



Report on Vertex Application for Special Permit and Site Plan Review 92 Stallion Hill Road, Sturbridge

Vertex Towers, LLC (“Applicant”) seeks a Special Permit and Site Plan Review (with waiver) from the Sturbridge Planning Board to place a cell tower at 92 Stallion Hill Road. A 130-foot monopole with a 3600 square-foot fenced compound is proposed. In a parallel application, the Applicant seeks the necessary frontage variance from the Sturbridge Zoning Board of Appeals.

Isotrope has been engaged by the Town to review the application. We refer to Article IX of the Zoning Bylaw to identify the technical matters requiring our scrutiny. The main points are stated in section 300-9.1, Purpose; applicability. The first purpose is to protect from “hazards associated with wireless communication facilities.” The second and third purposes relate to non-technical issues of visual impacts and property value impacts. The final purpose promotes “the responsible deployment of wireless communication facilities.”

Residential District

Section 300-9.3 B. prioritizes non-residential districts over residential districts for new towers. The Applicant states “there are no alternatives to place the Facility in a non-residential district.” Considering the proposed location and its topography in relation to the coverage objective, the non-residential parcels lie along Route 20 which follows the Quinebaug River valley below Stallion Hill. It would require multiple towers to cover this segment of Route 20 and adjacent roads from the non-residential parcels along Route 20. This coverage objective includes substantial portions of Holland Rd, Brookfield Rd, and Old Sturbridge Village Rd.

Tree Canopy Waiver

In addition to seeking to use a parcel in a residential district, the Applicant also requests a waiver of the 15-feet above tree canopy limitation. No data on the tree canopy height has been provided, making it difficult to estimate just how much above the 15-foot limit the proposed tower would be. An aerial view of the site in winter (below) shows there is mixed deciduous and coniferous growth around the site. Of course, the ground elevation changes around the proposed site, with higher ground to the south and lower ground to the north. This makes the assessment of a “tree canopy height” challenging.



Generally, the purpose of a tree canopy restriction is to minimize the intrusion of a new cell tower into the skyline views from a distance. The balloon test performed for this application, and the photographic materials submitted to the record help address the question of how far the tower would project above the skyline from various points of view.

Conceptually, if the pine trees are in the 100-foot height range, regardless of what the average canopy height might be, as a practical matter, 15 feet above the average of surrounding treetops is more of a starting point than a practical height limit. In other words, a tower satisfying the 15-foot limit would likely be useful to only one wireless carrier. §300-9.3 G. encourages site-sharing by multiple providers. The Applicant is in the business of owning towers that providers share. Additional height is necessary for multiple providers to successfully share the tower.



Figure 1 - Winter Tree Cover around Proposed Site

The waiver also requires the board to find that there are no alternative locations where the grant would be substantially more in keeping with the purpose of the bylaw. We have not identified any. It is an opportunity during the public hearing for the board and the public to raise new locations not yet identified.



Camouflage

The bylaw requires a new facility to “be camouflaged in a manner that is compatible with its surroundings as determined by the Planning Board with reference to visual impact analysis and simulations.” The board can review the photosimulations and decide whether there is any material benefit in requiring camouflage. It is likely that the most effective camouflage would be a monopine because of the surrounding vegetation in the various views. We find that monopines tend to polarize public reactions. Because badly situated monopines grab the public’s attention, some people find them atrocious. However, well-sited monopines do their jobs so well that people tend not to notice them. And some people express the preference to look at a fake tree than an industrial behemoth.

An alternative camouflage for a wooded hill could be a faux fire tower. While a 130-foot tower is substantially taller than the typical fire tower, if it appears to be close to the tree line from the various viewpoints, it might seem proportional. Of course, the applicant will point out that the cost of installing and maintaining camouflage is not trivial, so if there is no substantial benefit from using camouflage, it is less burdensome to leave the design as proposed.

The bylaw allows a new tower without camouflage only in the Wireless Communication Overlay District. This suggests that the proposed tower must be camouflaged unless it is “compatible with its surroundings as determined by the Planning Board with reference to visual impact analysis and simulations.”

Existing Structures

The applicant asserts there are no existing structures on which to mount facilities to address the coverage objectives. We are aware of no such opportunities. The public hearing presents an opportunity for the board and the public to identify any overlooked opportunities.

The One-Mile Rule

The Applicant asserts that there are no wireless communications facilities within one mile of the proposed site. This not only demonstrates compliance with this rule, but also reinforces the notion that this part of Sturbridge is presently underserved because there are no nearby facilities. We also note that the one-mile rule is left over from the early days of cell siting when towers were originally miles apart. We also note that a literal interpretation of this rule seems to apply only to towers in the overlay district, i.e. “any facility of the type in §300-9.3C” which is the overlay district clause, in which case this criterion does not apply to the proposed facility.

Safety

The proposed facility is designed to operate in compliance with the FCC regulations relating to public exposure to radio frequency energy. This is confirmed by the analysis prepared by C-Squared Systems. As the board is aware, no further regulation of the placement of the facility on



the basis of its emissions may be imposed. Furthermore, as the Applicant notes, this site is remote from even the nearest residential activity.

Noise

Based on our experience with such facilities and the location of the proposed facility, we do not anticipate exceedance of the 50 dBA noise limit during normal operations. If the one proposed generator is included in the assessment, it is a closer call, but still comfortably clear. With the proposed sound enclosure, the highest noise level at 23 feet away is 68.2 dBA. With a property line 301 feet away, the sound would be attenuated in free space (no terrain or vegetation) by about 22 dB.

$$68.2 \text{ dBA} - 22 \text{ dB}^1 = 46.2 \text{ dBA predicted worst case at the nearest property line.}$$

This is comfortably below the 50 dBA limit because the additional sound absorption by the terrain and vegetation will only further reduce the level below the estimated value at the nearest property line.

It is recommended that an approval, if granted, contain a condition that the proposed sound enclosure be installed and maintained.

Environmental

The bylaw also requires the proposal to show compliance with the National Environmental Policy Act ("NEPA") and local environmental requirements. The Applicant states in its narrative:

The Applicant will provide a report to demonstrate compliance with National Environmental Policy Act and local environmental requirements prior to the public hearing on this Application.

Wireless tower owners are required by the FCC under NEPA to perform and comply with such analysis.

Coverage Analysis

The zoning bylaw (§300-9.3 I.) says "The Town may retain a technical expert in the field of RF engineering to peer-review the applicant's claims and submittals and to provide advice on the need for the proposed facility and on any potential alternatives." The bylaw does not directly call for proof of need but does amply require preferred alternatives to be explored. Moreover, in the case of a potential claim of effective prohibition of service under the Telecommunications Act of 1996 ("TCA"), it is helpful to review the coverage claims.

¹ Decibels are not intuitive to understand. You subtract a number of dB loss from a starting dBA level to obtain a new dBA level.



The coverage maps are provided by an engineering consultant, C-Squared Systems on behalf of Verizon Wireless. The Applicant summarizes the consultant's report:

"Specifically, Verizon Wireless determined that much of Sturbridge is without reliable service in the following areas and town roads, including but not limited to:

Route 20 (Main Street) Serves ~ 19,000 vehicles per day as measured between Arnold Road and Cedar Street (2022);

Holland Road Route 148 (Brookfield Road)

Old Sturbridge Village

The surrounding roads, neighborhoods, businesses, and shopping areas in the proximity of the proposed site."

The coverage maps confirm this assertion.

As to whether a denial of this proposal would cause an "effective prohibition of service" we can provide technical advice but ultimately it is a legal question. The coverage that has been put on the record is Verizon's. The Applicant has considered other locations to essentially duplicate the proposed coverage and has reported a lack of success on identified parcels. The Applicant asserts that existing structures in the right location do not exist, which is likely the case unless we are missing something that the board or the public is aware of. The most likely alternative to the proposed facility would require more than one tower to cover the main objective described above. Such towers would also likely provide more coverage than the proposed facility would. If the proposed location is found to be unacceptable, additional analysis could be performed to evaluate possible multi-tower alternatives before finally denying the application or accepting it under the TCA.

Aviation

The Applicant included a printout of the results of the FCC TOWAIR web tool. It indicates that the site is far enough away from airports that the FAA does not need to be notified. This is an indication that obstruction lights will not be required.

David Maxson, WCP

January 16, 2024