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April 10, 2012

Chairwoman Norma Drummond and  
Members of the Zoning Board of Appeals  
Town of East Fishkill Town Hall  
330 Route 376  
Hopewell Junction, New York 12533

RE: Wireless Edge Towers, LLC wireless telecommunications facility  
722 Route 376, Hopewell Junction, New York

Dear Chairwoman Drummond and Members of the Zoning Board of Appeals:

Your Board has requested that the undersigned, a New York State Licensed Professional Engineer specializing in radio frequency engineering, review portions of the application of Wireless Edge Towers, LLC ("Wireless Edge") to construct a wireless telecommunications facility in the Dogwood Knolls Golf Course located at 722 Route 376 in Hopewell Junction. For this critical review, the undersigned as considered the following documents:

Fishkill Plains Cell Site – Radio Frequency Analysis, prepared by Jonathan Edwards Radio Frequency Design Engineer, Verizon Wireless ("Verizon"), dated December 21, 2012

Zoning Drawings, prepared by Tectonic engineering & Surveying Consultants, PC dated January 25, 2012

Portions of the Code of The Town of East Fishkill dealing with commercial communications towers.

Wireless Edge proposes to construct a 110 foot monopole to provide support for wireless telecommunications carriers. As Wireless Edge is not a carrier, it has included Verizon to support the need for the facility. Verizon has included in its Radio Frequency analysis a number of propagation and line of site plots to justify its need for the facility. Attachment1 to the analysis "Fishkill Plains – Existing Coverage @ -85 dBm" indicates by a computer simulation (model) the existing calculated coverage of the Verizon system. Although Verizon operates a number of system in the area (Cellular, Personal

Communications System and Long Term Evolution) it has not indicated which system is depicted. The areas depicted in white are those where the calculated level of coverage is below the stated design goal. An examination of this Attachment reveals an area of insufficient coverage generally in the area of Route 376 and portions of The Taconic State Parkway. In compliance with 194-80A(5) of the ordinance Verizon indicates all existing surrounding sites within 10 miles of the proposed site. Note that the location of all existing sites is compliant with good engineering and design of such systems as the sites are regularly spaced on a “regular reuse grid” with the site separation of approximately 3.5 miles

Attachment 1 “Fishkill Plains – Proposed Coverage @ -85 dBm” demonstrates with the model the proposed calculated coverage that would be provided by the proposed facility.

Attachment 1 “Fishkill Plains Existing and proposed Coverage @ -85 dBm” is a composite of the two previously noted coverage maps. Note in this attachment, the location of the proposed site with respect to the existing sites. The proposed Fishkill Plains site is approximately 1.5 miles to the northwest of the existing Hopewell Junction site. This location does not appear to be ideal with respect to the regular reuse grid. Note also that the coverage provided by the site leaves areas of insufficient coverage, especially in the vicinity of the Taconic State Parkway. Moreover the proposed site only provides approximately 60% new coverage (un-duplicated) and 40% overlap with existing coverage provided by the Hopewell Junction site. It is relevant to note that while some coverage overlap is required to accomplish seamless handoffs between cell sites, this overlap is generally designed to be approximately 10%.

Figure 1, page 4 of the Radio Frequency Analysis, indicates the “Search Area” that the engineering department of Verizon developed to locate a new site in the area. This “search ring” centered just north of Route 376 has a radius of approximately 1.5 miles. By comparing the search area along with the proposed site location it is obvious that the proposed site is in the lower  $\frac{1}{4}$  of the search area. Note also that a site located in the upper  $\frac{1}{4}$  of the search area would not only meet the regular reuse grid design of 3.5 miles, but also might provide superior coverage to the northwest, while minimizing the inefficient duplication of coverage.

Attachment 1 “Existing, Future and Proposed Coverage @ -85 dBm” depicts coverage from the proposed site as well as other planned sites in the area. Please note a proposed site Verizon denotes as “Hillside Lake.” Your Board has requested the undersigned to review the application for this site and that will be the subject of another report. It is noted here as it is a proposed site that is most impacted by the site reviewed herein.

The remaining Attachments to the Radio Frequency analysis deal with line of sight plots so as to justify the height requested. They will not be considered more fully here as while they are helpful, do not appear to justify the site.

**FINDING:** Verizon has reasonably demonstrated that it has a gap in coverage in the general area of Hopewell Junction. Verizon has not demonstrated, however, that the site

proposed is *unique* in its ability to provide coverage relief. Issues associated with the spacing with existing sites, the inefficient use of new radio frequency coverage and the consideration that must be given to another application before your Board lead to this finding. The undersigned is not familiar with the location of the different land use zones within the Town. It is noted, however, that there are a number of zones within the Town where towers of up to 150 feet and up to 195 feet above ground may be permitted. Moreover, the search ring provided by Verizon indicates areas to the north of the search ring center have reasonably high ground elevations that are essential to good coverage. Finally, with the existing application for the site at Hillside Lake also before your Board, it is the opinion of the undersigned that, if possible, these two applications be "joined" as mutually exclusive. A correctly located site in either application may negate the need for the other. Specific review and findings with respect to the Hillside Lake site will be presented in another report to your Board.

**Verizon or Wireless Edge, as the case may be, should be requested to provide additional information with respect to alternate sites located within the search ring that would meet the standards of good engineering practice with respect to regular reuse grid and non-duplication of coverage and that would result in a truly unique site to provide the relief it seeks.**

This review is based on the information presented and to the best of the undersigned's knowledge and belief that the information contained therein is true, accurate and complete. Should your Board have any additional questions, please feel free to contact the undersigned.

Very truly yours,



Ronald E. Graiff