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**Cape Cod Commission Staff Report
Development of Regional Impact Review
CCC File No. 18012**

Draft Date:	August 29, 2018
Project:	Wireless Communications Tower/Mashpee Fire Station #2
Location:	101 Red Brook Road, Mashpee, MA
Public Hearing:	September 5, 2018, Mashpee Public Library at 5:30 p.m.
Subcommittee Members:	Ernest Virgilio, Chair (Mashpee), Fred Chirigotis (Barnstable), Harold Mitchell (Sandwich), Dick Roy (Dennis), and David Weeden (Native American Representative)

Introduction

Blue Sky Towers II, LLC (“Applicant”) proposes a 150-foot tall, monopole-style Wireless Communications Tower (“WCT”), with appurtenant equipment and supporting site improvements, at the “Mashpee Fire Station #2” property located at 101 Red Brook Road, Mashpee, which property is owned by the Town of Mashpee (“Town”). The WCT is designed to support up to four personal wireless service carriers and Town of Mashpee EMS. Carriers Verizon Wireless and T-Mobile have proposed to site share on the WCT.

Conclusion/Cape Cod Commission Staff Recommendation

The Applicant has provided application materials sufficient to allow the subcommittee to review the DRI and to consider whether to recommend approval of the proposed project described herein to the full body of the Cape Cod Commission, subject to the receipt of certain information and performance of certain conditions recommended by staff and discussed in the final sections of this report entitled “Recommended Supplemental Application Materials” and “Recommended Conditions.”

If, however, the subcommittee takes the position that the Applicant has not sufficiently evidenced the need for the proposed project described herein in order to address wireless coverage or capacity problems, the subcommittee could request, for its further review, additional coverage maps and other information referenced in the Wireless Consultant’s report.

Further, if the subcommittee takes the position that the proposed project described herein may have a significant regional visual impact, the subcommittee could request additional information from the Applicant as outlined herein for the subcommittee’s further review and consideration relative to whether there are viable design or siting alternatives, in light of Verizon Wireless and T-Mobile’s claimed wireless service coverage gaps.

Jurisdiction

The proposed project described herein triggers mandatory Development of Regional Impact (“DRI”) review pursuant to Section 3 of the Cape Cod Commission’s *Enabling Regulations Governing Review of Developments of Regional Impact* (revised April 2018), since it proposes the construction of a WCT exceeding 35 feet in overall height, including appurtenances, from the natural grade of the site on which it is located. Section 7(c)(viii) of the Commission’s *Enabling Regulations* contains the standards to be met for DRI approval, which include consistency with the Act, the RPP, Districts of Critical Planning Concern (DCPCs) (*as applicable*), municipal development bylaws, and the Local Comprehensive Plan. The Commission must also find that the probable benefit from the proposed DRI is greater than the probable detriment.

This DRI review is subject to the 2009 *Cape Cod Regional Policy Plan*, as amended August 2012 (“RPP”), which is the version of the RPP in effect at the time of the first public hearing on the DRI. The Cape Cod Commission’s Technical Bulletin 97-001, *Guidelines for DRI Review of Wireless Communication Towers* (Revised September 2010), provides additional guidance for the review.

The Commission received the mandatory DRI referral from the Mashpee Planning Board on June 22, 2018, and a DRI application from the Applicant on July 11, 2018. The Applicant submitted additional application materials in August 2018. The DRI hearing period was opened for procedural purposes by a hearing officer on August 20, 2018 at Cape Cod Commission offices in Barnstable, MA. The first substantive hearing on the DRI has been noticed and scheduled for September 5, 2018, at 5:30 p.m. at the Mashpee Public Library located in Mashpee, MA.

Project Description

The Town had issued a Request for Proposals for a new wireless communications facility to be constructed on a portion of the Mashpee Fire Station #2 property (Assessors Map 104, Lot 2), located at 101 Red Brook Road (“Property”), and the Applicant submitted the winning bid. The Applicant subsequently entered into a lease agreement with the Town, dated 10/27/17, for a 100-foot x 100-foot leased area, within which the 150-foot tall, monopole-style WCT, 6-foot tall lightning rod, and associated improvements/equipment are proposed to be sited, with access and utility service over the Property (“Project Site”).

The “Project”, as referred to herein, is as follows:

The proposed WCT is sited within a 70-foot x 70-foot compound, which will be surrounded by a chain link fence topped with barbed wire.¹ Access to the Project Site is provided within a 20-foot-wide access and utility easement extending from Red Brook Road, a public way, to the fenced compound. The majority of the easement area is currently paved and used for access to Mashpee Fire Station #2 facilities; a new, 12-foot-wide gravel access drive and paved apron is proposed behind the fire station where there is currently no improved access to the Project Site. Utilities will run underground from Red Brook Road directly to the Project Site. A gravel parking and turnaround area is proposed outside of the fenced compound.

¹ The chain link fence is described as being 6 feet in height in Exhibit 3 of the Application materials and on the site plans included in Exhibit 5, but there is one instance in Exhibit 3 where a fence height of 8 feet is mentioned. It is assumed that this instance is a typographical error, and that the proposed fence height is indeed 6 feet.

The proposed WCT is designed to accommodate up to a total of 4 wireless service providers' antennas and equipment, in addition to Town of Mashpee EMS antennas. The Applicant has signed Letters of Intent with two personal wireless service carriers, Verizon Wireless and T-Mobile ("Carriers"), to site share on the WCT. The Carriers indicate that the Applicant's proposed WCT location will address coverage problems and remedy capacity deficiencies in this area of Mashpee.²

The Town's EMS antennas will be located 100 feet above ground level.

Verizon Wireless proposes to mount 12 panel antennas (4 per sector) at a centerline elevation of 146 feet above ground level. 12 Remote Radio Heads ("RRH") with accessory junction boxes and surge suppressors will be mounted alongside the antennas. Verizon Wireless proposes to place telecommunications cabinets, telco/power/fiber connections, and a back-up propane power generator on concrete pads within a 12-foot x 20-foot area within the 70-foot x 70-foot fenced compound.

T-Mobile proposes to mount 12 panel antennas (3 per sector) and 12 RRH's at a centerline of 136 feet above ground level. T-Mobile will encompass a 10-foot x 20-foot area for its ground equipment and a 10-foot x 10-foot area for its propane generator within the 70-foot x 70-foot fenced compound. A pad-mounted transformer will be located just outside the fenced compound.

The cabling will run within the monopole and an ice bridge will extend from the equipment area of Verizon Wireless and T-Mobile to the WCT to protect the cabling.

The use of the gravel roadway/parking area, and regular vehicle trips to the Project Site, will be very minimal. Vehicle trips to and from the Project Site will be limited to once or twice per month, on average, by maintenance personnel to ensure that the telecommunications equipment remains in good working order (though the equipment is designed to be maintenance-free). Further, the Applicant will perform any maintenance on an 'as needed' basis.

Wireless Communications Technical Consultant's Report

The Cape Cod Commission requested third-party, independent technical review of the Project from its contracted wireless communications technical consultant ("Wireless Consultant"), David Maxson of Isotope, LLC. The Wireless Consultant will present his report in-person to the subcommittee at its September 5, 2018 hearing; a copy of the report is included in the project file. Some of the Wireless Consultant's key findings are also referenced in this Commission staff report.

Compliance with Regional Policy Plan and Technical Bulletin 97-001

Commission staff reviewed the Project as presented in the application and supporting materials in light of the RPP's Goals and Minimum Performance Standards (MPSs) and the provisions of Technical Bulletin 97-001, *Guidelines for DRI Review of Wireless Communication Towers* applicable and material to the Project. The Wireless Consultant was also hired by the Commission to provide a technical review of the Project. Based on these reviews, Commission staff developed the following summary of key findings and recommendations.

² In one instance on page 22 of Exhibit 3, there is mention of an ability to "accommodate and close existing gaps for up to four additional wireless service providers on this facility in the future." It is assumed that this is a typographical error, that this phrase should either read "up to two additional" or not include the term "additional," and that no more than four total wireless carriers are proposed to site share on the WCT.

The three RPP issue areas that are applicable and material to this Project are Heritage Preservation/Community Character, Water Resources, and Wildlife and Plant Habitat; they are addressed below in terms of compliance with the RPP.

Heritage Preservation/Community Character

- There are no historic properties on the Project Site or in the immediate vicinity of the Project Site.
- The Massachusetts Historical Commission found that the Project is unlikely to affect historic or archaeological resources within the Project Site. (*HPCC1.3*)
- No archaeological resources were identified in the intensive site survey conducted within the Project Site by a consultant retained by the Applicant. (*HPCC1.3*)
- The average tree canopy height in this area is 55 feet to 64 feet.
- The Project is set back from the road and buffered by existing vegetation to limit its visibility.
- Virtual Site Simulations, LLC (“VSS”) prepared photographic simulations on behalf of the Applicant. VSS conducted a balloon test on the property on 4/14/18. Balloons were flown at two heights: 125 feet above ground level (“AGL”) and 150 feet above ground level. Photos were taken from various vantage points and photographic simulations of the proposed WCT and antennas were produced. Photo locations included locations requested by the Town of Mashpee and the Cape Cod Commission. The photographic simulations show that the proposed WCT will be visible along nearby roadway segments and will be visible from some residential homes in the Project vicinity. Photosimulations were provided of the WCT at a height of 150 feet AGL, with four wireless service carriers and antennas, and alternately with two wireless service carriers and antennas; photosimulations were not provided of the WCT at a height of 125 feet AGL. The photographs and photographic simulations are included in the application materials. (*See additional discussion on visual impact below.*)
- The Project is not located within the viewshed of a scenic vista, scenic landscape, or scenic road as designated by the Town of Mashpee. The Project will not be visible from identified historic structures or scenic landscapes. (*HPCC1.2*)

Water Resources

- The Project Site is located in a wellhead protection area and within the Rock Landing Wells subwatershed of the Popponesset Bay watershed.
- Popponesset Bay is nitrogen-impaired and requires approximately a 45% reduction in nitrogen load across the watershed to meet the DEP-established TMDL for nitrogen, however the Rock Landing Wells subwatershed does not require nitrogen load reduction. The Project’s relatively small footprint and lack of wastewater generation result in an expected site-wide nitrogen loading of 1 ppm, well below the 5 ppm nitrogen loading standard for general aquifer protection. (*WR1.1*)
- The Applicant has submitted an erosion control plan to minimize erosion and runoff during construction activities. The plan includes phased construction, the use of silt fencing and other erosion control

barriers, stabilization of disturbed areas during construction, and replanting of vegetation to stabilize disturbed areas following construction. These plans provide for adequate control during construction. (WR7.9)

- The Project's gravel compound, concrete equipment pads, and gravel access road and paved apron will create approximately 7,230 ft² of new coverage area (per sheet A.3 of the site plan set), which may change stormwater runoff patterns off-site. Based on a review of the Project site plans, including the erosion control plan, the Applicant appears to have incorporated stormwater management systems at a scale sufficient to address runoff from the Project, given the Project's limited footprint and clearing, but the Applicant has not provided a detailed narrative description of the stormwater management system outlining anticipated stormwater management needs and the ways in which they will be addressed. Commission staff recommends that the Applicant provide a stormwater narrative which describes the elements that constitute the stormwater management system for the Project and articulates the design intent and operation of the system relative to anticipated runoff from the Project.
- There will be no hazardous materials or waste generated, used, or stored at the proposed wireless service facility.
- The two Carriers have proposed the use of propane generators for back-up power.

Wildlife and Plant Habitat

- The Project Site is not located within rare species habitat. (WPH1.4)
- According to materials submitted by the applicant, there are no wetlands present. (WPH1.5)
- The construction envelope has been limited to the greatest extent feasible and the proposed WCT has been sited close to Mashpee Fire Station #2 in order to: preserve a vegetative buffer (beneficial in preserving natural resources and minimizing visual impact); minimize the length of the access road; and minimize the impact to the undeveloped, forested portion of the Town parcel. (WPH1.3)
- The proposed area of disturbance is less than a half-acre and the Project does not appear to pose any significant impacts on wildlife based on a review of maps and resources. Given the limited amount of disturbance associated with the Project, Commission staff does not recommend the preparation and submission of a Natural Resources Inventory by the Applicant. (WPH1.1)

The RPP's Land Use MPSs require consistency with the Commission's Technical Bulletin 97-001, *Guidelines for DRI Review of Wireless Communication Towers*. TB 97-001 provides guidance on WCT DRI review, including siting/dimensional requirements and design, noise, and radiofrequency standards. Relevant aspects of TB 97-001 are addressed below.

- *Siting*: The Applicant performed an analysis of existing structures and undeveloped land to identify feasible sites that could be secured to accommodate wireless facilities and address coverage issues in the Carriers' wireless networks. It concluded that the proposed Project Site, which appears to be the Town's preferred location for a new wireless facility by virtue of the RFP, is the only feasible location.

- *Screening and Camouflage:* Since the Applicant determined that it is not feasible to locate on an existing structure, the Applicant will retain as much of the existing, naturally vegetated buffer as possible so the WCT compound is obscured from view and blends in with the natural environment to the greatest extent possible. The Project Site is surrounded by trees to the nearest property lines 200 feet away.

Commission staff recommends that the WCT in its entirety be painted light gray or sky blue. The Applicant has indicated a willingness to select the color at the discretion and recommendation of the Commission and Town, but the application materials describe just painting the portion of the WCT that extends above the height of the vegetation surrounding it.

- *Legal Right:* The Applicant is required to submit documentation of the legal right to install and use the proposed facility mount at the time of application for a DRI. The Applicant provided a copy of the lease agreement with the Town of Mashpee and copies of FCC Licenses for Verizon Wireless and T-Mobile. Because the Carriers are not technically “applicants” for the Project, Commission staff requested that the Applicant submit Letters of Intent from the Carriers formally evidencing their interests and standing in the Project, which the Applicant provided on 8/21/18.

A portion of the WCT’s fall zone is outside of the 100-foot x 100-foot leased area but within the Town of Mashpee Fire Station #2 property. It is the Commission staff opinion that since the Town is the underlying landowner and is fully aware of the applicable fall zone restrictions, the Applicant need not be required to hold a lease on the entire fall zone. It is further noted that any reduction in WCT height will reduce the radius of the fall zone proportionally. (*See additional discussion on visual impact/WCT height below.*)

- *Height:* In Wireless Facility Overlay Districts where taller facilities are permitted, “personal wireless service facilities of up to 150 feet in height may be allowed.” Monopoles are the preferred type of mount for taller structures. The proposed WCT is a 150-foot tall monopole.
- *Noise Standards:* If the proposed facility were built out to the fullest extent possible, the combined energy from all sources, according to Modeling Specialties, a sound expert retained by the Applicant, would produce a property line Ldn level of 49 dBA, which is below the regulatory standard of 50 dBA at the property line. The Wireless Consultant confirmed that the noise analysis performed and documented by Modeling Specialties employed best practices to arrive at its conclusions.
- *Radiofrequency Standards:* According to Dr. Donald L. Haes, Jr., a Radiation Safety Specialist retained by the Applicant, the proposed facility (inclusive of Verizon Wireless, T-Mobile, and the Town’s EMS equipment) will comply with all regulatory guidelines for radio-frequency (RF) exposure, including relevant sections of Massachusetts Department of Public Health regulations and the FCC’s guidelines for RF exposure. The Radiation Safety Specialist also looked at the scenario of the two possible additional Carriers with transmitters operating at their FCC-licensed capacity; for this “fully loaded” WCT, the sum of maximum RF contributions would fall within the established RF exposure guidelines. The Wireless Consultant confirmed the radio-frequency analysis prepared by Dr. Haes.
- *Lighting:* The WCT is not required to be lit by the FAA, and no lighting atop the WCT is proposed. The Applicant is not proposing any lighting associated with the equipment compound at this time. As a condition of any DRI approval, Commission staff recommends that the Applicant provide, for Commission staff review and approval prior to any lighting installation on or in the equipment compound, a plan and specifications for any such proposed lighting to ensure it is designed, installed, and

maintained in accordance with Technical Bulletin 95-001, *Development of Regional Impact Guidelines for Exterior Lighting*.

- *Abandonment:* As outlined in the lease agreement, within 120 days of the termination of the lease, the Applicant will remove all above-ground improvements and, to the extent reasonable, restore the premises to its condition at the commencement of the lease agreement.

Compliance with Local Regulations and Other Standards for DRI Review

Section 174-45.3 of the Town of Mashpee Zoning Bylaws regulates personal wireless service facilities in the Town of Mashpee. Within the Residential R-3 Zone and Wireless Facility Overlay, a Special Permit is needed for wireless facilities up to 100 feet tall. The Planning Board may grant a waiver for a height up to 200 feet in a Wireless Facility Overlay where circumstances warrant – for example, in cases where there is no serious impact on neighboring properties, residential areas, historic districts, historic places, or scenic vistas.

The Mashpee Town Planner’s comments regarding local regulations and Mashpee’s Local Comprehensive Plan are provided under separate cover.

The project site is located within the Town of Mashpee’s Groundwater Overlay District. (*See additional notes above.*)

The Mashpee Zoning By-law contains stormwater management requirements. The Applicant’s initial stormwater management proposal required significantly more clearing and site disturbance for the Project than what is necessary, given the limited clearing, disturbance, and ground coverage associated with the Project, and the ability of the naturalized portions of the Property to handle and treat the anticipated stormwater runoff from the Project. Commission staff understands that the Applicant will seek waivers from certain of these stormwater management requirements; Commission staff would support such waivers. Consistency with local development bylaws will be evidenced by the Applicant obtaining all necessary local permits, licenses, and approvals.

The Project is not located within a designated District of Critical Planning Concern (DCPC) other than the Cape-wide Fertilizer Management DCPC. The Town adopted implementing regulations pursuant to the Cape-wide Fertilizer Management DCPC, however, since the Project does not propose any managed turf area, these implementing regulations are not applicable to the Project.

Requested Supplemental Application Materials

- Commission staff requested that the Applicant provide a stormwater management narrative which: describes the stormwater management system for the Project; and articulates the design intent and operation of the system relative to anticipated runoff from the Project. The Applicant indicated that the stormwater narrative was still in progress as of 8/24/18.
- Because the two Carriers (Verizon Wireless and T-Mobile) are not technically “applicants” for the Project, Commission staff requested that the Applicant submit Letters of Intent from the Carriers formally evidencing their interests and standing in the Project, which the Applicant provided on 8/21/18. The Letters of Intent confirm that the guideline for co-location outlined in section VII of Technical Bulletin 97-001 has been met.

- As noted by the Wireless Consultant, the photographic simulations included in the application materials appeared to have discrepancies in terms of the photographic simulation scales and the focal lengths of photos #3 and #4. Commission staff requested that the Applicant provide: additional information to resolve these discrepancies; a description of photographic simulation methodology per the recommendations of the Wireless Consultant; and, as applicable, accurate revised photosimulations. On 8/24/18, the Applicant provided an explanation for the photographic simulation discrepancies between Photo #3 and Photo #4. The Applicant's consultant, VSS, reviewed the metadata for the original photos taken on 4/14/18 and determined that the digital equivalent focal lengths for Photo #4 and Photo #5 were set incorrectly. On 8/24/18, the Applicant provided: revised images for Photo #4 and Photo #5; corrected photosimulations for Photo #4; and a written description of the photographic simulation methodology used by their consultant. The Applicant also confirmed that VSS verified that all the other photos included in the photographic simulation package, submitted as part of the original application materials, were taken at the correct digital focal length equivalent.

Recommendations – Subcommittee Discussion/Further Consideration

In addition to consistency with other DRI review and approval standards, the subcommittee should discuss the probable beneficial impacts of the WCT relative to the probable detrimental impacts, from a regional perspective. The subcommittee should also determine whether there are any additional application materials needed to complete a review of the proposed project. The notes below are intended to provide guidance.

- The Applicant has indicated that the WCT will address wireless coverage issues and remedy capacity deficiencies. Town EMS equipment will also be placed on the WCT. The proposed WCT will allow for improved wireless coverage in the area depicted on the maps included in the application materials at the indicated frequencies at the proposed height.
- Pursuant to MPS HPCC2.3, the Applicant should explore and address all possibilities for lessening visual impacts, such as lowering the height of the WCT, provided the Applicant can address the Carriers' coverage issues with such alternative design.
- If the subcommittee takes the position that the Applicant has not sufficiently evidenced the need for the Project to address wireless coverage or capacity problems, the subcommittee could request, for its further review, additional coverage maps and other information referenced in the Wireless Consultant's report.
- The subcommittee might consider whether the benefit of having space for two additional Carriers (in addition to the two Carriers already intending to site share) outweighs any identified detrimental impacts of the additional height needed for the WCT to be able to accommodate these potential additional Carriers, assuming that the two Carriers would be able to address coverage issues at lower WCT elevations. The subcommittee can determine whether reducing the visual impact outweighs the benefit of room for additional Carriers. *(See below for additional information.)*
- The Applicant indicates that the proposed facility is the minimum height necessary to address identified coverage needs and remedy capacity issues, but no studies were provided by the Carriers to corroborate this statement.
- For comparison purposes, the subcommittee might request data from the Applicant of the coverage attainable at lower WCT elevations. Additional data would help determine if the needs of the two

Carriers would be met sufficiently if the overall WCT height (and thus Carrier heights were reduced), potentially with just two Carriers co-located on the WCT along with the Town EMS equipment. Such coverage analysis should be provided with the proposed Carriers at two additional, lower heights: 25 feet lower and 50 feet lower than the currently proposed antenna placement heights. On 8/24/18, the Applicant provided Verizon Wireless coverage maps showing Verizon Wireless at 121 feet AGL and 91 feet AGL. At 91 feet AGL, the coverage maps provided by Verizon Wireless show a significant degree of coverage loss versus at 121 feet AGL and 146 feet AGL. At 121 feet AGL, Verizon Wireless appears to be able to cover most, but not all, of the same area as at 146 feet AGL. The Applicant indicated that T-Mobile was working on coverage maps for 110 feet AGL and 85 feet AGL. The Applicant will forward the additional T-Mobile coverage maps as soon as they are available. The Wireless Consultant will review the additional materials submitted by the Applicant and provide additional comments to the Commission.

- In addition, T-Mobile could be asked to refocus its coverage analysis on in-building only and overlay coverage from both 700MHz and 2100 MHz licenses. (*See Wireless Consultant's report for additional information.*) This information would inform the discussion on whether a lower overall WCT height might address the coverage issues while reducing visual impact. The Applicant has represented that they are working with T-Mobile to provide additional coverage maps using the -97 dBm threshold for 2100 MHz, and its equivalent at 700 MHz, to illustrate the two stages of in-building coverage available today and with the proposed facility.
- Additionally, photosimulations of the WCT were not provided, but might be provided by the Applicant, at a lower alternate WCT height of 125 feet AGL, to match the lower balloon test height.
- Finally, the subcommittee should discuss whether plantings are necessary to supplement the existing natural buffer to screen the fenced (chain link) compound from public view off-site.

Recommended Conditions

- As a condition of any DRI approval, Commission staff recommends that the Applicant provide, for Commission staff review and approval prior to any lighting installation on or in the equipment compound, a plan and specifications for any such proposed lighting to ensure it is designed, installed, and maintained in accordance with Technical Bulletin 95-001, *Development of Regional Impact Guidelines for Exterior Lighting*.
- Commission staff recommends that any DRI approval be conditioned to limit fuel sources for backup generators to the use of propane.
- Commission staff also recommends that the subcommittee include as a condition of any DRI approval that the Applicant paint the WCT in its entirety either light gray or sky blue.