DRAFT

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January 22, 2008

Shawangunk Planning Board
P.O. Box 247
Wallkill, NY 12589

RE: Verizon Wireless application at 23 Old Hoagerburgh Road

Dear Shawangunk Planning Board:

The Shawangunk Planning Board engaged the Environmental Simulation Center Ltd. (ESC) to review the Application of Verizon Wireless at 23 Old Hoagerburgh Road, and advise you and Verizon Wireless on visual analysis to be performed as a part of this application.

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The ESC is a not-for-profit organization based in New York City. It helped to develop many of the techniques that have become standard practice in the production of materials used to evaluate impacts on visual resources and continues to work on visual analyses for applicants, lead agencies and interested third parties. Questions regarding the materials contained herein should be referred to George M. Janes, AICP at 212-279-1851.

MICHAEL KWARTLER, FAIA
President

GEORGE JANES, AICP
Executive Director

Current Status of the Visual Analysis of the Action
The third page of the project narrative of the applicant's application states:

> "According to Section IV (c)(9) the Town has the discretion to not only require a balloon test to demonstrate the potential visual impacts of the proposed structure, but to also identify key locations from which photographs should be take in connection with a photosimulation analysis. In light of this discretion, Verizon Wireless has not completed the balloon test and has not submitted a visual resource evaluation with the Application. Verizon Wireless will be happy to provide such analysis once we receive direction from the Planning Board."

This letter is an attempt to provide the Planning Board and Verizon Wireless direction as to how this analysis should be completed.

Visibility Analysis
Before the town selects any viewpoints for visual analysis, the Town should have available to it a visibility analysis (also known as viewshed mapping) that shows within a five mile radius of the proposed action areas have theoretical visibility to the proposed action. The town should also have available to it an inventory of listed visual resources within a five-mile radius and if these visual resources have theoretical visibility to the proposed action. Listed visual resources include:

- Properties on or eligible for the National or State Register of Historic Places;

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- State parks;
- Urban cultural parks;
- State forest preserves, Catskill parks;
- National wildlife areas, State game refuges, State wildlife management areas;
- National natural landmarks;
- The National Park System, Recreation Areas, Seashores, and Forests;
- Rivers designed as National or State Wild, Scenic or Recreational;
- A site, area, lake, or highway designated or eligible as "Scenic";
- Scenic Areas of Statewide Significance (SASS);
- State or federally designated trail;
- State nature and historic preserve areas;
- Bond Act Properties purchased under "Scenic Beauty" or "Open Space" categories.

Viewpoints selected for analysis do not need to be limited to only listed visual resources, but can include publicly accessible areas with views that add to the community character of the area and can include views from roads, highways, local parks, public buildings, and so on. These are considered "resources of local importance" and can be defined by the town as it sees fit. Private property that is not open to the general public, however, is usually not considered for visual analysis unless there is a specific public purpose for the analysis. The Department of Environmental Conservation's "Assessing and Mitigating Visual Impacts" gives good guidance as to how to conduct visibility analysis and an inventory of visual resources.

The Town has the discretion to require a balloon test. In short, a balloon test is an exercise where the applicant would set up a balloon at the project site that would rise to the height of the proposed action. A balloon test allows two significant things: first it allows members of the community to see from where the action will be visible. Second, it can also be used in evaluating the actual visibility of the action from listed visual resources within a five-mile radius, as actual visibility can vary from theoretical visibility. Additionally, the balloon used in a balloon test can be used as a reference when creating photosimulations or verifiable digital photomontages.

Verifiable digital photomontages

The Town has the discretion to require the applicant to perform photosimulations from viewpoints of their choosing. To meet standards regarding accuracy and verifiability, photosimulations must be performed as "verifiable digital photomontages." Verifiable digital photomontage is a technique that merges an existing conditions photograph with an elevated, 3D computer model of a proposed action. It is "verifiable" since a computer model of the action can be measured and its placement in the terrain checked for accuracy. A key part of making a photosimulation verifiable is the use of references that exist in both the

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existing conditions photograph and in the 3D model. References ensure that the computer camera used with the 3D computer model matches the camera used to take the photograph, adjusting to proper location, pitch, roll, and yaw.

In urban areas, references are usually existing buildings that can be seen in the photographs of existing conditions, and which are then included into the 3D computer model of the action for camera match purposes. In rural areas, these elements are usually added to the scene before photographs are taken. Cranes, balloons or other elements of a known size, shape and location are placed into the scene and the photograph is taken with these elements in the scene. These same elements are built into the 3D model and the photo and the model are matched to these known points. Common rural elements such as tree lines or ridges are usually not considered to be acceptable references and should never be the only points used to match the photograph to the 3D model.

Because of the rural nature of the area of the proposed action it is likely that the viewpoints simulated will require the use of balloons and/or other introduced references into the photograph (and the underlying computer model) to ensure that the simulation produced is verifiable. The actual references to be used are left to the discretion of the professional who produces the simulations and may vary according to the viewpoint, but the applicant should ensure that at least five hard match points are used when creating the camera match.

Representation of the action

The photosimulations should represent the action using photorealistic textures that accurately portray the color and materials used in the proposed action. The lighting in the simulations should be set to the time of day and year of when the photographs were taken. If the materials used in the action are specular (e.g. they reflect light) they should be represented as such. If the action is to be lit or require material nighttime lighting, the town may consider requiring nighttime simulations depending on the specifics of the proposals. While nighttime simulations are not yet typical, they have become more common as technology has evolved to make it easier to produce them with some confidence as to their accuracy.

Photographs

Existing condition photographs should be taken during leaf off, no snow conditions when atmospheric conditions are clear. If additional viewpoints or photographs taken at other times of year add to the understanding of impacts on visual resources they can be added at the applicant's option. Photographs should be taken near mid-day, when shadows are short and the light from the sun the bright, though the applicant is free to choose another time of day if a viewpoint suffers from glare or unusual reflection at this time of day. If nighttime simulations are required, photographs used for the nighttime simulation should be taken from the same viewpoints used for daytime simulations. The applicant is advised to use either 35mm film or a full-frame digital camera to take the

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photographs used for existing conditions, to ensure proper aspect ratio. Photographs should be taken in landscape orientation and most of them should use a normal lens (see below).

Lenses

Most photographs used for photosimulation should be taken using a normal, or 50mm lens. This lens has been shown to create an image where distance relationships are similar to the perception of the human eye. Simply, lenses less than 50mm will make elements in the photograph appear smaller that they would to the human eye, while larger lenses will make elements of the photograph appear larger[1]. If more than two viewpoints are selected for analysis, I recommend that one or two photosimulations should be done using a zoom lens to simulate the acuity of the human eye when it focuses on an object in the distance. This zoom lens should be 85mm or larger. Panoramic lenses (or the use of panoramic stitching) should not be used.

Presentation of results

The existing conditions photographs and the photosimulations should be printed on photo quality paper using the highest appropriate resolution. They should be accompanied by a key map showing from where all the viewpoints have been taken and a discussion of how the photosimulations have been performed. The applicant should also provide written documentation not only of the methods used to produce the simulations, but which also discusses the existing landscape character and visual setting to establish the baseline visual conditions from which change is evaluated. The visibility analysis and resource inventory should be reproduced and submitted with the documentation. The action's impact on visual resources should be analyzed using generally accepted criteria used to evaluate impacts on visual resources (e.g. displacement, form, line, color, texture, scale, spatial dominance.) Finally, if visual impacts are shown, a mitigation program should be discussed.

Alternatives

The application states that there are no acceptable co-location alternatives that are available. Should the town require alternatives that do not involve co-location, visual analysis from these locations typically do not require the same level of detail as the proposed action, but enough information should be presented to allow for a meaningful comparison between any alternative and the proposed action. This means that the alternative would need to be simulated using the same technique and method of representation as used for the proposed action, though fewer photosimulations may be required.

[1] Research has shown that there is variation between people so that any lens between 50 and 55mm is an acceptable lens to represent distance relationships of the human eye.

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Close

Should you have any questions or comments please do not hesitate to contact me. If I need to appear before the Planning Board on this matter, please contact my office soon so that we may discuss timing.

Sincerely,

George M. Janes, AICP
Executive Director
Environmental Simulation Center