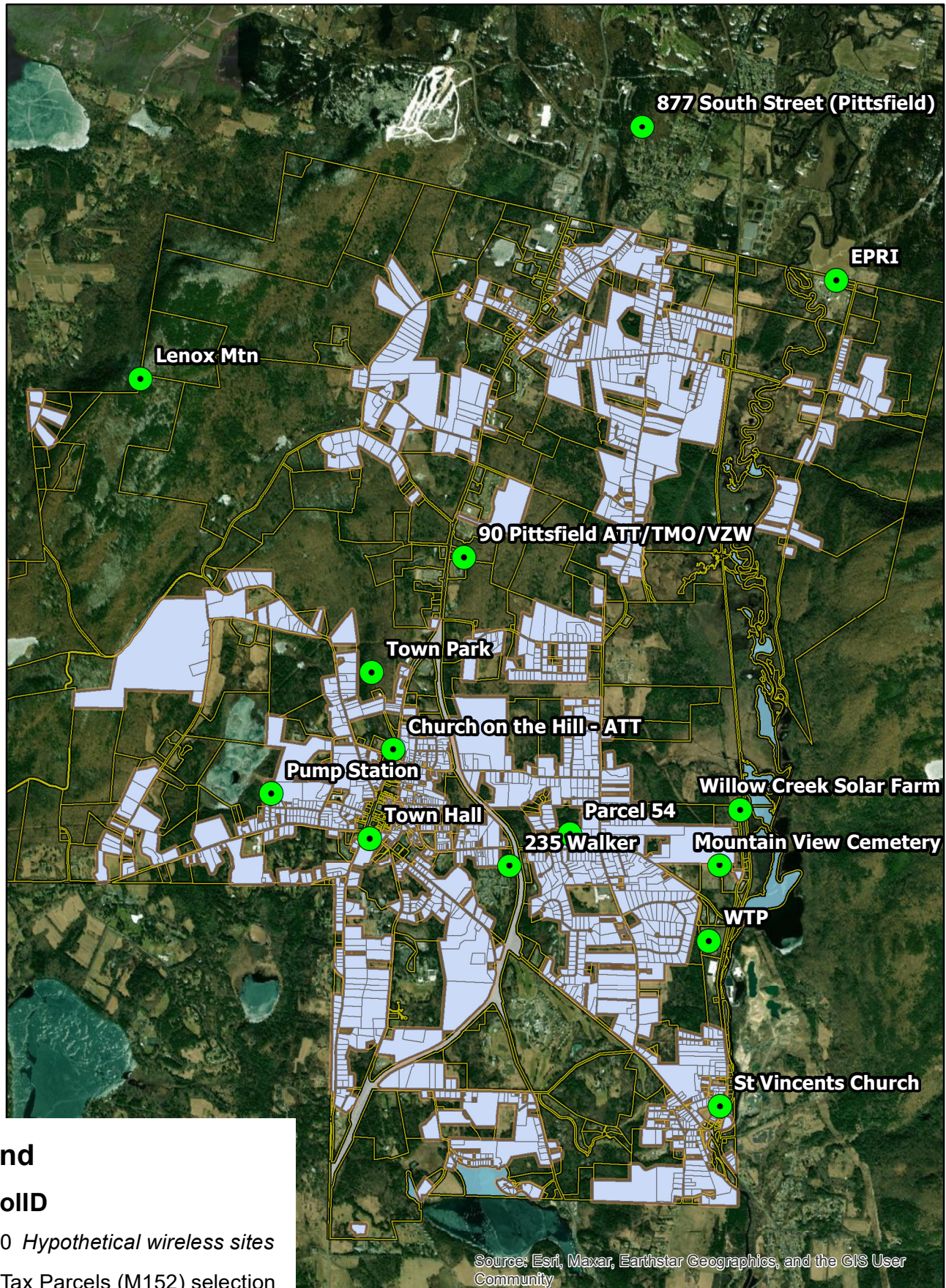
In addition to compliance with the standards, specifications and details in this document and Subsection 8.16 of the Town of Lenox Zoning Bylaw, the owner of a wireless communications facility, whether a wireless infrastructure provider or wireless services provider, shall comply with all other applicable rules, regulations, standards, specifications and details of any federal, state, or local law, code, or regulation regarding installation and construction of such a facility, including, but not limited to; provisions regarding electrical code compliance and safety, provisions regarding RF Interference and Exposure, and all other applicable safety, construction and maintenance regulations relating to wireless communications facilities.

Item 108 – Amendments.

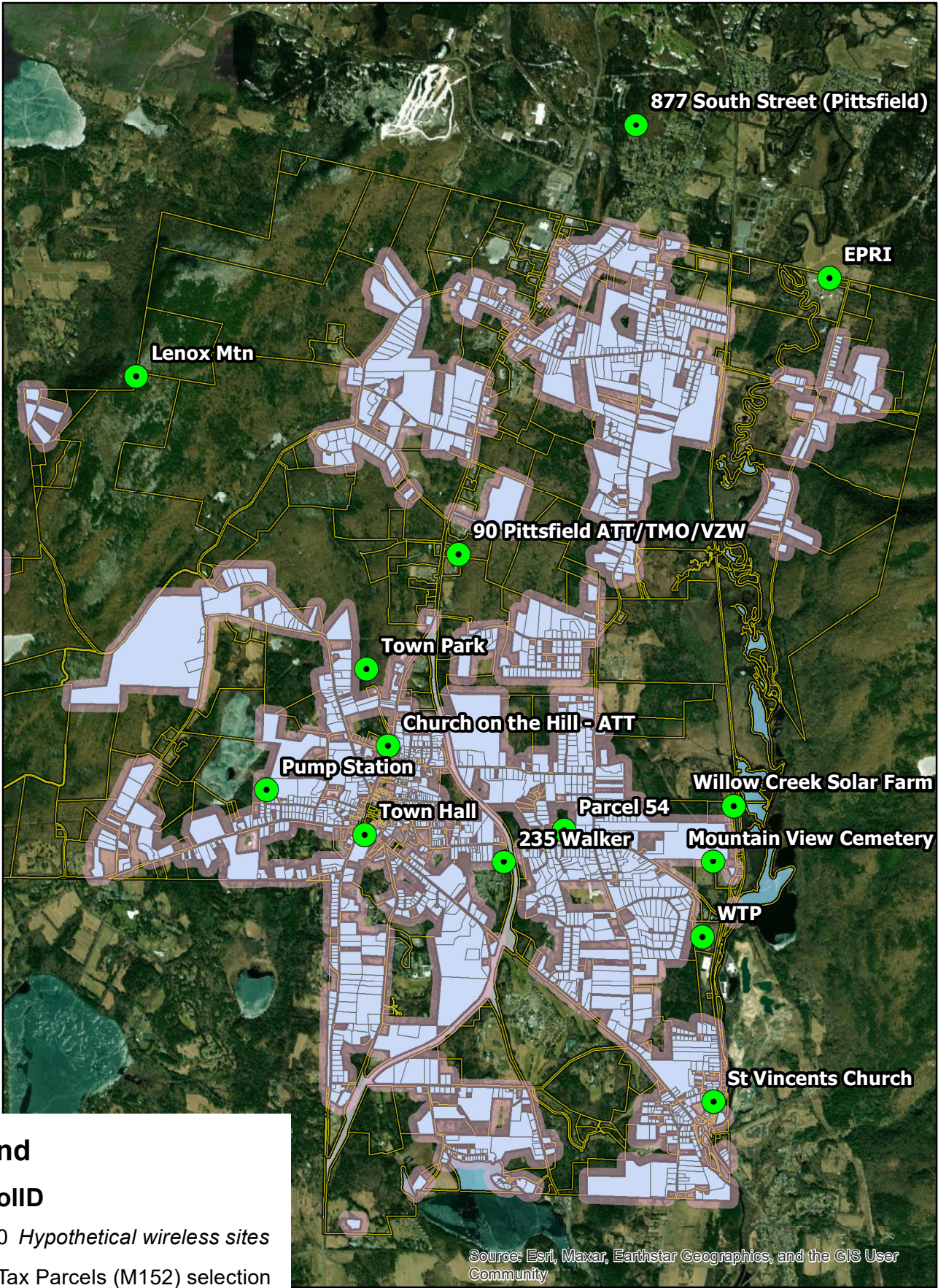
- (1) This Manual and the standards and specifications contained herein may be amended from time to time in accordance with Town policy .

Note: Sample illustrations to be added

Residential Parcel Buffer--100 Feet






Residential Parcel Buffer--250 Feet



Legend

SymbolID

-  0 Hypothetical wireless sites
-  Tax Parcels (M152) selection
-  250'



Residential Parcel Buffer--500 Feet

