

SUPPLEMENTAL VISUAL IMPACT ASSESSMENT

Jordanville Wind Power Project

Towns of Stark and Warren, Herkimer County, New York

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TABLE OF CONTENTS

INTRODUCTION.....	1
PROJECT DESCRIPTION.....	1
Project Site.....	1
Proposed Project.....	2
Wind Turbines.....	2
Electrical System.....	2
Meteorological Tower.....	3
Service Roads.....	3
EXISTING VISUAL CHARACTER.....	4
Physiographic/Visual Setting.....	4
Landform and Vegetation.....	4
Land Use.....	4
Water Features.....	5
Cultural Resources.....	5
Landscape Similarity Zones.....	5
Viewer/User Groups.....	6
Visually Sensitive Resources.....	6
VISUAL IMPACT ASSESSMENT METHODOLOGY.....	11
Project Visibility.....	11
Viewshed Analysis.....	11
Cross Section Analysis.....	12
Field Review.....	12
Project Visual Impact.....	13
Viewpoint Selection.....	13
Simulations/Photo Renderings.....	15
Panel Evaluation.....	17
VISUAL IMPACT ASSESSMENT RESULTS.....	18
Project Visibility.....	18
Analysis of Existing and Proposed Views.....	22
Visual Impact Assessment Rating.....	30
MITIGATION MEASURES.....	33
CONCLUSIONS.....	34
LITERATURE CITED/REFERENCES.....	38

TABLES & FIGURES

Table 1.	Project Visibility from Sensitive Sites
Figure 1.	Regional Project Location
Figure 2.	Proposed Project Layout
Figure 3.	Visual Study Area
Figure 4.	Landscape Similarity Zones
Figure 5.	Visually Sensitive Sites
Figure 6.	Demonstration of Simulation Accuracy
Figure 7.	Turbine Viewshed Analysis
Figure 8.	Transmission Line Viewshed Analysis
Figure 9.	Viewpoint Locations
Figures 10-32.	Visual Simulations/Photo Renderings

APPENDICES

Appendix A.	Transmission Facility Components
Appendix B.	Large Scale Viewshed Maps
Appendix C.	Expanded Photo Log – See Enclosed CD
Appendix D.	Digital Simulations – See Enclosed CD
Appendix E.	Visual Impact Assessment Rating Forms – See Enclosed CD
Appendix F.	Information on Turbine Light Shield
Appendix G.	Resumes of Involved Landscape Architects

INTRODUCTION

Environmental Design & Research, Landscape Architecture, Environmental Services, Engineering and Surveying, P.C. (EDR) was retained by Jordanville Wind, LLC to prepare a Visual Impact Assessment (VIA) for the proposed Jordanville Wind Power Project (the Project) in the Towns of Stark and Warren, New York (EDR, 2006). This VIA was included in the Draft Environmental Impact Statement (DEIS) for the project, which was accepted as complete by the lead agency (Town of Warren) on May 31, 2006. As a result of proposed project changes, the availability of new data, and public/agency comments received on the original VIA, Jordanville Wind, LLC retained EDR to prepare this Supplemental Visual Impact Assessment (SVIA).

The purpose of the original VIA was to: 1) describe the appearance of the visible components of the proposed project, 2) define the visual character of the project study area, 3) inventory and evaluate existing visual resources and viewer groups, 4) evaluate potential project visibility within the study area, 5) identify key views for visual assessment, and 6) assess the visual impacts associated with the proposed action. The purpose of the SVIA is to provide supplemental analysis of project visibility, appearance, and visual impact based on 1) the components and arrangement of the project as currently proposed, 2) the availability of new data regarding proposed project components and visually sensitive resources in the area, and 3) an expanded visual study area. The SVIA is a supplement to the original VIA, and only addresses project changes and information not presented in the original VIA. It does not reiterate information and findings from the original VIA that remain accurate and unchanged. It is also not a comprehensive response to public/agency comments received on the original VIA. Although it does address several issues raised in these comments, a comprehensive responsiveness summary will be included in the Final Environmental Impact Statement (FEIS) for the Jordanville Wind Power Project. Like the original VIA, this SVIA was prepared under the guidance of a registered landscape architect experienced in the preparation of visual impact assessments. It is also consistent with the policies, procedures, and guidelines contained in established visual impact assessment methodologies (see Literature Cited/References section).

PROJECT DESCRIPTION

Project Site

The proposed project site has changed somewhat since preparation of the original VIA. Due to some minor changes in landowner participation, the currently proposed project site now includes

approximately 5,130 acres of leased private land (approximately 56 separate parcels) in the Towns of Stark and Warren in Herkimer County, New York (Figure 1). Other than this, the site is as described in the original VIA.

Proposed Project

The currently proposed project is a 136-megawatt (MW) wind power facility, consisting of 68 2.0-megawatt (MW) Gamesa G-87 wind turbines and associated support facilities. Thirty-four turbines are proposed for the Town of Stark, and 34 in the Town of Warren. The proposed collection station is located south of Upper Dock Road, and the substation is located north of State Route 168 in the Town of Stark, both of which are connected by an overhead 230 kV transmission line (Figure 2).

The components of the project are as described in the original VIA. Changes or additional data regarding the currently proposed project components are outlined below:

Wind Turbines

Other than the reduced number of total turbines (68 versus 75), the type and dimensions of proposed turbines has remained unchanged (maximum height of approximately 400 feet).

Electrical System

The project's electrical system includes the same components described in the original VIA. Changes and additional detail regarding these components are outlined below:

Collector System: The total length of 34.5 kV collection line will be approximately 27 miles. This compares to the previously proposed total length of approximately 41 miles. Design of the 2 miles above-ground section of this system has not been completed. However, typical photographs of overhead 34.5 kV lines from existing wind power projects were provided in Appendix A of the original VIA. In addition, the project developer is currently reviewing an alternative that would place this section of the interconnect system underground. Consequently, the collector system will not present a significant visual change and does not warrant further analysis.

Collection Station: The collection station will be located south of Upper Deck Road, and will be approximately 310 by 180 feet in size. It will include all of the electrical equipment described in the DEIS, along with an 81 by 27 foot, one story operations and maintenance

building. Elevations and plan views of this facility are included in Appendix A. The collection station site is well removed, (minimum 1,000 feet) from public roads and residences, and completely screened from view by hills and trees that will remain following construction (see photos in Appendix C). Project visibility will be limited to, at most, a few locations on lightly-used Aney Hill Road where only the upper portions of the collection station equipment may be visible above the trees. Consequently, the collection station is not addressed in this study.

230 kV Transmission Line: The 230 kV transmission line will be approximately 0.7 mile in length, and will be carried on five new Corten steel monopoles ranging from 60 to 110 feet in height (see proposed structure locations and types in Appendix A). Because approximate tower locations and proposed structure types are now known, the appearance and visual impact of the transmission line is addressed in the SVIA.

Substation: The substation will be located off of State Route 168 in the Town of Stark, adjacent to the existing National Grid 230 kV transmission line. The substation will be approximately 215 by 243 feet in size. Elevations and plans showing the components and dimensions of this station are included in Appendix A. The substation will be located approximately 600 feet north of Route 168, and will be accessed by a new gravel service road. Because preliminary design of this facility is now complete, it is addressed in the SVIA.

Meteorological Tower

The two permanent meteorological (met.) towers currently proposed as part of the project are anticipated to be galvanized steel monopole structures 262 feet in height. These structures taper from a base diameter of 10 feet to a top diameter of 5 feet, and include wind monitoring instruments at 32, 84, 169, 254, and 259 feet. Specifications and details regarding these structures are included in Appendix A. The met. towers have been added to the computer model of the proposed facility, have been included in all of the revised simulations where they are visible, and therefore are fully addressed in the SVIA.

Service Roads

Current plans call for approximately 19 miles of new or improved access/service roads. This compares with approximately 21 miles of road proposed on the original project. Road dimensions and surfacing will be described in the original VIA. The finished roads will be gravel-surfaced and

approximately 16-feet wide. The visual character of the service roads are presented in simulations where they appear (see Viewpoint 39). The visual effects of the proposed 16-foot wide roads are not evaluated further.

The layout of the currently proposed project components on the site is illustrated in Figure 2.

EXISTING VISUAL CHARACTER

The following section describes the visual character of the expanded visual study area. Based on established visual assessment methodology (NYSDEC, not dated) the study area evaluated in the original VIA was defined as the area within a 5-mile radius of each of the proposed turbines. Based on public and agency comments received on the DEIS, the visual study area was expanded to a 10-mile radius around the proposed turbines, thus including approximately 300 square miles in Herkimer, Otsego, and Montgomery Counties. This study area is illustrated in Figure 3.

Physiographic/Visual Setting

Landform and Vegetation

Topographic and vegetation conditions within the expanded visual study area are generally similar to those of the original study area described in the VIA. The area between 5 and 10 miles from the project is generally characterized by hilly topography and a mix of forests and open fields. This area includes steeper hills and ridges and more extensive forests to the south. The broad, relatively level Mohawk River Valley, with its mix of agricultural fields and wooded slopes, is the dominant physiographic feature to the north.

Land Use

Land use within the expanded visual study area is similar to that described for the original study area. It is dominated by agricultural fields, farms, and scattered rural residences. However, by expanding to 10 miles, it now includes more urban areas in the Mohawk Valley that are characterized by higher density residential and commercial development. The Villages of Richfield Springs, Herkimer, Mohawk, Ilion and Cherry Valley and the City of Little Falls now fall fully within the expanded study area. This area also includes Glimmerglass State Park, a larger portion of the NYS Thruway and a larger portion of the Erie Canal/Mohawk River.

Water Features

Water features within the expanded visual study area include larger portions of West Canada Creek, East Canada Creek, and the Mohawk River/Erie Canal. Canadarago Lake and the north end of Otsego Lake are also now included within the study area, along with a larger portion of the Erie Canal.

Cultural Resources

The area in and around the expanded visual study includes an abundance of historic/cultural resources. These include structures, as well as districts that are listed or eligible for listing on the National Register of Historic Places (see additional discussion in Visually Sensitive Resources section). In addition, a report commissioned by Otsego 2000 (O'Donnell, 2006), suggested that the area within and around the proposed project site appears to qualify for consideration as a rural historic district. While a formal response to this report will be provided in the Project FEIS, it should be noted that two EDR landscape architects, experienced in visual impact assessment and cultural landscape analysis and treatment, reviewed this report (as well as the project DEIS) and toured the project site to make their own evaluation. While acknowledging that the area may have historic significance due to its association with agricultural settlement patterns, they found that the integrity of landscape components and their organization as a whole, do not provide strong evidence that the area is a distinctive cultural landscape that would qualify for eligibility as a rural historic district on the National Register. The EDR landscape architects concluded that although the landscape is attractive, it is no more exceptional than other agricultural landscapes in this region of New York State (see additional discussion in Methodology and Visually Sensitive Resources sections).

Landscape Similarity Zones

Landscape similarity zones within the expanded visual study area are consistent with those described in the original VIA. Within the outer 5-10 mile ring, Waterfront and Forest zones are more abundant to the south, while Village/Hamlet zones are more abundant to the north. Areas of the Rural/Agricultural zone are fairly consistent throughout the expanded study area, except that those within the Mohawk Valley are often more enclosed by surrounding valley walls and lack the expansive views available in more elevated settings. Because the original VIA concluded that project visual impact will be largely concentrated in areas with foreground and midground views of the turbines, landscape similarity zones were not specifically defined or modified for the expanded visual study area. However, within 5 miles of the proposed project, the approximate location of these zones has been mapped, and is presented in Figure 4. The general landscape character, use,

and potential views to the proposed wind power project from each of these zones are as described in the original VIA.

Viewer/User Groups

As with landscape similarity zones, viewer/user groups impacted by the proposed project will be concentrated within the original 5 mile radius visual study area. Consequently, the three groups described in the original VIA (local residents, through travelers/commuters, and recreational users/tourists) are still considered to represent the typical groups that will have future views of the project. Because the expanded visual study area includes portions of Otsego Lake and Canadarago Lake, larger portions of the Mohawk River/Erie Canal, and additional parks and historic sites, recreational users/tourists are perhaps a more significant group within the expanded visual study area.

Visually Sensitive Resources

The area within the expanded visual study area includes several sites that the New York State Department of Environmental Conservation (NYSDEC) Visual Policy (DEP-00-2) considers scenic resources of statewide significance (NYSDEC, 2000). Visually sensitive resources not described in the original VIA (either because they occur between 5 and 10 miles from the site, or were not known at the time that study was prepared) include the following:

Sites listed on the National or State Register of Historic Places

Along with the 10 National Register-listed sites/districts identified in the original VIA, the expanded visual study area includes the following:

1. Hicks Cemetery – Town of Warren
2. Lakeview Cemetery – Town of Richfield
3. Cherry Valley Village Historic District – Roughly bounded by Alden Street & Montgomery Street, Maple Avenue & Elm Street, and Main Street, Cherry Valley
4. East Springfield Union School – East Lake Road, East Springfield Vicinity
5. Baker Octagon Barn – State Route 28, Village of Richfield Springs
6. Bates-Englehardt Mansion – Village of St. Johnsville
7. Enlarged Double Lock No. 33 Old Erie Canal – Village of St. Johnsville
8. First United Methodist Church – 36 Second Street, Ilion
9. Fort Herkimer Church – State Route 5S, East Herkimer

10. Herkimer County Courthouse – 320 North Main Street, Herkimer
11. Herkimer County Historical Society – 400 North Main Street, Herkimer
12. Herkimer County Jail – 327 North Main Street, Herkimer
13. Herkimer County Trust Company Building - 25 West Main Street, Little Falls
14. Herkimer Home – South bank of Mohawk River on State Route 5S, Little Falls
15. Hyde Hall – Glimmerglass State Park, South of Springfield Center
16. Hyde Hall Covered Bridge – Glimmerglass State Park, East Lake Road, Springfield
17. Lindesay Patent Rural Historic District – Towns of Springfield, Cherry Valley, Middlefield and Roseboom.
18. Indian Castle Church – State Route 5S, Hamlet of Indian Castle
19. Palatine German Frame House (Wilder House) – 4217 State Route 5, Herkimer vicinity
20. Remington House – 1279 Upper Barringer Road, Kinne Corners vicinity
21. Remington Stables – 1 Remington Avenue, Ilion
22. Richardson, Thomas, House – 317 W. Main Street, Ilion
23. Sanders, James, House – 546 Garden Street, Little Falls
24. The Reformed Church – 405 North Main Street, Herkimer
25. U.S. Post Office – Ilion – 48 First Street, Ilion
26. U.S. Post Office – Little Falls – Corner of Ann and Albany Streets, Little Falls
27. U.S. Post Office – Herkimer – 135 Park Avenue, Herkimer
28. Windfall Dutch Barn –Clinton and Ripple Roads, Salt Springville

The expanded study area also includes a few additional sites that are considered eligible for listing on the State and National Register. These include:

1. Waggoner Patent Historic District - East Springfield
2. West Main Street Historic District – Village of Richfield Springs
3. New York State Erie Canal System - Town of Herkimer to City of Little Falls

In addition, an architectural survey conducted by John Milner Associates (JMA) identified an additional 89 sites within 5 miles of the Project site that could be considered eligible for listing on the National Register (Traum and Klein, 2006). In JMA's opinion, 34 of the properties are concentrated in potential historic districts located in the hamlets of Newville, South Columbia, and Van Hornesville.

Since completion of the original VIA, a report was prepared by O'Donnell (2006) for Otsego 2000, which suggested that the area in and around the project site might be eligible for listing on the National Register as a rural historic district. As described, previously, review of this report and field

review of the area by two EDR landscape architects concluded that the landscape components in the area do not constitute a potentially significant and distinctive landscape that would warrant a study and determination of eligibility for designation as a rural historic district on the National Register. This conclusion was based on the observation that 1) for the most part the landscape is no more exceptional than much of rural/agricultural landscape in this region of New York State and appears to have limited historic association, and 2) the integrity of the landscape has been weakened over time with the loss of character-defining features and contemporary intrusions. As an example, the EDR landscape architects did not find readily discernable lot lines, hedgerows, and field patterns that would clearly depict the spatial organization of a rural agricultural district, as was observed in the Register-listed Lindsay Patent.

State Parks:

Two state park facilities occur within the expanded visual study area. These parks (Glimmerglass State Park and Canadarago Boat Marine Park) and the recreational facilities/opportunities they provide were fully described in the original VIA.

Urban Cultural Parks: NONE IN THE STUDY AREA

State Forest Preserve:

The expanded study area includes the Ohisa and Otsquago State Forests, as described in the original VIA.

National Wildlife Refuges: NONE IN THE STUDY AREA

State Wildlife Management Areas:

The Plantation Island Wildlife Management Area (WMA) occurs within the expanded visual study area. This area was described in the original VIA.

National Natural Landmarks:

Moss Island in the Town of Little Falls occurs within the expanded visual study area. The island is part of an uplifted fault block of ancient crystalline rock. It contains the best exposure of glacial age potholes eroded by meltwater floods in the eastern United States.

National Park System Lands:

The only National Park Service lands within the expanded visual study area is the Erie Canal National Heritage Corridor. This corridor was described in the original VIA.

Wild, Scenic and Recreational Rivers: NONE IN THE STUDY AREA

Designated Scenic Roads/Byways:

The expanded visual study area includes three state-designated scenic byways. These include State Route 20, the Revolutionary Trail Scenic Byway (along State Route 5), and the Southern Adirondack Trail Scenic Byway (which includes portions of State Routes 8, 28, 29, 167, and 169). These scenic byways were described in the original VIA.

Designated Scenic Sites/Overlooks: NONE IN THE STUDY AREA

State or Federal Designated Trails: NONE IN THE STUDY AREA

The proposed Canalway Trail extension between the Towns of Ilion and Little Falls was described in the original VIA.

Adirondack Park Lands and Scenic Vistas: NONE IN THE STUDY AREA

State Nature and Historic Preserve Areas: NONE IN THE STUDY AREA

Palisades Park Land: NONE IN THE STUDY AREA

Bond Act Properties (Exceptional Scenic Beauty, Open Space): NONE IN THE STUDY AREA

Beyond the scenic resources of statewide significance listed above, the expanded visual study area also includes areas that are regionally or locally significant/sensitive. These include local parks and recreation facilities, public open space, population centers, and heavily used transportation corridors. The most significant of these that were not described in the original VIA are listed below:

Local Scenic Vistas:

No additional scenic vistas or overlooks were identified within the study area, beyond the 10 scenic views identified in the Town of Stark Planning and Reference Guide (Bronner and Lewis, 2000). These overlooks/vistas were identified and discussed in the original VIA and have been added to the large scale viewshed maps included in Appendix B.

State Land:

In addition to the Van Hornesville State Fish Hatchery in the Town of Danube, which was described in the original VIA, the expanded visual study area also includes a small portion of the Exeter State Forest on the 10 mile boundary in the southwest portion of the study area. This forest includes 1,957 acres of land in the Town of Exeter that is available for hunting, nature observation and other forms of outdoor recreation.

Recreational Areas:

Beyond the facility listed above, the expanded study area includes several additional areas that receive recreational use. These include the following:

1. Canadarago Lake – Otsego County
2. Cary Park – Village of Richfield Springs
3. Otsego Lake – Otsego County
4. Summit Lake – Hamlet of Springfield Four Corners
5. Weaver Lake and Maumee Swamp – Town of Warren
6. Erie Canal, Locks 17 and 18 – Towns of Herkimer and Little Falls
7. Kingfisher Tower – Otsego Lake, Otsego County
8. Little Falls Municipal Golf Course – Town of Little Falls
9. Mohawk Valley Country Club – Town of Herkimer
10. Moreland Park – Town of Little Falls
11. Mount Wellington (Sleeping Lion) – Otsego Lake, Otsego County
12. Muskrat Pond – Village of Richfield Springs
13. Rotary Park Marina and Boat Launch – Town of Little Falls

Areas of Intensive Land Use:

A few additional villages and areas of concentrated human settlement occur within the expanded visual study area. These are considered visually sensitive due to the concentration of residential development or the type/intensity of land use they receive. These include the following:

1. City of Little Falls
2. Village of Cherry Valley
3. Village of Ilion
4. Village of St. Johnsville

Transportation Corridors:

The expanded visual study area includes a few highways that could be considered visually sensitive due to the number of drivers that travel these roads on a daily basis. This area includes larger stretches of those roads listed in the original VIA (Interstate Route 90, State Routes 5, 5S, 20, 28, 80, 167 and 168, and County Route 18), along with the following:

1. State Route 163 - From the Village of Fort Plain through the Hamlet of Sprout Brook, to the Hamlet of Buel.
2. State Route 166 - From the intersection of U.S. Route 20 north of the Village of Cherry Valley, to the intersection of County Highway 33, south of the Village of Cherry Valley.

The locations of mapped visually sensitive resources within the expanded visual study area are illustrated in Figure 5. The locations of these sites are also indicated on the large-scale viewshed maps included in Appendix B.

VISUAL IMPACT ASSESSMENT METHODOLOGY

The Visual Impact Assessment (VIA) procedures used for this supplemental study are the same as those utilized in the original VIA. The specific techniques that differ from those utilized in the original VIA are described in the following section.

Project Visibility

Viewshed Analysis

Revised viewshed maps for the study area were prepared based on the revised turbine layout and the expanded visual study area boundary. In all other regards, the analysis was as described in the original VIA. Two 10-mile radius topographic viewsheds were mapped, one to illustrate “worst case” daytime visibility (based on a maximum blade tip height of 400 feet above existing grade) and the other to illustrate potential visibility of turbine lights (based on a nacelle height of 262 feet above existing grade).

To illustrate the potential screening effect of forest vegetation, a 10-mile radius vegetative viewshed analysis was performed, utilizing the techniques and assumptions described in the original VIA.

A turbine count analysis was performed to better identify how many wind turbines are visible from a given point within the viewshed study area. This analysis utilizes the same topographic USGS DEM

base mapping as a regular viewshed analysis and the same maximum turbine height used in the blade tip viewshed analysis. The results of this process are then classified into ranges of turbines visible. The number of classes used and class range values relate to the total number of turbines within the proposed project. Classes were created with turbines distributed as evenly as possible, which results in a data distribution that is easy to interpret once the values are mapped in a figure.

To address concerns regarding potential cumulative visual impact of multiple wind power projects along the NYS Thruway, a cumulative viewshed analysis was prepared. To accomplish this, the 10-mile radius Jordanville topographic analysis based on maximum blade tip height was overlaid on the same viewshed analysis prepared for the proposed Top Notch Wind Power Project in the Towns of Fairfield and Norway (north of the NYS Thruway and the City of Little Falls). The specific methodology used to create each of these viewsheds is as described in the original VIA. The two viewsheds were then plotted on a base map showing the NYS Thruway from Frankfort to St. Johnsville (roughly 26 miles), and areas of viewshed overlap identified.

A one-mile radius topographic viewshed map was also prepared for the five proposed transmission line structures. These structures ranged in height from 60 to 110 feet above existing grade, and the location of these structures were based on data provided by the Project developer. Viewshed methodology is as described in the DEIS.

Cross Section Analysis

As a result of the additional viewshed analysis prepared for the SVIA, it was determined that additional cross sections were not necessary as part of the supplemental visibility analysis.

Field Review

Supplemental field review was conducted on July 19, September 7, and October 26, 2006. The first two days featured clear skies and bright sunshine, while the latter was primarily overcast, but still offered excellent visibility. Supplemental field review focused on obtaining photographs and GPS coordinates from areas with potential views of the overhead transmission line and substation, as well as from additional visually sensitive sites identified during the public comment period. The sites included various locations on Otsego Lake, the Route 20 scenic byway, Glimmerglass State Park, the proposed Waggoner Patent Historic District, Hoyer Hill Cemetery, the Lindesay Patent Historic District, and various other sites, primarily in the Town of Springfield and the Mohawk Valley. The purpose of this exercise was to evaluate potential project visibility from these sites, and obtain data

necessary for the subsequent development of photo simulations/renderings. The techniques utilized to obtain this data were as described in the original VIA.

As noted previously, two registered landscape architects from EDR toured the area on September 14, 2006, to obtain a fuller understanding of cultural landscape characteristics within the study area. Both of these individuals have experience with visual impact assessment, and one (Paul Fritz) has experience with the evaluation and treatment of culturally significant landscapes. The primary purpose of this field visit was to review the findings of a report prepared for Otsego 2000 suggesting that the Jordanville area is a cultural landscape that could be eligible as a rural historic district on the National Register of Historic Places (O'Donnell, 2006). Field review involved visiting the area in and around the project site (including the hamlets of Jordanville and Van Hornsville), as well as the nearby Register-listed Lindsay Patent rural historic district. They also traveled Route 20, from Cherry Valley to the Route 167 intersection, and Route 80 from Van Hornsville to Glimmerglass State Park. Observations were documented with photos and field notes. The team confirmed their findings by comparing the Jordanville area to the existing Register-listed historic districts in the area.

Project Visual Impact

Beyond evaluating changes to potential project visibility, the SVIA also examined the visual impact of the proposed wind power facilities on the aesthetic resources and viewers within the expanded visual study area. This assessment involved creating computer models of the revised turbine layout, along with the proposed permanent met. towers, 230 kV transmission line, and substation. These models were used to prepare computer-assisted simulations and photo renderings of the proposed project. These images were then evaluated by the same in-house panel of landscape architects involved in the original VIA. The purpose of this evaluation was 1) to determine if the revised turbine layout (including revised access road locations and inclusion of the two permanent met. towers) changed their previous assessment of impact from viewpoints evaluated in the VIA, 2) describe the type and extent of visual impact likely to result from construction of the proposed transmission line and substation, and 3) evaluate the type and extent of visual impact that will occur at newly identified sensitive sites within and beyond the expanded visual study area. Details of the visual impact assessment procedures utilized in the SVIA are described below.

Viewpoint Selection

In the original VIA, EDR selected a total of 11 viewpoints for development of simulations/photo renderings. These viewpoints were selected to illustrate typical views of the proposed project and the range of visual change that will occur with the project in place. Locational details and the

reasons for selection of each viewpoint are described in the original VIA. It should also be noted that the majority of these viewpoints fall within the area suggested by O'Donnell (2006) as possibly being eligible for listing as a rural historic district on the National Register of Historic Places. Because proposed changes in the project layout could possibly be perceived in almost all of these views (i.e., 10 out of 11) all of the original photo simulations/renderings were re-modeled based on the currently proposed project layout. In addition, several new viewpoints were selected to illustrate views from sensitive locations within (and beyond) the expanded visual study area, as well as from locations with potential views of the proposed transmission line and substation. Supplemental viewpoints for use in the development of additional simulations were selected based on potential project visibility, site sensitivity, and/or because viewpoint location/character were not addressed in the original VIA. Locational information for these new viewpoints, and the reasons for their selection, are described below. The location of all viewpoints evaluated in the SVIA is indicated in Figure 9.

- Viewpoint 87 - View from Clinton's Dam on Lake Street in the Village of Cooperstown, looking north. Viewpoint across Otsego Lake, suggested by Otsego 2000.
- Viewpoint 88 - View from Cooperstown Lakefront Park on Pioneer Street in the Village of Cooperstown, looking north. Viewpoint across Otsego Lake, suggested by Otsego 2000.
- Viewpoint 96 - View from Three-mile Point Park off of Route 80 on the west shore of Otsego Lake, looking north. Viewpoint across Otsego Lake, suggested by Otsego 2000.
- Viewpoint 99 - View from U.S. Route 20, looking northwest. Additional viewpoint from designated scenic byway.
- Viewpoint 109 - View from Derhonda Road, looking northwest. Additional viewpoint from the Waggoner Patent.
- Viewpoint 111 - View from the proposed site of an Otsego County tourism information center on Route 20, looking northwest. Additional viewpoint from designated scenic byway, that also allows cumulative views (i.e., of two proposed wind power projects).
- Viewpoint 124 - View from the water on Otsego Lake, looking north. Representative of an unobstructed view toward the project that would be available to boaters/recreational users of the lake.
- Viewpoint 129 - View from the water near Point Judith, along the east shore of Otsego Lake, looking north. Viewpoint including Kingfisher Tower, suggested by Otsego 2000.

- Viewpoint 175 - View of the proposed transmission line looking north from Upper Deck Road. Most open available view of the proposed poles, substation, and cleared ROW.
- Viewpoint 187 - View of the proposed substation from State Route 168 in the Town of Stark. Most open view available, looking east.

Viewpoints 70, 87, and 109 were chosen for the development of nighttime simulations because they provided representative views across Otsego Lake (Viewpoint 87), from the Waggoner Patent (Viewpoint 109), and the core of the visual study area (Viewpoint 70).

Viewpoint 111 was chosen for development of a cumulative simulation, because it is a visually sensitive location that will have views of both the proposed Jordanville project and the proposed Top Notch Wind Power Project in the Towns of Fairfield and Norway. It also allows unscreened views of significant numbers of turbines in each project. Although the proposed East Hill Wind Power Project in the Town of Cherry Valley is closer, a local wind ordinance that is currently under review in that town would, if adopted, significantly change the layout, if not prevent the development of that project. The Top Notch project is the only other project within 30 miles of the Jordanville project for which a proposed turbine model (within known dimensions) and layout has been publicly proposed and described in a DEIS.

To illustrate those instances where turbines are visible across a broad expanse of the landscape, panorama simulations were also prepared from original Viewpoints 39 and 43A (Jordanville Road and Route 167 at the Holy Trinity Russian Orthodox Monastery).

Simulations/Photo Renderings

To show anticipated visual changes associated with the proposed project, high-resolution computer-enhanced image processing was used to create realistic simulations or photo renderings of the completed project from each of the viewpoints described above. The simulations and photographic renderings of the turbines were developed as described in the original VIA. The accuracy of past EDR photo simulations/renderings, as compared to actual photos of a built project, is illustrated in Figure 6.

In response to a request from the NYS Department of Public Service, panoramic simulations were developed for two of the selected viewpoints (Viewpoints 39 and 43A). These simulations were developed by utilizing a series of (five) overlapping 50 mm photos, and aligning the digital wind farm model with each photograph using existing site elements (such as hills, built structures, vegetation,

and roads) that appear in each photo. The model of the proposed wind farm was then composited with the photographs using this alignment. By using the same process described in the original VIA, foreground separation was performed on each of the five 50 mm photos. The five photos were then overlaid and blended using Adobe Photoshop 7.0®. The final image is approximately 2+ frames wide and covers a 90° field of view. The additional frames utilized in the stitching process were overlaid to reduce the effect of barrel distortion.

Photo renderings/simulations of other project components that have been defined since completion of the original VIA (i.e., met. towers, transmission line, and substation), were prepared using photographs and GPS coordinates collected in the field, along with locational and dimensional data/specifications provided by the project developer. Specific assumptions, techniques and computer software used, are as described in the original VIA. Computer models of the project components utilized in this SVIA are shown in Appendix A.

As in the original VIA, animation was added to the Viewpoint 39 simulation to illustrate the motion of the turning rotor (see digital images in Appendix D).

Nighttime simulations were developed by obtaining nighttime photos from selected viewpoints at multiple exposures and shutter speeds. Photos that most closely represented the ambient light levels observed during field data collection (i.e., looked most like what the observer saw) were selected for use in development of the simulations from each viewpoint. A longer exposure photograph (which allowed better visibility of existing site features) was used to align the computer model of the project with existing site elements in each view. Once the alignment was complete, the longer exposure photo was replaced with the photo selected for simulation. The turbine lighting plan for the Project (which was developed in accordance with FAA guidelines and has been sent to the FAA for approval) was then obtained from the project developer, and lights were added to the modeled turbine array in accordance with this plan. The size and intensity of these modeled lights are based on specifications of the proposed light fixture (L-864) and observations/photos of operating FAA warning lights on existing wind turbines (at the Fenner and Maple Ridge projects). The proposed lights, as well as existing lights visible in the nighttime photos, were digitally altered to reduce the amount of "light-bleed" commonly found in long exposure photographs of lights. The resulting images thus portray more accurately what the human eye perceives in nighttime views.

To create an animation of the flashing lights at night, three computer-generated renderings were brought into Adobe After Effects® compositing software. These renderings include an animation of the turbines spinning (in darkness), a still rendered view of the proposed FAA lights, and a still

rendered view of the existing lights. By overlaying the original nighttime photo with the rendered views and applying transparency at specific times, a blinking effect is achieved. Consistent with observations of built wind power projects, a blink rate of approximately five seconds was applied to the proposed turbine lights. A rate of approximately three seconds was applied to any existing FAA lights (based on field observations). The final product was rendered out as a high definition video.

Panel Evaluation

The same in-house panel of three landscape architects that evaluated the project in the original VIA was asked to evaluate the revised and supplemental simulations/photo renderings prepared for the SVIA (see resumes in Appendix G). For the 11 viewpoints that were evaluated in the original VIA, the panel was asked to compare the revised simulations/photo renderings with those prepared for the VIA to determine if project changes altered their previous conclusions. The panorama views from Viewpoints 39 and 43A were evaluated as part of the panels' review of the revised simulations/photo renderings from these viewpoints. For new viewpoints that were not addressed in the original VIA, the panel compared simulations/photo renderings of the currently proposed facilities (turbines, met. towers, transmission line and substation) with photos showing the existing view for each viewpoint. As in the original VIA, 11 x 17-inch digital color prints were used for the elevation of all photos, with the exception of the nighttime simulations from Viewpoints 70, 87, and 109 and the animated view from Viewpoint 39. For these views, both the existing image and the simulation were viewed on a computer monitor to provide better resolution and allow movement in the view. The digital images were animated to illustrate the flashing of the FAA obstruction warning lights (at night) and the spinning rotors (during the day). These animated images are included in Appendix D. Evaluation methodology was as described in the original VIA. This simplified version of the U.S. Army Corps of Engineers Visual Resources Assessment Procedure (VRAP) (Smardon, et al., 1988) was developed by EDR in 1999 for use on wind power projects, and as stated in the original VIA, has proven accurate in predicting public reaction to completed projects in New York State. The use of a rating panel, a short evaluation form, and a simple numerical rating process 1) prevents individual bias (either for or against the project) from significantly skewing results, 2) provides understanding of the basis for conclusions regarding visual impact, 3) allows for independent review and replication of the evaluation, and 4) allows a large number of viewpoints to be evaluated in a reasonable amount of time without "burn-out" of the panel members.

VISUAL IMPACT ASSESSMENT RESULTS

Project Visibility

Topographic viewshed analysis (Figure 7, Sheet 1 of 5) indicates that the proposed project has the potential to be visible in approximately 60% of the expanded visual study area, disregarding the screening effect of vegetation and structures. As with the viewshed analysis included in the original VIA, potential visibility is most heavily concentrated in the central portion of the study area and diminishes at the periphery, especially to the southeast, southwest, and west. Visually sensitive sites within 5 to 10 miles indicated as having potential views of the project include 18 Register-listed historic sites (see Table 1) and portions of Exeter State Forest, the City of Little Falls, the Villages of Richfield Springs, Ilion, Mohawk, Herkimer, St. Johnsville, Fort Plain, and Cherry Valley, Otsego Lake, Canadarago Lake, Glimmerglass State Park, Canadarago Boat Marine Park, State Route 5, and additional portions of the Erie Canal, the NYS Thruway, U.S. Route 20, NYS Routes 80, 167, and 168, and County Route 18.

In most areas where potential visibility is indicated, the turbine count analysis of the topographic viewshed suggests that views to multiple turbines could be available (see Figure 7, Sheet 2 of 5). In approximately 22% of the 5-mile radius study area and 15% of the 10-mile radius study area, 1-17 turbines are potentially visible. From 18 to 34 turbines are potentially visible in 16% of the 5-mile radius study area and 10% of the 10-mile radius study area. Between 35 and 51 turbines are potentially visible in 15% of the 5-mile radius area, and 10% of the 10 mile radius study area. From 52 to 68 turbines are potential visible in 24% of the 5-mile radius area, and 24% of the 10-mile radius study area. Sites with potential views of the most turbines are typically concentrated in the central portion of the study area and on higher elevation hilltops and slopes oriented toward the project. Views from many valley bottoms, ravines, and the backsides of hills (40% of the expanded visual study area) are indicated as being fully screened by topography (including the Mohawk Valley, Cherry Valley, Ilion Gorge and significant areas in the south and west portions of the 5-10 mile ring). Visually sensitive sites within the expanded study area indicated as being screened from view by topography alone include the Plantation Island WMA, the majority of Glimmerglass State Park, the majority of the Lindesay Patent Historic District, the Herkimer Home Historic Site, Moss Island, and the majority of the NYS Thruway and Erie Canal/Mohawk River. The majority of the Glimmerglass Historic District, Otsego Lake, Canadarago Lake, portions of the Villages of Mohawk, Herkimer and Ilion, and portions of the City of Little Falls are indicated as having potential project visibility (see large-scale topographic viewshed map in Appendix B). Areas of potential nighttime visibility (Figure 7, Sheet 3 of 5) cover approximately 55% of the expanded visual study area, and generally occur in the same areas where potential daytime visibility is indicated.

Factoring vegetation into the viewshed analysis significantly reduces potential project visibility (Figure 7, Sheet 4 of 5). Within the 10-mile radius study area, vegetation, in combination with topography, will serve to screen the project from approximately 75% of the area (i.e., potential visibility is limited to 25% of the area). Visibility will essentially be restricted to open agricultural areas, which are concentrated in the central portion of the study area and the northeastern portion of the expanded 5-10 mile study area. With the exception of Canadarago Lake and Otsego Lake, potential project visibility within the remainder of the 5-10 mile ring is very limited. Register-listed historic sites in this ring indicated as being screened from view include the Cherry Valley Historic District, Hyde Hall, Hyde Hall Covered Bridge, East Springfield Union School, Baker Octagon Barn, Windfall Dutch Barn, Indian Castle Church, Remington House, and Bates-Englehardt Mansion. Other visually sensitive sites indicated as being completely or almost completely screened in the vegetation viewshed include the NYS Thruway, State Route 5, the Erie Canal/Mohawk River, and the three State Forests. Several Register-listed sites in the Villages of Herkimer, Ilion and Mohawk, and the City of Little Falls are indicated as having potential project visibility by the vegetation viewshed (see large-scale vegetation viewshed map in Appendix B).

The cumulative viewshed analysis of the proposed Jordanville and Top Notch projects indicates that there are very few areas along the NYS Thruway where turbines from both projects could potentially be visible (see Figure 7, sheet 5 of 5). As this figure shows, only three small areas (totaling less than 0.5 mile) along the 26 miles of Thruway between Frankfort and St. Johnsville fall within the cumulative viewsheds of these two projects. For a driver traveling 65 miles per hour, this amounts to a total of less than 30 seconds of exposure. Actual duration/extent of visibility of both projects along the Thruway will be even less (if not eliminated) due to the screening effect of trees, structures, and rock cuts that were not considered in this analysis. Field evaluation by EDR personnel suggests that simultaneous visibility of both project will not available along the NYS Thruway.

Areas of actual visibility within the expanded study area are anticipated to be much more limited than indicated by the viewshed analyses. This is due to the greater distances from which the turbines will be viewed (i.e., over 5 miles), along with the slender profile of the turbines (especially the blades, which make up the top 139 feet of the turbine), their light color, and screening provided by structures, street trees, and hedgerows, which are not considered in the viewshed analyses.

Topographic viewshed analysis of the five transmission line towers (Figure 8) indicate that approximately 62% of the area within a mile of the proposed line could have views of one or more

towers. Areas within this viewshed include State Route 168, Upper Deck Road, Aney Hill Road, and Travis Road, along with the residences that front on these roads.

Field review revealed that buildings and trees within the expanded study area effectively screen various areas indicated as potentially visible by the viewshed analyses. These include the NYS Thruway, portions of Glimmerglass State Park and various villages and hamlets where ground-level views toward the project site are fully or completely screened. Beyond the viewpoints previously listed that were selected for the development of visual simulations, EDR staff also visited several additional sites as part of our supplemental field review. These sites were suggested by various commenters (NYS Department of Public Service, Otsego 2000, Advocates for Stark, etc.) that have expressed concerns regarding project-related visual impacts. The sites, their distance from the nearest turbine, and the potential for Project visibility are outlined below:

- Hoyer Hill Cemetery, Town of Warren. Potentially visible turbines within 0.6 to 1.0 mile (Viewpoints 131 and 132).
- Chyle Road and Pumpkin Hill Road, Town of Springfield. Turbines as close as 1.3 miles to the north will be visible (Viewpoints 133 and 134).
- State Route 80 and Mount Tom Road, Town of Springfield. Nearest turbine 3.2 miles to the northwest. Turbine visibility blocked by intervening hill (Viewpoints 136 and 137).
- Doc McShane Road at Craft Farm, Town of Springfield. Nearest turbine 3.6 miles to the north. Possible visibility of turbines behind foreground hill (Viewpoint 139).
- Route 29A between Route 20 and Springfield Center, Town of Springfield. Nearest turbine 4.5 miles northwest. Limited visibility possible beyond wooded background ridge (Viewpoint 140).
- Route 20 at Cape Wykoff in the Lindesay Patent Historic District, Town of Cherry Valley. Nearest turbine 6.0 miles to the northwest. Possibly visible beyond background hill (Viewpoint 141).
- High point on Briar Hill Road, Town of Springfield. Nearest turbine 6.2 miles to the northwest. Partial turbine visibility beyond background hill, where not screened by foreground vegetation (Viewpoints 142-144).
- Route 53 between Mill Road and Public Landing Road, Town of Springfield. Nearest turbine 5.5 miles. Partial visibility beyond background hill (Viewpoint 145).
- Chicken Farm Hill Road (vicinity of Star Field), Town of Middlefield. Nearest turbine 13.2 miles. Solidly wooded, no visibility (Viewpoint 146).

- Glimmerglass State Park: Nearest turbine 6.9 miles to the north. No visibility due to intervening topography and trees (Viewpoints 147-149).
- Glimmerglass Historic District, north of Glimmerglass State Park. Nearest turbine 5.9 miles north. No visibility due to foreground trees (Viewpoint 150).
- Buddle Road, high point in Town of Springfield. Nearest turbine 5.9 miles to the north. No visibility due to screening by hills and trees (Viewpoint 151).
- Route 169, Town of Manheim. Nearest turbine 7.8 miles to the southwest. Open long distance view across Mohawk Valley (Viewpoint 153).
- Route 58, high point in Town of Danube. Nearest turbine 5.6 miles south-southwest. Views blocked by intervening hill (Viewpoint 154).
- Route 5S and River Road, Town of Danube. Nearest turbine 6.3 miles to the southwest. No visibility due to intervening trees and hills (Viewpoint 155).
- Route 5S west of Moyers Corners, Town of Mendon. Nearest turbine 6.6 miles southwest. Possible open view to turbines on background hills (Viewpoint 156).

Viewpoint locations are indicated in Figure 9. Photos from all referenced viewpoints can be found in Appendix C.

As stated previously, additional simulations from these viewpoints were not prepared because either 1) the turbines would not be visible, or 2) existing simulations already indicate the type and magnitude of visual impact that could occur from comparable distances and landscape similarity zones. The 20 turbine simulations prepared for this project are well in excess of what has been prepared for other wind power projects in New York.

Field review also indicated that views of the proposed transmission line and substation will be limited by topography and trees to approximately 0.75 mile along NYS Route 168, 0.75 mile along Upper Deck Road and 0.5 mile along Aney Hill Road in the Town of Stark.

Table 1 summarizes the results of the visibility analyses described above, in regard to aesthetic resources of statewide and local significance. As this table indicates, of the 50 resources of statewide significance (as defined by NYSDEC Visual Policy) viewshed analysis and field review suggest that 28 of these (56%) will not have views of the proposed project. The majority of the sites with potential project visibility will only have partial views and/or views from limited areas. The degree of potential visibility at these sites is indicated in the large scale viewshed maps included in Appendix B.

Analysis of Existing and Proposed Views

To illustrate anticipated visual changes associated with the revised project, simulations and photographic renderings of the completed facilities from each of the 22 viewpoints indicated in Figure 9 were used to evaluate project appearance and visual impact. The results of rating panel review of these images in comparison to simulations/photo renderings of the project as originally proposed (for viewpoints evaluated in the original VIA), or in comparison to photos of the existing view (for new viewpoints) are presented below. Digital images of the simulations, including an animation from Viewpoint 39 showing the turbine rotors in motion and a nighttime simulations from Viewpoints 70, 87, and 109 showing the flashing FAA warning lights, are included in Appendix D (see attached CD).

Viewpoint 12 (Figure 10)

This viewpoint is from State Route 167 near the intersection of County Route 136, looking southwest. This viewpoint is approximately 2.0 miles from the nearest proposed turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 15 (Figure 11)

This viewpoint is from Cramers Corners Road adjacent to the Ohisa State Forest. This viewpoint is approximately 1.0 mile from the nearest proposed turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 25 (Figure 12)

This viewpoint is from State Route 80, south of the Hamlet of Van Hornesville, looking northwest. This viewpoint is approximately 1.3 miles from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 27 (Figure 13)

This viewpoint is from Summit Hill Road in Otsego County, looking northwest. This viewpoint is 3.7 miles from the nearest turbine that would be visible in this view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 34 (Figure 14)

This viewpoint is from U.S. Route 20 near the intersection of Ostrander Road in the Hamlet of Warren, looking northeast across Weaver Lake. It is 3.6 miles from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 39 (Figure 15)

This viewpoint is from the intersection of County Route 18 and State Route 116, looking northwest. This viewpoint is approximately 0.7 mile from the nearest turbine that would be visible in the view. Along with the 50 mm photo from this viewpoint, the panel also evaluated a panoramic simulation showing a 90° field of view from the same viewpoint (Figure 30). Along with the cultivated agricultural fields and utility/communication structures included in the 50 mm photo, the panoramic view includes a foreground farm complex and more farm buildings that serve as focal points on the right hand side of the view. Although the panel felt that the revised project layout (including one visible met. tower) did not significantly change their previous evaluation, review of the panoramic simulation from this viewpoint resulted in reduced contrast rating from two panel members and an increase from the third. This appears to result from the larger expanse of landscape visible in the panoramic image, which adds man-made elements and accentuates the rolling topography and agricultural landuse. Although more turbines are visible in the view, they appear less dominant and more compatible with the existing landform and landuse. In their review of the animated simulation for this viewpoint, showing turning turbine rotors, the panel felt that the motion of the turbines draws attention, and the scale (and to a lesser degree vertical contrast) appears more significant.

Viewpoint 43 (Figure 16)

This viewpoint is from State Route 167 near the Holy Trinity Russian Orthodox Monastery, looking northwest. This viewpoint is approximately 1.0 mile from the nearest proposed turbine. With the revised project layout, turbines are no longer proposed on the monastery property, and therefore are no longer visible in this view. Visual impact from this viewpoint is thus eliminated. However, in comparing the revised simulation from Viewpoint 43A (i.e., the most open view from the Monastery property), the rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA. A panoramic simulation prepared for this viewpoint (Figure 30) added some man-made elements (building, tractor and utility poles) to the edges of the view. The panel felt that in the panoramic simulation the foreground utility pole and vegetation, viewing distance, and the broader expanse of visible landscape all served to reduce the scale and overall contrast of the turbines.

Viewpoint 46 (Figure 17)

This viewpoint is from County Route 117 near Hicks Cemetery, looking northwest. This viewpoint is approximately 0.4 mile from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 70 (Figure 18)

This viewpoint is from Jordanville Road (County Route 18) near the Hamlet of Jordanville, looking east. This viewpoint is 2.2 miles from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout (including one visible met. tower) did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 71 (Figure 19)

This viewpoint is from County Route 18 near the intersection of County Route 117, looking southeast. This viewpoint is 0.6 mile from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 72 (Figure 20)

This viewpoint is from County Route 18 south of the County Route 203 intersection, looking northeast. This viewpoint is 0.3 mile from the nearest turbine that would be visible in the view. The rating concluded that the revised project layout (including one visible met. tower) did not significantly change their evaluation of project appearance or visual impact, as described in the original VIA.

Viewpoint 87 (Figure 21)

Existing View

This view is from Clinton's Dam (Lake Street) on the shores of Otsego Lake in the Village of Cooperstown. This viewpoint is approximately 14.4 miles from the nearest proposed turbines that would be visible from this location. Moored sailboats in the foreground are the only interruption of the glassy surface of the lake. A few shoreline structures (including Kingfisher Tower) can be seen along the edge of the lake in the background, but the lakeshore is defined by steep wooded slopes. The distinctive topography of the ridge known as Mount Wellington or "the sleeping lion" can be seen clearly at the north end of the lake.

Proposed Project

With the proposed project in place five turbines and one met. tower can barely be seen rising above the distant background ridge at the far end of the lake. The turbines are difficult to perceive with the naked eye, and do not change the aesthetic character or quality of the view. Two panel members indicated no adverse visual impact, while a third found there to be only minimal impact, with the possible exception of turbine lights in nighttime views.

Viewpoint 88 (Figure 22)

Existing View

This viewpoint is from Cooperstown Lakefront Park (Pioneer Street) on the shore of Otsego Lake in the Village of Cooperstown. It is approximately 14.5 miles from the nearest turbine that would be visible in this view. The immediate foreground of this view is dominated by an informational sign and landscape plantings. Moored boats are present in the foreground and a cluster of distant sailboats can be seen in the middle of the lake. Although not appearing as dramatic as in the previous view, the lake shoreline is defined by steeply wooded slopes. The topographic feature known as the sleeping lion is a focal point at the north end of the lake.

Proposed Project

With the proposed project in place, portions of three turbines and one met. tower can barely be seen in the valley between the hill on western shoreline and the sleeping lion. The turbines project above the background ridgeline, but are barely discernable against the sky. They do not attract attention, nor do they alter the character or quality of the view from this location. Two panel members found there to be no adverse visual impact, while a third noted minor contrast between the proposed turbines and the character of existing vegetation and land use.

Viewpoint 96 (Figure 23)

Existing View

This view is from Three-mile Point Park on the west shore of Otsego Lake in the Town of Otsego. It is approximately 12.9 miles from the nearest turbine that would be visible in this view. Picnic facilities and a dock in the foreground give way to a broad expansive open water with two distant sailboats. The lack of watercraft and the generally undeveloped shoreline lend a sense of openness and uncrowdedness to the view. As in the previous photos, steep wooded slopes define the lake shoreline.

Proposed Project

With the proposed project in place, one turbine is visible between the tree overhanging the water on the western shoreline and the slope of the background hill (the sleeping lion). The turbines could essentially not be perceived by the panel, and thus had no effect on the character or quality of this view.

Viewpoint 99 (Figure 24)

Existing View

Viewpoint 99 is from the Route 20 Scenic Byway in the Town of Springfield. It is approximately 5.1 miles from the nearest turbine that would be visible in this view. The view features roadside wild flowers and a cornfield in the foreground with additional fields and pastureland beyond a midground hedgerow. A midground ridge with scattered trees and shrubs rises on the right hand side of the view, while the background is defined by a horizontal wooded ridgeline that blocks views of more distant features. Two widely separated structures in the midground, a glimpse of overhead utility structures in the foreground, and a distant communication tower on the background ridge are the only man-made features in the view.

Proposed Project

With the proposed project in place only the upper portions of a few turbines can be seen between the scattered trees on the midground ridge. The turbines (especially the blades) are difficult to discern from the cloud formations that form a backdrop in this view. At this distance, and under these sky/lighting conditions, the turbines although clearly visible, are minor components of the landscape that do not perceptibly change the character of the view. Two panelists indicated no visual impact, while a third noted minimal impact due to minor scale contrast with the existing vegetation.

Viewpoint 109 (Figure 25)

Existing View

This viewpoint is located on Derhonda Road within the Waggoner Patent in the Town of Springfield. It is approximately 2.8 miles from the nearest turbine that would be visible in the view. A broad and gently rolling hayfield in the foreground gives way to a low wooded ridge in the midground. The background includes a mix of gently sloping hills and forest. The view is open with strong horizontal lines formed by the foreground and background landform and midground vegetation. The only visible man-made features are a few small structures in the background and distant communication towers on the horizon.

Proposed Project

With the proposed project in place, numerous turbines can be seen beyond the midground ridge. At this distance the vertical line and man-made form of the turbines are clearly perceptible, and contrast with the strong horizontal lines and generally undeveloped character of the landscape. The scale contrast and density of the turbines have an adverse impact on the view. Shadowing on the turbines creates contrast with the sky, and overlap of turbines in the view creates a sense of disorder and visual clutter. As indicated by the panel, although, these effects are mitigated somewhat by distance (which reduces perceived scale contrast) and the view retains a strong rural character, the impact of the size of the project is clearly perceived in this view.

Viewpoint 111 (Figure 26)

Existing View

This view is from the site of a proposed tourist information center on Route 20 in the Town of Cherry Valley. The viewpoint is approximately 9.9 miles from the nearest turbine that would be visible in this view. It is also approximately 21 miles from the nearest turbine in the proposed Top Notch Wind Power Project in the Town of Fairfield. This elevated viewpoint offers a sweeping panoramic view of the Mohawk Valley and foothills of the Adirondacks to the north. The view includes a patchwork of fields and forests with scattered farms and rural residences. Topography is gently rolling in the foreground and midground, before dropping more steeply into the valley in the distant background. It is a unique long-distance view with a very strong rural character.

Proposed Project

With the proposed project in place, a cluster of turbines can be seen on the background ridge on the left hand side of the view. The turbines are clearly visible against the sky, but at this distance present limited contrast in scale or color. Intervening forest vegetation also helps reduce turbine visibility. The valley in the central and right hand portion of the view remains the focal point, but the presence of the turbines does draw the viewer's eye back toward the ridgetop. The turbines' line, form, and scale contrast with other horizontal features in the view, but do not significantly alter its rural character or visual quality.

Adding the Top Notch Wind Power Project to the view (Figure 29) results in little perceptible change, due to the distance of this project from the viewer. The Top Notch turbines are barely visible on the background ridge in the center of the view. Despite being centrally located, the effects of distance (haze, bluing, loss of detail) all serve to minimize their visibility and visual impact. Although lower sun angle would probably increase the visibility of this project, under less ideal weather conditions (overcast, fog, haze, etc.) the Top Notch turbines would be essentially invisible from this location.

One panel member indicated that the addition of the Top Notch project creates repetition and balance along the horizon, which could have a beneficial visual effect.

Viewpoint 124 (Figure 27)

Existing View

This view is from the surface of Otsego Lake, approximately 8.6 miles from the nearest visible turbine. The viewpoint is at a location in the lake where viewshed mapping indicates the maximum number of proposed turbines should be visible. A smooth expanse of open water dominates the view toward the north end of the lake. The shoreline is characterized by steeply rising wooded slopes and limited waterfront development. However, this shoreline development draws the viewer's attention due to its color contrast with the adjacent vegetation and water. A steeply dropping ridge (part of the sleeping lion) is a distinct visual feature that creates a focal point on the right hand side of the view.

Proposed Project

With the proposed project in place, several turbines can be seen rising above the wooded ridge at the north end of the lake. A centrally located line of four turbines is particularly prominent. At this distance, the turbines present only minor scale contrast, but their vertical line and shadowing interrupt the horizon and make them clearly visible against the sky. Their man-made character is compatible with the shoreline development in this view, but their unique form and function heighten land use contrast. Although the turbines attract the viewer's eye away from the shoreline development, the prominent ridge on the right hand side of the view remains the focal point.

Viewpoint 129 (Figure 28)

Existing View

This viewpoint is located on the eastern shore of Otsego Lake in the Town of Middlefield. It is approximately 12 miles from the nearest turbine that will be visible in this view. The existing view is dominated by the Kingfisher Tower in the foreground. This tower's proximity, along with its distinctive architecture, height, vertical line, and unique location on the water, make it a strong focal point in the view. The broad expanse of water and sky, rolling wooded hills along the shoreline, and strong, undulating horizon line heightens the contrast and prominence of the tower. The relative lack of boats on the water and limited shoreline development provide a sense of quiet and solitude.

Proposed Project

With the proposed project in place, 16 turbines are visible along the wooded ridge at the end of the lake. The shoreline hill on the left hand side of the view appears to screen additional turbines from

view. The turbines' vertical line and shadowing make them visible against the sky, and although distant, their significant height is apparent. However, at this distance their contrast in color, form and scale are minimized, and the Kingfisher Tower and broad expanse of the lake still strongly dominate the view. Rating panel members felt the project's visual impact would be minor and would not have an adverse effect on recreational activities/land use.

Viewpoint 175 (Figure 31)

Existing View

This viewpoint is from Upper Deck Road in the Town of Stark. It is located approximately 590 feet from the nearest pole on the proposed transmission line, and is looking to the north, toward the proposed substation site. A successional old field in the foreground gives way to a mix of shrubs and young trees in the midground. Superior viewer position and the open foreground provide expansive views to surrounding fields and woodlots in the background. Beyond a background ridge, the land drops into the Mohawk Valley before rising again into the wooded foothills of the Adirondacks in the distance. Developed features include scattered farms and residences, as well as an existing transmission line, but the overall character is strongly rural.

Proposed Project

With the proposed transmission line and substation in place, the three arm, Corten steel monopoles and associated transmission lines dominate the once open view. The viewer's focus is now directed along the large vegetation ROW clearing, and the transmission poles are significantly greater in scale than the existing vegetation and thus disrupt the horizontal quality of the background view. In this view, the substation's lower elevation, and partial vegetative screening, reduces its visual intrusion. However, the scale, form, and function of the proposed transmission line and substation introduce an industrial, utilitarian use to an otherwise attractive panoramic view of the Mohawk Valley agrarian landscape.

Viewpoint 187 (Figure 30)

Existing View

This viewpoint is located on State Route 168, looking east. It is approximately 0.4 mile from the proposed substation and transmission line crossing of this road. Roadside vegetation consists of a broken line of young trees that becomes more solidly wooded in the low area directly ahead. An agricultural field on the north side of the road provides open views to the proposed substation site and the wooded slopes of the Mohawk Valley in the background. Existing transmission line structures are visible on the left-hand side of the view, but the road surface is the focal point, and draws the viewer's eye down and to the right.

Proposed Project

With the proposed project in place, the substation can be clearly seen on the left-hand side of the view. Light-colored galvanized steel take-off structures rise above the midground trees and contrast in color, line, and form with the dark background of wooded hills. Other equipment within the substation is partially screened by foreground and midground vegetation, but can be perceived through the bare branches. The substation adds a significant new man-made element to the view that contrasts with the generally undeveloped/rural character of the view. However, its contrast is mitigated somewhat by the presence of the existing transmission line.

Visual Impact Assessment Rating

An in-house panel of three registered landscape architects (LA) evaluated the visual impact of the revised project, as described in the Methodology section of this report and the original VIA. Utilizing 11 x 17-inch digital color prints of the selected daytime viewpoints, along with digital animations of the daytime simulation from Viewpoint 39 and the nighttime simulations from Viewpoints 70, 87, and 109, the rating panel members evaluated the revised and supplemental simulations, assigning each view quantitative visual contrast ratings on a scale of 1 (completely compatible) to 5 (strong contrast). Each panel member's ratings were averaged to get an overall score for each viewpoint, and these scores were then compiled to obtain a composite average for each viewpoint. Copies of the completed rating forms are included in Appendix D, and the results of this process are summarized below.

Visual Contrast Rating – Wind Turbines

Viewpoint #	Individual Overall Scores ¹			Composite Score
	LA 1	LA 2	LA 3	
VP 12	3.50	2.75	2.25	2.83
VP 15	1.00	2.25	5.00	2.75
VP 25	1.00	2.25	2.25	1.83
VP 27	1.00	2.00	1.63	1.54
VP 34	1.00	2.00	1.30	1.43
VP 39	3.75	3.25	3.13	3.38
VP 39 pan	3.00	2.50	3.38	2.96
VP 43	1.00	1.00	1.00	1.00
VP 43 pan	1.00	2.25	2.00	1.75
VP 43A	2.25	3.25	1.87	2.46
VP 46	1.50	2.25	2.13	1.96
VP 70	3.25	2.75	4.25	3.42
VP 71	1.88	2.25	2.88	2.34
VP 72	3.13	2.75	1.63	2.50
VP 87	1.00	1.80	1.00	1.27
VP 88	1.00	1.40	1.00	1.13
VP 96	1.00	1.00	1.00	1.00
VP 99	1.00	1.25	1.00	1.08
VP 109	1.75	2.75	3.63	2.71
VP 109 night	2.33	2.00	1.67	2.00
VP 111	1.00	2.00	1.88	1.63
VP 124	1.00	2.40	1.70	1.70
VP 129	1.00	1.80	1.40	1.40
Average	1.68	2.18	2.15	2.00

¹On a scale of 1 (completely compatible) to 5 (strong visual contrast).

Visual Contrast Rating – Transmission Line and Substation

Viewpoint #	Individual Overall Scores ¹			Composite Score
	LA 1	LA 2	LA 3	
VP 175	2.00	2.50	3.00	2.50
VP 187	1.38	1.75	2.50	1.88
Average	1.69	2.13	2.75	2.19

As the above turbine rating table indicates, individual contrast ratings for the revised simulations from the original viewpoints (i.e., VP 12-72) were very similar to those reported in the original VIA. As in the original VIA, the revised scores ranged from 1.0 (completely compatible) to 5.0 (strong visual contrast). Composite scores for these revised simulations (i.e., the average of rating panel member's scores) ranged from 1.0 to 3.42, with 9 of the 11 original viewpoints (82%) still having a composite score below the midpoint of 3.0 on the scale of 1 to 5. These scores are very similar to those from the original VIA, and generally indicate a continued low to moderate level of visual contrast. As in the original VIA, the lowest contrast ratings (under 2.0) were received by Viewpoints

25, 27, and 34, along with Viewpoints 43 and 46 based on the revised layout. The highest composite contrast ratings were received by Viewpoints 39 and 70, as was the case in the original VIA. The basis for these scores is as described in the original VIA.

Mixed reaction by the rating panel was seen on the panorama simulations from Viewpoints 39 and 43A. The panorama from Viewpoint 39 received relatively high contrast ratings, while the panorama from Viewpoint 43A received relatively low contrast ratings. This appears to result primarily from the turbines' greater perceived contrast with land use and scale of existing landscape elements in Viewpoint 39. However, in both viewpoints, the scores received for these images indicated reduced project impact in comparison to the 50 mm photos from these same viewpoints. This appears to be related to the broader expanse of landscape and additional landscape features (natural and man-made) that are included in these views. These attributes tend to decrease the spatial dominance of the turbines and their contrast with land use and landform. This despite the fact that more turbines are visible in these panoramic views.

Almost all of the new turbine simulations (which were prepared primarily to address public comments) received scores under 2.0. These simulations of the proposed project from visually sensitive sites were generally far enough away from the project site and/or included few enough turbines that their visibility and visual impact was minimal. The one exception was Viewpoint 109 from Derhonda Road in the proposed Waggoner Patent Historic District. This simulation generated a wide range of scores (from 1.75 to 3.63), reflecting broad differences in perceived visual impact amongst rating panel members. Most of the impact from this viewpoint relates to the number and density of visible turbines, and their contrast with the existing landscape in terms of line, form, scale, and land use. Mitigating factors that reduced impact in the opinion of some rating panel members included screening provided by existing vegetation, compatibility with agricultural land use, and the effects of distance.

The contrast ratings for the transmission line and substation views (VP 175 and 187) indicate that there will be a moderate visual impact. The extent of the visual impact directly relates to the proximity of the proposed transmission and substation components to the viewer. In Viewpoint 175, the visual contrast rating was higher (composite score of 2.5) due to the perceived contrast of scale, color, and form with the existing landscape components, as well as the visual impact caused by the cleared transmission line ROW. However, in Viewpoint 187 the visual contrast rating was lower (composite score of 1.88) due to the distance from the substation, and the adjacency of the new substation facility to an existing industrial use in the landscape. Additional vegetative plantings would further mitigate the visual contrast of the view in Viewpoint 187.

The panel's review of the nighttime simulations from Viewpoints 70, 87, and 109, indicate that the FAA warning lights in the dark night skies that characterized much of the visual study area will be perceived negatively by area residents who view these lights from their homes and yards.

MITIGATION MEASURES

As described in the original VIA, mitigation options are limited, given the nature of the project and its siting criteria. In accordance with DEC Program Policy, (NYSDEC, 2000) various mitigation measures were evaluated in the original VIA. Beyond those, other potential mitigation measures include the following:

- A. Color. The use of naturally weathering Corten steel take-off structures should be considered for the substation. These would match the proposed transmission line poles and blend better with the wooded hills that provide a backdrop in most views of the substation.
- B. Screening. The Project cultural resources consultant has recommended establishing a visual mitigation planting fund to subsidize owners of affected historic properties in those cases where the planting of screening materials will significantly reduce or eliminate adverse visual effects of the Project. In addition, based on rating panel review of the substation simulations, a planting plan should be developed and implemented to minimize visibility and visual impact associated with this component of the project.
- C. Relocation. Turbines on the Holy Trinity Russian Orthodox Monastery site have been relocated, which reduces visual impact on this sensitive site. Removal of these and other turbines along the northern edge of the project site also reduces, to some extent, project visibility from the Mohawk Valley and other sites to the north. However, as indicated by the rating panel's overall reaction to the revised simulations, turbine relocation did not significantly alter the visual impact of the project as a whole.
- D. Nonspecular Materials. Non-specular conductor will be used on the overhead transmission line. Galvanized steel utilized for the met. towers and substation equipment will rapidly weather to a non-reflective gray color.
- E. Lighting. Jordanville Wind has committed to investigate the feasibility of a shading device for the FAA warning lights on the turbines (see information in Appendix F).

F. Off-sets. The Project cultural resources consultant has recommended some off-set type visual mitigation for potential impacts on historic sites, including the following:

- Identify an existing historic building within the Study Area which does not presently meet National Register eligibility because it has lost integrity, restore it in accordance with the Secretary of the Interior's Standards, and use it as a Project office and/or visitor center.
- Directly undertake or provide financial support for the restoration/maintenance of local historic cemetery(s).

CONCLUSIONS

The SVIA for the Jordanville Wind Power Project largely confirms the conclusions drawn in the original VIA. Revised and additional conclusions are presented below:

1. As stated in the original VIA, viewshed mapping, cross section analysis, and field review indicate that most of the aesthetic resources of statewide significance within 5 miles of the project site will be screened from view of the project. As indicated in Table 1, only 11 of these resources could potentially have views of the project.
2. Viewshed mapping indicates that the proposed turbines will be visible from many areas within the expanded visual study area. However, vegetation viewshed analysis indicates that only 25% of the 5-mile radius study area, and 22% of the area between 5 and 10 miles from the project site will have potential views of the turbines. Within this area viewshed mapping and field review indicate that sites screened by vegetation, structures, and/or topography include the Mohawk River corridor, Cherry Valley, the backsides of hills, narrow valleys and gorges, and the interior portions of hamlets and villages. Most of the sensitive resources between 5 and 10 miles from the turbines will be screened from view, including most of the Register-listed historic sites/districts, Glimmerglass State Park, the Erie Canal, the Military Trail Scenic Byway, Plantation Island WMA and Moss Island (see Table 1).
3. Supplemental field review within (and beyond) the expanded visual study area suggests that actual project visibility will be even less than suggested by viewshed mapping, due to screening provided by structures, street trees, and hedgerows. Such screening was documented at several visually sensitive sites, including the Village of Richfield Springs, Glimmerglass State Park, the NYS Thruway, the Erie Canal/Mohawk River, and the Mohawk

Valley Sensitive sites where field review indicated that turbines were likely to be visible include several points along shoreline of Otsego Lake (including the lakeshore in the Village of Cooperstown), the Route 20 scenic byway, the Waggoner Patent, Hoyer Hill Cemetery and various high points in the Town of Springfield. In addition, field review determined that the project service roads (16-foot wide) in themselves are visually compatible with the existing community fabric.

4. Evaluation by the in-house panel of landscape architects indicated that from previously-evaluated viewpoints, the revised project's overall contrast with the visual/aesthetic character of the area will be similar to that reported in the original VIA, and generally low to moderate.
5. Field review and visual simulations indicate that from Otsego Lake and Cooperstown, the project will be distant enough that visual impacts should be insignificant. This is consistent with anecdotal observations and published findings which indicate that although turbines can be visible at distances over 10 miles, significant visual effects of wind power projects are generally concentrated within 3.5 miles (6 kilometers) of the project site (Eyre, 1995).
6. Of the eight new day time turbine simulations prepared for this SVIA, only one (Viewpoint 109) received a contrast score over 2 on the scale of 1 to 5. This simulation received a composite score of 2.71, but generated a wide range of scores (from 1.75 to 3.63), reflecting broad differences in perceived visual impact amongst rating panel members. Most of the impact from this viewpoint relates to the number and density of visible turbines, and their contrast with the existing landscape in terms of line, form, scale, and land use.
7. Three of the new or revised simulations included in the SVIA are from viewpoints along the Route 20 scenic byway (Viewpoints 34, 99, and 111). Viewpoint 34 is at approximately the nearest location to the project on Route 20 (3.6 miles), but offered limited turbine views, while Viewpoint 111 is distant (9.9 miles) but offered an open view of numerous turbines. The contrast scores received for these simulations ranged from 1.08 (for Viewpoint 99) to 1.43 (for Viewpoint 34), indicating minimal project contrast with the existing landscape. These low scores are attributable to screening provided by existing hills and trees, the distance of the views, and the fact that the turbines' white color has minimal contrast with the sky which forms a backdrop in these views. The two EDR landscape architects who toured the site on September 14, 2006 agreed that the project was unlikely to have a significant adverse impact on views from Route 20.

8. The cumulative viewshed analysis for the Jordanville and Top Notch projects show that simultaneous views of both projects from the NYS Thruway will be limited to a maximum of three locations, totaling less than 0.5 mile in length. Actual cumulative visibility of the projects from the Thruway is not anticipated.

The cumulative simulation from Viewpoint 111 indicates that at sites where significant portions of both projects can be seen, the cumulative visual impact is negligible. This viewpoint is far from both projects, and cumulative impact could be greater from viewpoints that are closer to either project. However, it is worth noting that at their closest, the projects are 9.4 miles apart. In any views where the Jordanville turbines are in the foreground or midground (i.e., 0-3.5 miles from the viewer), the nearest Top Notch turbines, if visible, would be at least 9.5 miles away. At such distances the Top Notch turbines would appear as distant features in the landscape and would likely have limited visual impact (simulations from Viewpoints 111 and 124 show the Jordanville turbines at comparable distances). Also, as noted by one rating panel member, seeing multiple projects in the landscape can actually have a beneficial visual impact.

9. Based upon review of a nighttime simulations, the panel felt that the red flashing lights on the proposed turbines will have an impact on rural residents that currently experience dark nighttime skies. However, the impact will be minimized as distance from the project increases.
10. Based upon review of transmission line and substation simulations, the panel felt that the components would have a moderate visual impact on the rural character of the site. Most of the impact relates to the scale, color, and form of the components and their contrast to the existing landform.
11. The EDR landscape architects that evaluated the eligibility of the project area for listing on the National Register as a rural historic district, also evaluated the potential impacts of the proposed project on those landscapes within the study area known to have significance and integrity (as well as those suggested to have significance and integrity). They noted that, in comparison to other more conventional forms of development, the extent of physical disturbance within the overall footprint of each wind turbine will be relatively small and will not significantly affect the landscape components that shape the existing rural agricultural character in and around Jordanville and Van Hornesville. Areas that might clearly reflect historic land division, land use, and building placement should be minimally impacted by the

construction of the turbines and associated access roads. Daytime views and vistas to the larger landscape from the existing Register-listed historic districts and the Route 20 scenic byway will also not significantly deteriorate as a result of the project. Due to existing topography and vegetation, there will be a limited opportunities to view the wind turbines from these areas, and in few if any instances will the entire project be visible at one time.

12. Results of the rating panel evaluation and a tour of the visual study area by EDR landscape architects determined that the project will have limited adverse visual impact from most locations. With a few exceptions, the landscape surrounding this project will retain its open space character and overall spatial organization once the project is in place. Although there are some intrusions to the vertical and overhead planes in the landscape within the project site, the surrounding landscape retains much of its integrity because the open sky, topography, and existing patterns of land use will remain dominant. However, the Jordanville Wind Power Project will introduce new elements (i.e., wind turbines) into the existing landscape, which could be considered a change in community character. It is worth noting however, that the introduction of these new elements will, in fact, help maintain the existing community character by helping area farms remain in business, and slowing the trend of farm abandonment and conversion to successional vegetation and residential development.

It is also worth noting that community character evolves over time, and wind power can now be considered an integral (if not essential) part of the evolving agrarian landscape. This evolution is evident along portions of U.S. Route 20 (a designated scenic byway) in Madison County, where the presence of two wind power projects within approximately 5 miles of Route 20 have helped to maintain the agrarian community character. As indicated in The U.S. Route 20 Byway Strategy (Saratoga Associates, 2004), "The farming community is a critical part of why the Route 20 Byway is what it is today. These family-owned businesses provide the backdrop and frame the scenic and cultural beauty that the Route 20 Byway has to offer. These independently owned and operated establishments are important contributors to the economic vitality of the communities that define the Route 20 Byway. Programs and initiatives that support the successful operation of these businesses should be a fundamental objective of the Route 20 Byway." Therefore, by disuading the trend of farm abandonment (and subsequent conversion of the landscape), wind power projects, such as the proposed Jordanville Wind Power Project, contribute to the economic vitality of the farming community that helps define the Route 20 Byway.

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Tables & Figures

Appendix A

Transmission Facility Components

Appendix B

Large Scale Viewshed Maps

Appendix C

Expanded Photo Log – See Enclosed CD

Appendix D

Digital Simulations – See Enclosed CD

Appendix E

Visual Impact Assessment Rating Forms – See Enclosed CD

Appendix F

Information on Turbine Light Shade

Appendix G

Resumes of Involved Landscape Architects