

**Review of the
Canton Mountain Wind Project
Visual Impact Assessment**

James F. Palmer

Scenic Quality Consultants
Burlington, Vermont

Prepared for
Maine Department of Environmental Protection
Augusta, Maine

March 20, 2012

Table of Contents

1. Introduction	1
2. Adequacy of the Report	3
2.1 Project Description	3
2.2 Landscape Character	3
2.3 Visibility Analysis	3
2.4 Significant Scenic Resources	4
2.5 Visual Simulations	5
2.7 Evaluation of Potential Scenic Impacts	7
3. Field Review and Additional Analysis	12
3.1 Determination of the Area of Potential Effects and Scenic Resources of State or National Significance	12
3.2 Visibility Analysis	12
3.3 ArcScene Visualizations	21
3.4 Field Review	21
4. Evaluation of Scenic Impacts	21
4.1 Evaluation Criteria	21
4.2 Bass Boarding House	23
4.3 Goodspeed Memorial Library	24
4.4 Holmes-Crafts Homestead	24
4.5 Jay-Niles Memorial Library	24
4.6 North Jay Grange Store	25
4.7 Nelson Family Farm	25
4.8 Forest Pond	25
4.9 Nelson Pond	27
4.8 Cumulative Visual Impacts	28
4.9 Summary of Impacts	29
5. Summary and Conclusions	31
6. References	32
Appendix 1. Maine’s Wind Energy Act and the Evaluation of Scenic Impacts	35
Appendix 2. Review Maps	42
Appendix 3. ArcScene Visualizations	47

1. Introduction

On January 13, 2012, the Maine Department of Environmental Protection (MDEP) approved the application of Canton Mountain Wind, LLC to construct and operate the Canton Mountain Wind Project in the Town of Canton, Oxford County, Maine (DEP# L-25558-24-A-N/ L-25558-TB-B-N). The nameplate capacity of this amended project is 22-megawatts (MW). The turbines are located along the ridge of the Canton Mountain. The project is within the area designated for expedited grid-scale wind development.

The generation facilities include:¹

- **Turbines.** Eight General Electric (GE) turbines with an output of 2.75 MW per turbine. The height of the turbine hub height is 85-meters (279 feet). The diameter swept by the blades on seven of the turbine is 103 meters (338 feet) for a total height of 136.5 meters (448 feet). The blades of the southwestern most turbine has a diameter of 100 meters (328 feet) for a total height of 135 meters (443 feet). The turbines will be painted white (FAA does not require day-time warning lights if the turbines are white).
- **Night warning lights.** Red warning lights will be installed according to Federal Aviation Administration (FAA) guidelines. Typically lights are placed on the ends of a turbine string, and on alternating turbines between them.
- **Tower foundation.** The tower is affixed to a 16±-foot diameter concrete foundation.
- **Electrical collection system.** Underground conductors will connect the turbines to the above ground generator lead line. They will be buried within the ridgeline road work limits.

Associated facilities include:

- **Generator lead line.** The underground collector line transitions to above ground wooden poles that are typically 40 feet high. It follows the unpaved access road for approximately 8,405 feet (1.6 miles). Then it enters the right-of-way for the Saddleback Ridge Wind project's generator lead line for 5,800 feet (1.1 miles) until it reaches the Ludden Lane Substation. It is projected that no new clearing will be required for the overhead transmission lines (Patriot Renewables 2012, page 1-3, Table 1-1)
- **Roads.** The access road involves upgrading 7,175 feet of Ludden Lane and 8,600 feet of an existing logging road to be 24 feet wide. The final 3,425 foot portion of the access road will be new construction. The ridgeline road and crane path will be 35 feet wide and run for approximately 7,175 linear feet connecting the turbine pads along the ridgeline. After construction, all new access road construction will be reduced to 12 feet with periodic turnouts, and upgraded roads will be restored to their original width.

¹ DEP has not determined exactly which project components are generation facilities, and which are associated facilities. This review follows LURC's April 21, 2011 procedural order defining generating facilities to be "wind turbines, including their blades, towers, and concrete foundations, and transmission lines... Associated facilities means all other facilities that are not generating facilities." The Commission clarified that the "transmission lines that run between turbines...are generating facilities" (Hilton 2011, page 3)

- **Turbine pads.** A cleared and level area of approximately 1.75 acres will be cleared around each turbine to facilitate construction. After construction the turbine pads will be allowed to naturally revegetate.
- **O&M Building.** An approximately 3,500 square foot single- or two-story Operations and Maintenance building is located on Ludden Lane in Canton. There will also be a 7,500 parking area and an area for outside storage. No information is given about how it will be painted.
- **Meteorological towers.** There will be no permanent meteorological (met) towers.

This report is prepared to review the adequacy of the VIA prepared by Terrence J. DeWan and Associates (TJDA 2011) entitled *Visual Impact Assessment Canton Mountain Wind Project*. It presents the findings of a field investigation and additional analyses of the Canton Mountain Wind Project's potential visual impacts. This is followed by an independent evaluation of the potential visual impacts to state and nationally significant scenic resources, using the Evaluation Criteria presented in the Wind Energy Act. These criteria are described Appendix 1. The final section of this report presents the Conclusions of this review.

2. Adequacy of the Report

There is a standard process that is followed by all VIAs, which includes: (1) project description, (2) landscape character, (3) visibility analysis, (4) significant scenic resources, (5) public use and expectations, and (6) evaluation of potential impacts. This section reviews the adequacy of the VIA prepared by Terrence J. DeWan and Associates (2011). The geographic information system (GIS) data used for the VIA were reviewed and additional analysis conducted. In particular, a standard visibility analysis was performed using ArcMap software, and the visual simulations were compared to a three-dimensional ArcScene model to determine representational accuracy.

2.1 Project Description

The project's elements are identified (TJDA 2011, pages 12-14), but some useful descriptive details are left out. For instance, it would be useful to have a scaled elevation drawing of the turbine to better understand the scale of its different parts. What type of night lighting is used on the met towers? Are there any portions of the roads with significant cuts or fills, and will they be revegetated? Does the clearing around the turbine (i.e., turbine pads) create any areas with significant cuts or fills, and will the clearings be revegetated? There appears to be one misleading measurement: "A cleared and level pad averaging one acre in size will be required at the base of each turbine for staging crane movement, and turbine installation." Section 1 of the application (Patriot Renewables 2011, page 1-3, Table 1-1) indicates that 14.0 acres will be cleared for the 8 turbine locations. The average area cleared for each turbine will be 1.75 acres.

2.2 Landscape Character

The VIA describes the landform, water resources, vegetative patterns and cultural character of the area surrounding the proposed project (TJDA 2011, pages 10-11). The major features are identified. Photographs illustrating the landscape character are included in Appendix A Study Area Photographs (pages 1-9).

2.3 Visibility Analysis

In the VIA, there is a topographic visibility analysis for turbine blade tips (TJDA 2011, Figure 3), and a visibility analysis with vegetative screening for blade tips (TJDA 2011, Figure 4). On these maps, the number of visible turbines is shown in two groups ranging between 1-4 and 5-8 visible turbines. No visibility maps are prepared for other generating facilities or associated facilities, particularly the met towers with warning lights and the clearing associated with roads, crane paths, turbine pads, collector line and the generator lead line.

In addition, there is a cumulative visibility analysis with vegetative screening for blade tips from the Canton Mountain, Saddleback Ridge, Spruce Mountain Wind Projects (TJDA 2011, Figure 5). The map only indicates the extent of visibility for each project, not how many turbines are visible. In addition, it is unclear whether areas exist where more than one project will be visible. However, there is a caption that states: "From the Jay-Niles Memorial Library in Jay it may be possible to see turbines from the Saddleback Ridge Wind Project (7.8 miles away) and the Canton Mountain Wind Project (3.7 miles away). The viewing angle between the two projects is 59 degrees."

TJDA used WindPRO software to conduct the visibility analysis. The topography data are from the National Elevation Dataset, available from the GIS Data Depot web site.²

The visibility maps that take into account the screening effect of vegetation used Maine Land Cover Data (MELCD). The three forest types—deciduous, evergreen and mixed—are assumed to have a canopy height of 40 feet. The screening effects of areas that have been harvested since 1995 or may have lower woody vegetation are not considered. This “conservative” approach is more appropriate for identifying the extent of potential visibility and to help guide assessments made in the field at SRSNS.

Distance zones. The concept of distance zones is presented in section 4.2 of the VIA. The USDA Forest Service proposed these fixed distance thresholds for distance zones—foreground extends to 0.5 miles, middle ground is between 0.5 and 3 or 5 miles, and background is beyond 3 or 5 miles. However, it is the perceptual definition of distance zones that really matters, and the very large scale and smooth surface of wind turbines confound these traditional thresholds. So, the foreground for a wind turbine may be less than a half-mile because they are composed of smooth materials without much apparent texture or color, and foreground is defined as the distance from which “observers are able to detect surface textures, details, and a full spectrum of color” (TJDA 2011a, page 10), such as the “small boughs of leaf clusters... clumps of wild flowers... movement of tree boughs and tree tops in moderate winds” (USFS 1995, page 4-10). Since the surface texture on turbines is largely absent and the color very neutral, the functional qualities of the visual foreground are severely limited and difficult to determine.

Middle ground “is usually the predominant distance zone at which national forest landscapes are seen. At this distance, people can distinguish individual treeforms, large boulders, flower fields, small openings in the forest, and small rock outcrops. Treeforms typically stand out vividly in silhouetted situations. Form, texture, and color remain dominant, and pattern is important. Texture is often made up of repetitive treeforms” (USFS 1995, page 4-10). However, the middle distance for turbines may extend further than 5 miles because their basic elements are so large that they remain recognizable at distances where most naturally occurring landscape elements (e.g., trees) have ceased to be individually recognizable. The components of grid-scale turbines, particularly the blades, become difficult to recognize beyond 8 miles, which might be a better distance for a turbine’s middle distance threshold.

Background is where “texture has disappeared and color has flattened, but large patterns of vegetation or rock are still distinguished, and landform ridgelines and horizon lines are the dominant visual characteristics” (USDA 1995, p. 4-11) and atmospheric effects and distance result in a simplified image. While turbines may be visible beyond 8 miles, they will be relatively indistinct and it may not be possible to detect the motion of the blades. I suspect this is the reason why the threshold where wind turbines were determined to have an insignificant scenic impact was set at 8 miles by the Wind Energy Act. While individual turbines may not be easily distinguishable beyond 8 miles, a pattern of several turbines along a ridge or a grid of turbines seen from above may be recognized as a large-scale development.

2.4 Significant Scenic Resources

² <http://ned.usgs.gov>

The VIA provides a list of scenic resources of state or national significance (SRSNS) within 8 miles of the proposed wind turbines in Section 6 (page 8):

- Goodspeed Memorial Library in Wilton
- Bass Boarding House in Wilton
- Jay-Niles Memorial Library in Jay
- North Jay Grange Store in Jay
- Holmes-Crafts Homestead in Jay
- Nelson Family Farm in Livermore
- Forest Pond in Canton
- Nelson Pond in Livermore

Table 1 in the VIA summarizes the number of visible turbines and distance to the nearest turbine for the six historic sites (page 15). The impacts to the two Great Ponds is not similarly summarized.

2.5 Visual Simulations

Three visual simulations are prepared from viewpoints where the Canton Mountain turbines may be visible. They represent SRSNSs that have the potential view of blade tips within 8 miles of the viewer based on the results of the VIA's Topographic and Landcover Viewshed Map Canton Mountain Wind Project: Jay-Niles M. Library, N. Jay Grange Store and Forest Pond (TJD&A 2011, page 28).

Table 1. Establishing Viewing Distance for the VIA Photosimulations

Photo attribute	Scenic Resource of State of National Significance		
	1. Jay-Niles M. Library	2. N. Jay Grange Store	3. Forest Pond
Camera	Nikon D300	Nikon D70	Nikon D300
Image size (pixels)	3,216-by-2,136	3,008-by-2,000	4,288-by-2848
Focal Length	35 mm	35 mm	35 mm
Full-frame Equivalent [†]	53 mm	53 mm	53 mm
Horizontal Angle	37.3	37.3	37.3
Simulation Width [*]	14.6"	14.6"	14.6"
Viewing Distance [§]	21.7"	21.7"	21.7"

[†] Using Nikon APS-C format (23.6mm-by-15.7mm). <http://www.isotton.com/misc/lens-angle-calculator/>. The sensor for the Nikon D70 is 23.7mm-by-15.6mm; for the Nikon D300 it is 23.6mm-by-15.8mm.

[§] Viewing distance is calculated using the method described by Sheppard (1989, page 185).

^{*} This is the viewing width for the single frame photosimulations, not the panoramas.

Visual simulations are a primary tool to investigate the impact to SRSNSs.³ TJDA prepared panoramic photosimulations for three viewpoints. Two different cameras were used, a Nikon D70 and a Nikon D300, both used an AF-S Nikkor 35mm fixed focal length lens. Basic information about the photographs used for the simulations and their appropriate viewing distance is presented in Table 1.

Photosimulations begin with the photographs described in Table 1. TJDA uses a JOBO camera GPS to locate simulation viewpoints, and the longitude and latitude are included on each panoramic photosimulation. TJD&A uses WindPRO to prepare a digital perspective drawing of the wind turbines and the horizon line as seen from the same location and using the same “lens” as the photograph used. This horizon line is based only on topography and is limited to the extent of the study area. This drawing is superimposed over the photograph and the simulation technician registers them by matching the topographic horizon line to the horizon line of the photograph, as shown in Figure 1. This registration must take into account the height of the trees that are typically covering topography in the photo. WindPRO has tools to assist in removing parts of the turbines that are behind landscape elements in the photograph and making other adjustments. Sometimes PhotoShop may also be used to graphically clean up the image.

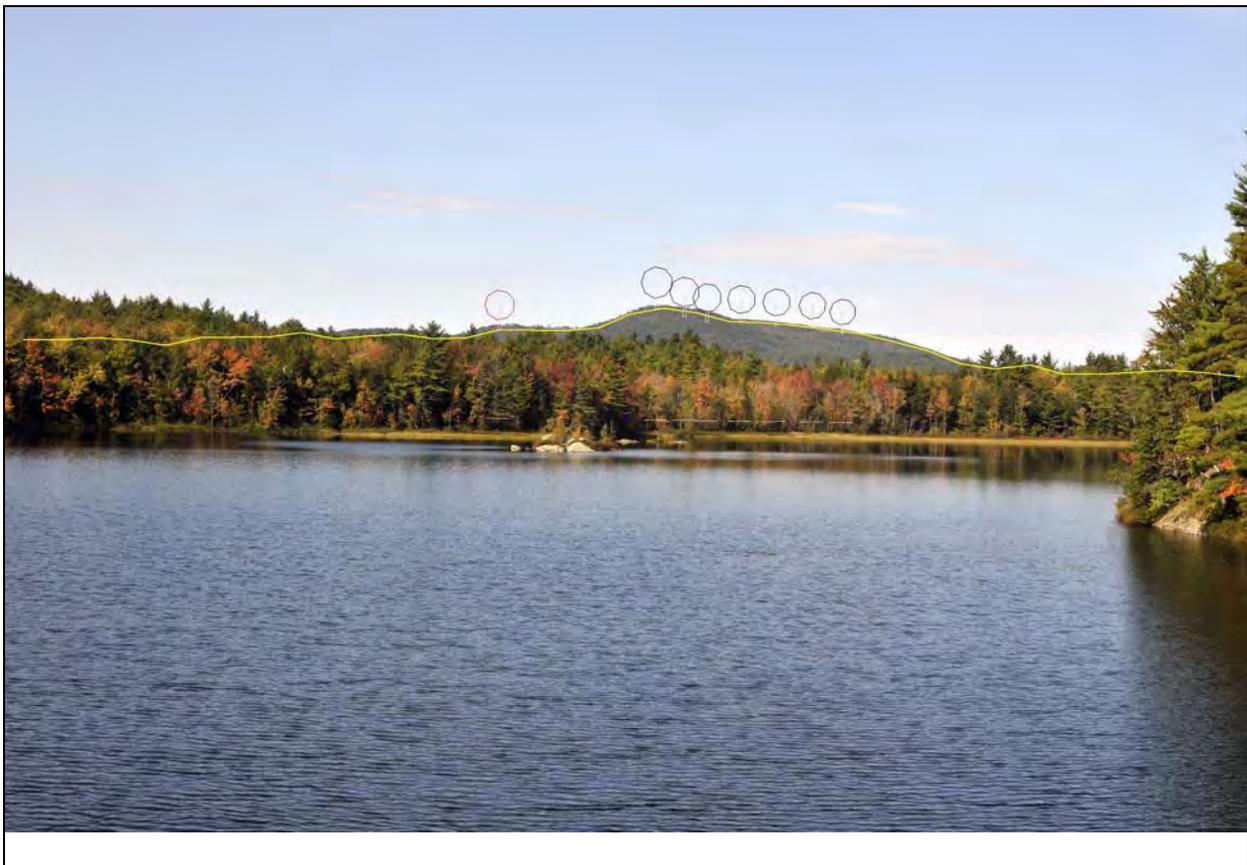


Figure 1. A draft of Photosimulation 3 from Forest Pond showing how the WindPRO drawing is registered to the photograph by aligning the landform ridge line. *Source:* TJD&A 2011.

³ The terms visual simulation and photosimulation refer to the montage of a photograph and a drawing of the proposed project that share the same viewpoint, perspective and scale. The term visualization is used to describe a perspective drawing of the landscape, including the proposed project.

While there is some interpretation that must be made to create photosimulations, those presented in the VIA appear generally accurate and well-constructed, as is apparent when compared to the ArcScene Visualizations in Appendix 3.

Jay-Niles Memorial Library—Viewpoint 1. The library is in a settled area with buildings and landscaping trees that are not represented in the GIS data. However, the scope and scale of Visualization 1 is very similar to the photosimulation in the VIA’s Figure 1A. It appears that the turbines will largely be screened by these urban elements. This supports the accuracy of the photosimulation.

North Jay Grange Store—Viewpoint 2. The Grange is located on the edge of a settled area, with trees that are not included in the GIS data. The scope and scale of Visualization 2 is very similar to the photosimulation in the VIA’s Figure 2A. This supports the accuracy of the photosimulation.

Forest Pond—Viewpoint 3. The scope and scale of Visualization 3 is very similar to the photosimulation in the VIA’s Figure 3A. This supports the accuracy of the photosimulation.

2.7 Evaluation of Potential Scenic Impacts

Logically, the information about the project, surrounding area, and scenic resources’ character and use should be presented first in a VIA. Then the scenic impact and whether it is Not Adverse, Adverse, or Unreasonably Adverse can be systematically evaluated by applying the Evaluation Criteria to what is presented about each scenic area and their views of the proposed development.

Essentially, this is what the *Visual Impact Assessment Canton Mountain Wind Project* has done. It evaluates the three SRSNSs with potential visibility of and within 8 miles of the proposed turbines according to the following criteria:

1. **Context.** The existing character of the surrounding area and the context of the proposed activity. (35-A MRSA § 3452.3.B and 3452.3.D).
2. **Significance.** The significance of the potentially affected scenic resource of state or national significance (§ 3452.3.A).
3. **Public Uses.** The extent, nature and duration of potentially affected public uses of the scenic resource of state or national significance. (§ 3452.3.E).
4. **Viewer Expectations.** The expectations of the typical viewer who would be using or enjoying the scenic resource of state or national significance. (§ 3452.3.C).
5. **Project Impact.** The scope and scale of the potential effect of views of the Project on the scenic resource of state or national significance, including but not limited to issues related to the number and extent of turbines visible from the scenic resource of state or national

significance, the distance from the scenic resource of state or national significance, and the effect of prominent features of the development on the landscape. (§ 3452.3.F).

6. **Potential Effect on Public Use.** The potential effect of the generating facilities' presence on the public's continued use and enjoyment of the scenic resource of state or national significance. (§ 3452.3.E).
7. **Overall Scenic Impact.** A determination of whether the development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance. (§ 3452.1). (TJDA 2011, page 15).

In addition, the VIA adds a new evaluation criterion—**Cumulative Impact**. However, it is unclear whether and how cumulative impacts can be considered as part of a WEA evaluation.

2.7.1 North Jay Grange Store

Context and Character: The description focuses on the immediate village context, since views beyond this area are limited. The building is privately-owned and in disrepair. The building was locked and no information about how to gain access was posted.

Significance: The building was nominated to the National Register in 1974. This section summarizes the nomination form.

Public Use: The building is privately owned and appears to be used occasionally for Grange events.

Viewer Expectations: It seems unlikely that users of the building would have heightened scenic expectations, given the property's current condition and use.

Project Impact: The building will block views toward the project when anyone is standing at the building's entrance. Photosimulation 2 is prepared from the sidewalk to the southwest of the building. Up to eight turbines may be visible when the trees are leafless; the closest turbine is less than four miles distant. With leaves on the trees, views of the turbines will be filtered or completely screened. At this distance the turbines will not dominate the visible landscape.

Potential Effect on Public Use: The turbines would impact the use of the property, since the use is not related to scenic quality in the surrounding landscape.

Cumulative Impact. The Saddleback Ridge Project VIA determined that there would be no views from this location.

Conclusion. “The Project should not compromise views from or of the North Jay Grange Store. The Project should not have an unreasonable adverse effect on its scenic character or the uses related to the scenic character of this historic property. The Project should have no impact on the public's use of the property, since the primary functions of the store (now closed) and the Grange

Hall occur inside the structure and are not related to the scenic quality of the surrounding landscape” (TJDA 2011, page 17). The overall scenic impact is Low (TJDA 2011, page 24).

2.7.2 Jay-Niles Memorial Library

Context and Character: The library is municipally owned. It is located on a hillside overlooking the village, toward the Canton Mountain Wind Project. The focus of the discussion is on the foreground village context. Views from within the building were not considered.

Significance: The library was added to the National Register in 1987. It is nominated for its architecture.

Public Use: The library is open to the public 6 days a week.

Viewer Expectations: It is assumed that there are no scenic expectations from users of the library beyond pride in the building’s appearance.

Project Impact: “From the west side of the library (the former main entrance) views of all but one of the turbines would be filtered by vegetation on the opposite side of the highway throughout most of the year. As seen in Photosimulation 1, one turbine would be visible at a distance of less than four miles to the southwest during the leaf-on months. Up to 8 turbines may be visible during leaf-off conditions, filtered through the branches of the large trees that surround the Grange Store” (TJDA 2011, page 17). At this distance the turbines will not dominate the visible landscape.

Potential Effect on Public Use: The turbines would impact the use of the property, since the use is not related to scenic quality in the surrounding landscape.

Cumulative Impact. “From the outside of the library the eight Canton Mountain turbines will be seen in conjunction with the 12 turbines that were approved by DEP for the Saddleback Ridge Wind Project. The Canton turbines will be seen in the midground over an arc of 10° in the southwest, filtered through trees in the foreground. The Saddleback turbines will be seen at a distance of 7.8 miles over an arc of 12° in the northwest, filtered through trees and utility lines in the immediate foreground. The viewing angle between the two groups of turbines (measured at their closest points) is 59°. This is an example of a successive cumulative visual impact where observers would not be aware of both groups of turbines without turning their head” (TJDA 2011, page 18).

Conclusion. “The Project should not compromise views from the Jay-Niles Memorial Library or its setting. The Project should not have an unreasonable adverse effect on the scenic character of the library or the uses related to the scenic character of this historic property. The Project should have no impact on the public’s use of the property, since the primary functions of the library occur inside the structure and are not related to the scenic quality of the surrounding landscape” (TJDA 2011, page 18). The overall scenic impact is Low (TJDA 2011, page 24).

2.7.3 Forest Pond

Context and Character: Forest Pond is a small lake surrounded by forested rolling hills. It is undeveloped and relatively isolated. The surrounding woodland has significant harvesting activity and a number of commercial logging roads—though none with direct access to the pond. The dominant landform is Jewett Hill to the west (the project is to the northwest). It appears that the land surrounding the pond is all in private ownership. “Purchasing and developing access is a continuing priority of” Maine Department of Inland Fisheries and Wildlife since the 1950s (TJDA 2011, page 18).

Significance: Forest Pond is listed as a significant scenic resource in the *Maine Finest Lakes* (Parkin et al. 1989). The VIA also presents the attribute ratings from the *Scenic Lakes Character Evaluation in Maine’s Organized Towns*. “Lakes with 60 points or more were identified as ‘outstanding;’ lakes with total points between 40 and 60 were identified as ‘significant’” (Parkin and Lortie 1989, page 12)

Scenic Attributes	Rating for Forest Pond
Relief (30)	Medium (20)
Physical features (25)	Medium (15)
Shore configuration (15)	Medium (10)
Vegetation diversity (15)	None (0)
Special features (15)	None (0)
Inharmonious development (-20)	None (-0)
Total (100)	45

Public Use: There is no direct road access or formal boat launch. There are no public records of recreation use for this area. TJDA (2011, page 20) assumes recreational use includes “boating, fishing, ice fishing, camping, and swimming.” However, “the Canton Comprehensive Plan does not mention Forest Pond in the section on public recreation” (TJDA 2011, page 20). Nonetheless, during fieldwork evidence of informal camping was observed in the area of the Photosimulation 3 viewpoint.

Viewer Expectations: There are no data about viewer expectation, but they are assumed to be “moderate to high” (TJDA 2011, page 20).

Project Impact: “The viewshed map indicates that turbines will be visible from approximately 75% of the pond, primarily on the southeasterly side” (TJDA 2011, page 20). “Canton Mountain acts as a focal point from the southern end of Forest Pond” and “the presence of the turbines will have an adverse impact to the scenic value of the southern half of Forest Pond. The primary visual impact will be to the campers, boaters, anglers, and swimmers who use the southern part of the pond, uses which are generally not scenery-dependent. The red warning lights on the turbines will be visible from most locations on the pond; however, since there is no development or designated campsites on the privately-owned shoreline, the number of people who would be affected by the lights is limited.” (TJDA 2011, pages 20-21).

Potential Effect on Public Use: No user surveys were conducted for the VIA. Instead there is reference to the survey of recreational users of Donnell Pond, where the respondents thought the turbines would have a small negative effect on their enjoyment, and no effect on whether they would continue to use Forest Pond.

Overall Scenic Impact. “The presence of the turbines will have an adverse visual impact on Forest Pond, as illustrated in the photosimulation from the southern end. Major moderating factors include the relatively low use that the pond receives, the lack of designated and/or easy public access, and the types of uses (fishing, swimming, and boating) that occur there are not scenery dependent. Surveys of similar situations indicate that, while the presence of wind turbines will have a negative effect on the scenic value of the resource, they will not affect people’s desire to return to the pond to enjoy water-based recreational activities. Therefore, the Project should not have an unreasonable adverse effect on its scenic character or the uses related to the scenic character of Forest Pond. The overall scenic impact for Forest Pond is rated Low to Medium” (TJDA 2011, page 21).

2.7.4 Associated Facilities

“None of these associated facilities will be visible from any scenic resource of state or national significance” (TJDA 2011, pages 21-22).

2.7.5 Evaluation Summary and Conclusions

Sections 7.0 and 8.0 of the VIA summarize the impacts described above. The conclusion is that “While low to moderate visual impacts are anticipated, the Canton Mountain Wind Project should not have an unreasonable adverse impact on scenic values and existing uses of scenic resources of state or national significance” (TJDA 2011, page 24). As a result, the scenic impacts will not be unreasonably adverse.

2.7.6 Concluding Comment about the Adequacy Review

The adequacy review has only identified two possible shortcomings.

1. There is little consideration of scenic impacts from FAA night-time warning lights on the wind turbines. These lights will be very visible from Forest Pond, and are likely to produce the red streaking “pillar” reflections produced by other projects. While there may be few users of Forest Pond to see this impact, it should still be described. The impacts to the Jay-Niles Memorial Library and North Jay Grange Store are not considered at all.
2. It appears that the public does not have a legal right of access to The North Jay Grange Store, which has potential visibility and is listed on the National Register of Historic Places. As a result it cannot be considered SRSNSs (35-A MRSA, § 3452, sub-§3). Formal documentation should be presented verifying that this is so.

However these are relatively minor shortcomings and the visual impact assessment for the Canton Mountain Wind Project is generally of high quality.

3. Field Review and Additional Analysis

This section of the review presents my independent analysis of the potential scenic impacts that may be caused by the Canton Mountain Wind Project. The analysis may not be as thorough as a complete VIA. Its primary purpose is to present the analysis that was used to conduct the assessment of the VIA's adequacy, and to share any additional analyses that were pursued.

3.1 Determination of the Area of Potential Effects and Scenic Resources of State or National Significance

Area of Potential Effects (APE). The VIA must evaluate potential scenic impacts to all SRSNSs within 3 miles of generating facilities (i.e., turbines and transmission line) and an unspecified distance from associated facilities. The permitting authority may require within 30 days of its acceptance of the application as complete for processing the evaluation of potential scenic impacts to SRSNSs within 8 miles of generating facilities. It may also require within the 30 day period the evaluation of scenic impacts from associated facilities (e.g., buildings, access roads, generator lead lines, and substations) using the "traditional" approach applied to non-wind energy projects.

In practice, no one has requested that the APE be extended to 8 miles from the wind turbines, but all VIAs have used the 8-mile APE. Typically, the associated facilities have not explicitly effected determination of the APE because they were well within the 8-mile APE. In the case of the Canton Mountain Wind Project, the Associated facilities are all well within 3 miles of the generation facilities.

Scenic Resources of State or National Significance. The VIA correctly identifies the potential SRSNSs under the Wind Energy Act. There are only eight potential SRSNSs:

1. Goodspeed Memorial Library in Wilton
2. Bass Boarding House in Wilton
3. Jay Niles Memorial Library in Jay
4. North Jay Grange Store in Jay
5. Holmes-Crafts Homestead in Jay
6. Nelson Family Farm in Livermore
7. Forest Pond in Canton
8. Nelson Pond in Livermore

Of the six historic sites listed on the National Register of Historic Places, the Holmes-Crafts Homestead, Nelson Family Farm, and North Jay Grange Store do not qualify as SRSNSs because they are privately owned and the public does not appear to have a legal right of access. A third, These judgments are made based on the National Register of Historic Places Registration Form and field observation.

3.2 Visibility Analysis

Visibility analysis determines whether a line-of-sight exists between two specified points. Typically a geographic information system (GIS) is used to map the viewshed from which specified targets are visible. In principle this is an objective exercise in geometry highly suited to a computer application. In practice however, since the data are only approximations of the actual condition and may include errors or require assumptions, the resulting viewshed maps are best considered a preliminary analysis of potential visibility under simplified conditions. The maps are useful for providing a preliminary investigation of the overall potential visual impact, and particularly for comparing alternatives. If potential visual impacts appear to exist for significant scenic resources, they need to be confirmed through field investigation and other visualization techniques.

For this review, visibility analyses were performed using ArcGIS 10 software (ESRI 2010). The digital data were provided by Terrence J. DeWan and Associates (2012). They include the location of the generation facilities, associated facilities, SRSNSs, 1/3 arc-second (approximately 10 meter) digital elevation model (DEM) from the National Elevation Dataset (NED) and forest cover from Maine and Cover Data file distributed by the Maine Office of GIS. The analysis procedure is relatively standardized, though analysts can reasonably make different assumptions about the analysis variables, and the results can be presented in a variety of ways.

In addition to investigating visibility limited only by landform, the VIA conducted a vegetated viewshed analysis that assigned a height of 40 feet to deciduous, evergreen and mixed forest cover types. No height is assigned to forested wetlands, forested areas harvested since 1995, or areas dominated by shrub-scrub vegetation. Forty feet is commonly used by professionals in the northeast as a conservative, but reasonable forest canopy height in a visibility analysis.

3.2.1 Visibility of the Canton Mountain Wind Project from SRSNS.

Four separate analyses were prepared to investigate several visibility associated with the Canton Mountain Wind Project are included in Appendix 2. The first two maps investigate the greatest possible area from which a part of any turbine could possibly be visible. In this case it is an upraised blade tip 448 feet (136.45 meters) above the ground—except for the southwestern most turbine, which is 443 feet (135 meters) above the ground. Two different constraints on visibility are considered: (1) just bare topography and (2) topography with forest cover. The resulting viewshed maps are:

Map 1: Topographic Viewshed for Blade Tip

Map 2: Forested Viewshed for Blade Tip

While there may be a line-of-sight to just an upraised blade tip, it may not be noticeable and would never be visually dominant. Therefore another analysis investigates the area from which a significant portion of a turbine could possibly be visible. In this case it is visibility of the turbine hub, located 279 feet (85 meters) above the ground. The same two constraints on visibility resulted in the following viewshed maps:

Map 3: Topographic Viewshed for Turbine Hub

Map 4: Forested Viewshed for Turbine Hub

Visual inspection indicates that this review's topographic viewshed of blade tips is similar to the VIA's (TJDA 2011) Topographic Viewshed Map, and that this review's forested viewshed map of blade tips is similar to the VIA's Topographic and Landcover Viewshed Map for Blade Tip. However, the maps from the VIA include turbines that are further away from the viewer than 8 miles. For instance look at the southern part of the study area. The VIA's Topographic Viewshed Map, shows that there are potentially 5 to 8 visible turbines right up to the 8 mile study area boundary. However, the Wind Energy Act specifies that "the effects of portions of the development's generating facilities located more than 8 miles, measured horizontally, from a scenic resource of state or national significance" are "insignificant."⁴ If the 8-mile threshold is incorporated into the analysis, then the edges of the viewshed map will appear "feathered" as turbines drop out of range for consideration as having a significant scenic impact, as seen in the viewshed maps prepared for this review.

It is important to remember that the primary purpose of these visibility maps is to inform and guide the field investigation. For instance, any SRSNS outside the area of topographic visibility need not be surveyed for visual effects from the proposed project and Maine Historic Preservation Commission has agreed to this for potential historic resources (Mohny 2011). This guidance to only evaluate state or nationally significant scenic resources with potential views of a turbine tip as indicated by the topographic visibility analysis is reasonable and should be adopted by others.

It is frequently argued that accounting for the screening effect of forest cover provides a more realistic assessment of a wind project's visibility. Such an analysis is useful for identifying "worst case" viewpoints. However, it is important not to use these results as the primary evaluation tool. Potentially "worst case" viewpoints at all SRSNSs need to be investigated in the field, and also should be investigated through geometrically accurate visual simulations and perhaps cross sections that include tree heights measured in the field.

The area around each of the SRSNSs is reproduced at a larger scale (i.e., close up) and presented in Figure 2 through Figure 7. Only the Nelson Family Farm apparently has no potential visibility of the Canton Mountain Wind Project (i.e., the visibility analysis found that topography alone screened all of the blade tips). However the analysis also indicates that forest cover is very likely to screen the view of the turbines at the Holmes-Crafts Homestead and very possibly Nelson Pond.

⁴ 35-A MRSA, § 3452, § 3

Screening

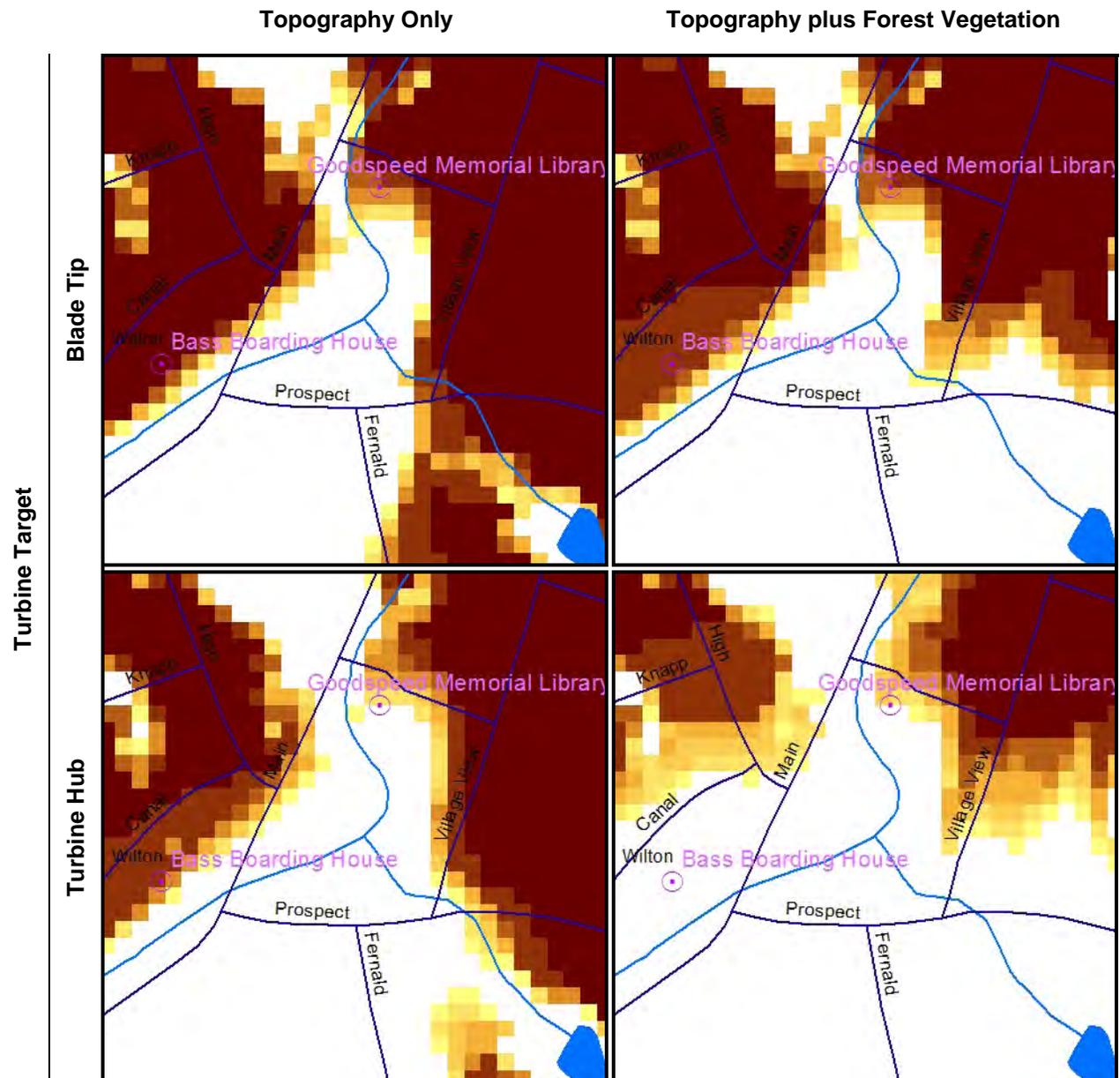


Figure 2. Visibility maps for the Bass Boarding House and Goodspeed Memorial Library in Wilton. The scale is approximately 1:4,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

Screening

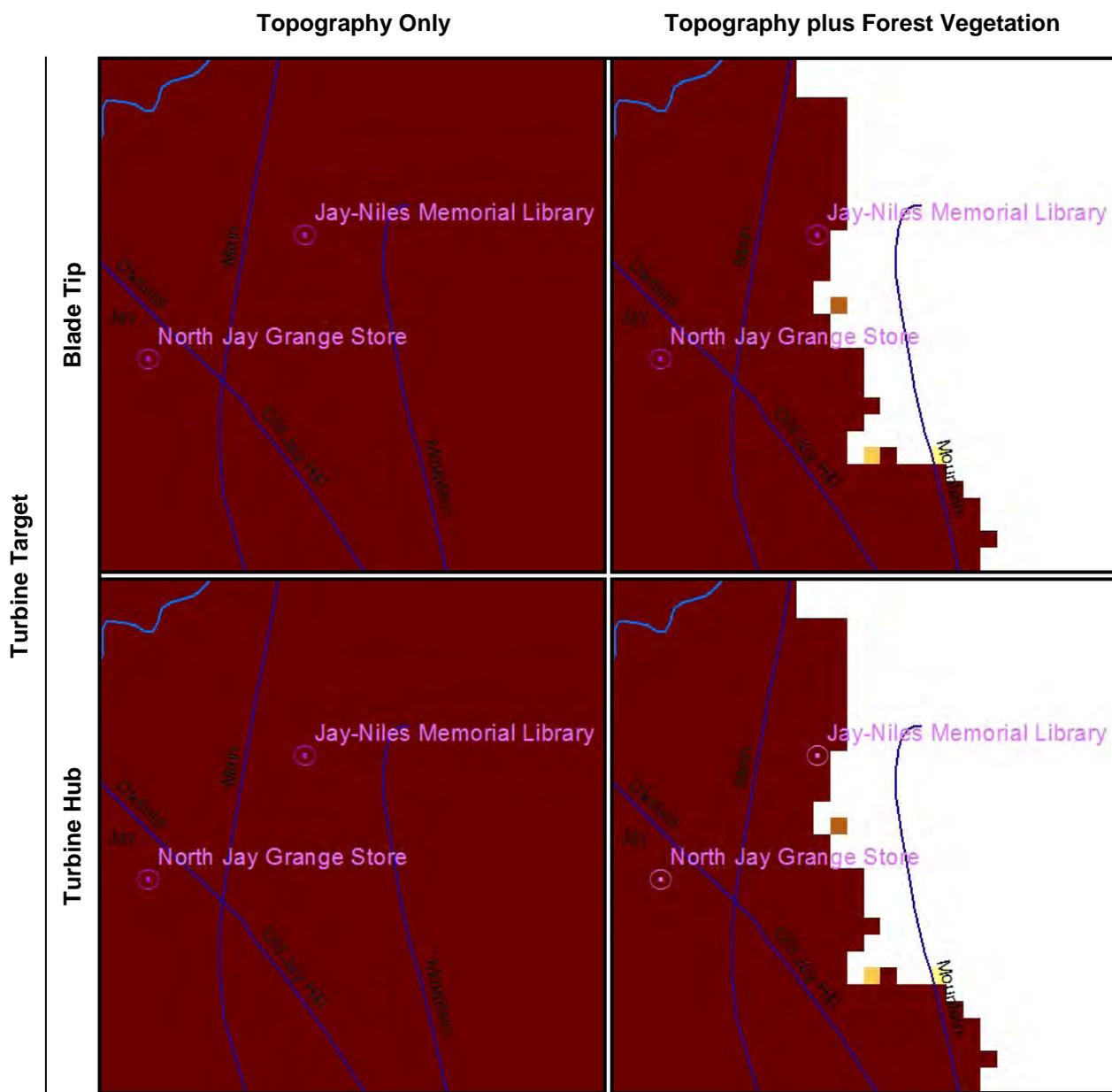


Figure 3. Visibility maps for the Jay Niles Memorial Library and North Jay Grange Store in Jay. The scale is approximately 1:4,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

Screening

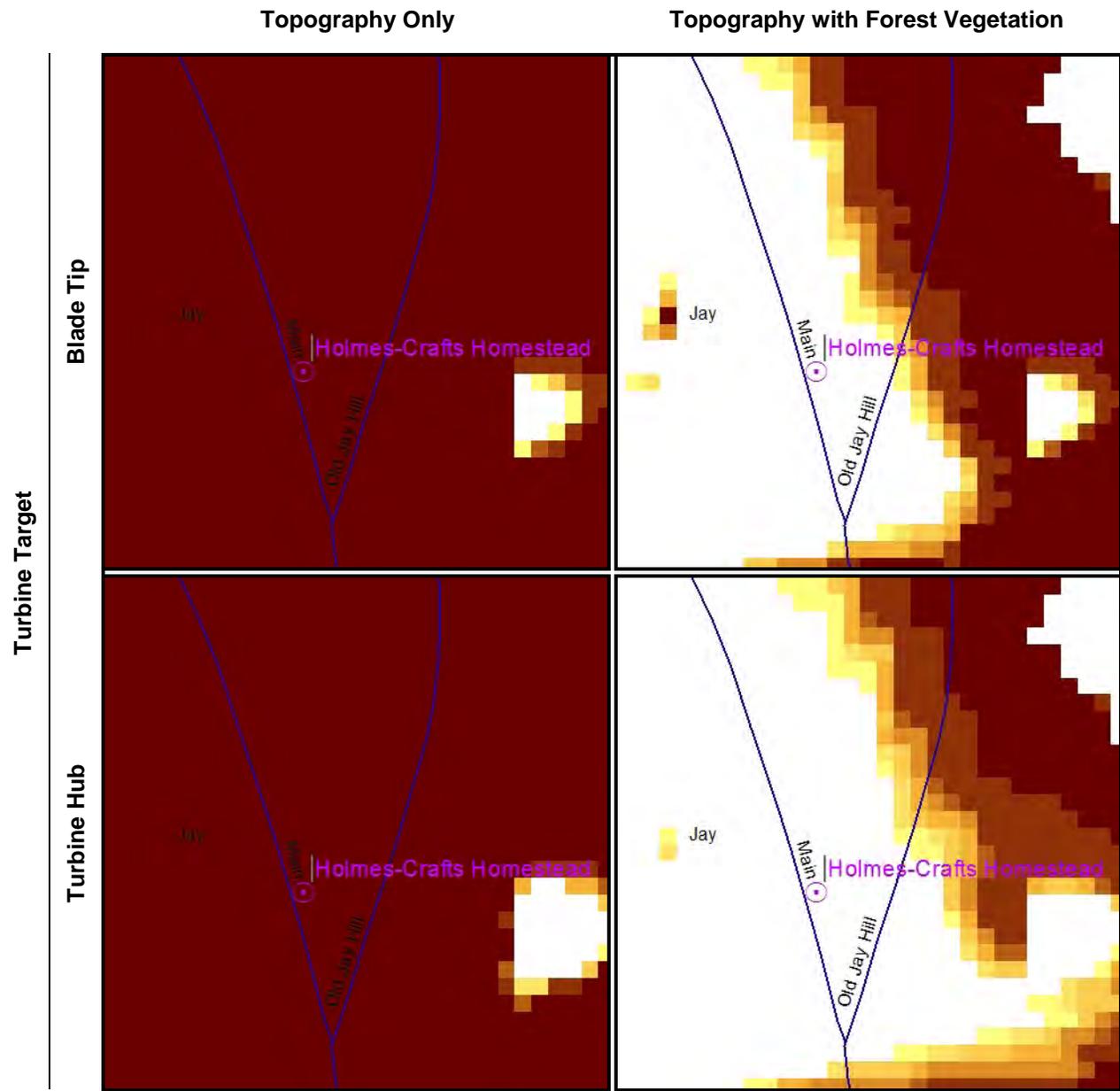


Figure 4. Visibility maps for the Holmes-Crafts Homestead in Jay. The scale is approximately 1:4,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

Screening

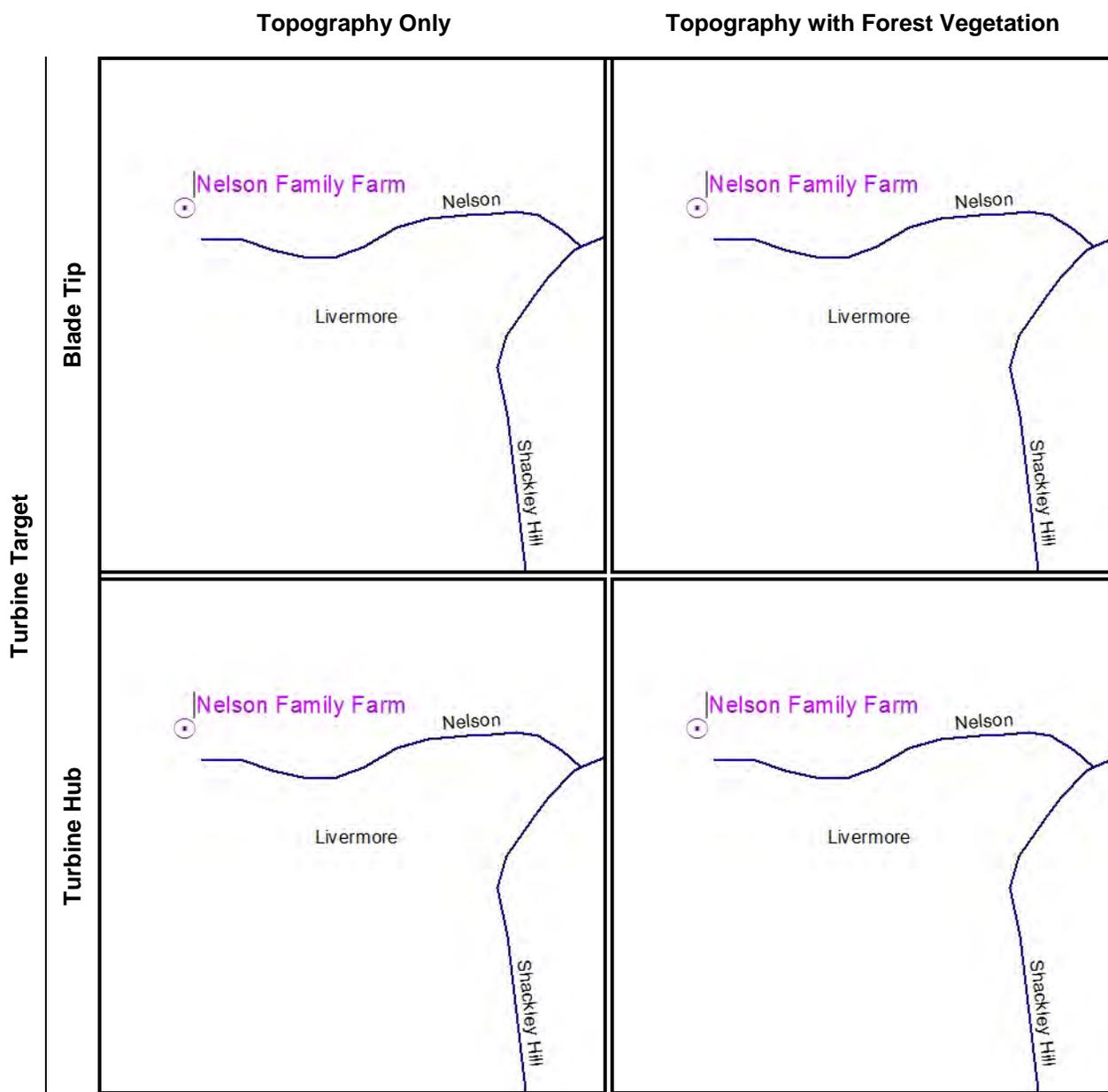


Figure 5. Visibility maps for the Nelson Family Farm in Livermore. The scale is approximately 1:4,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

Screening

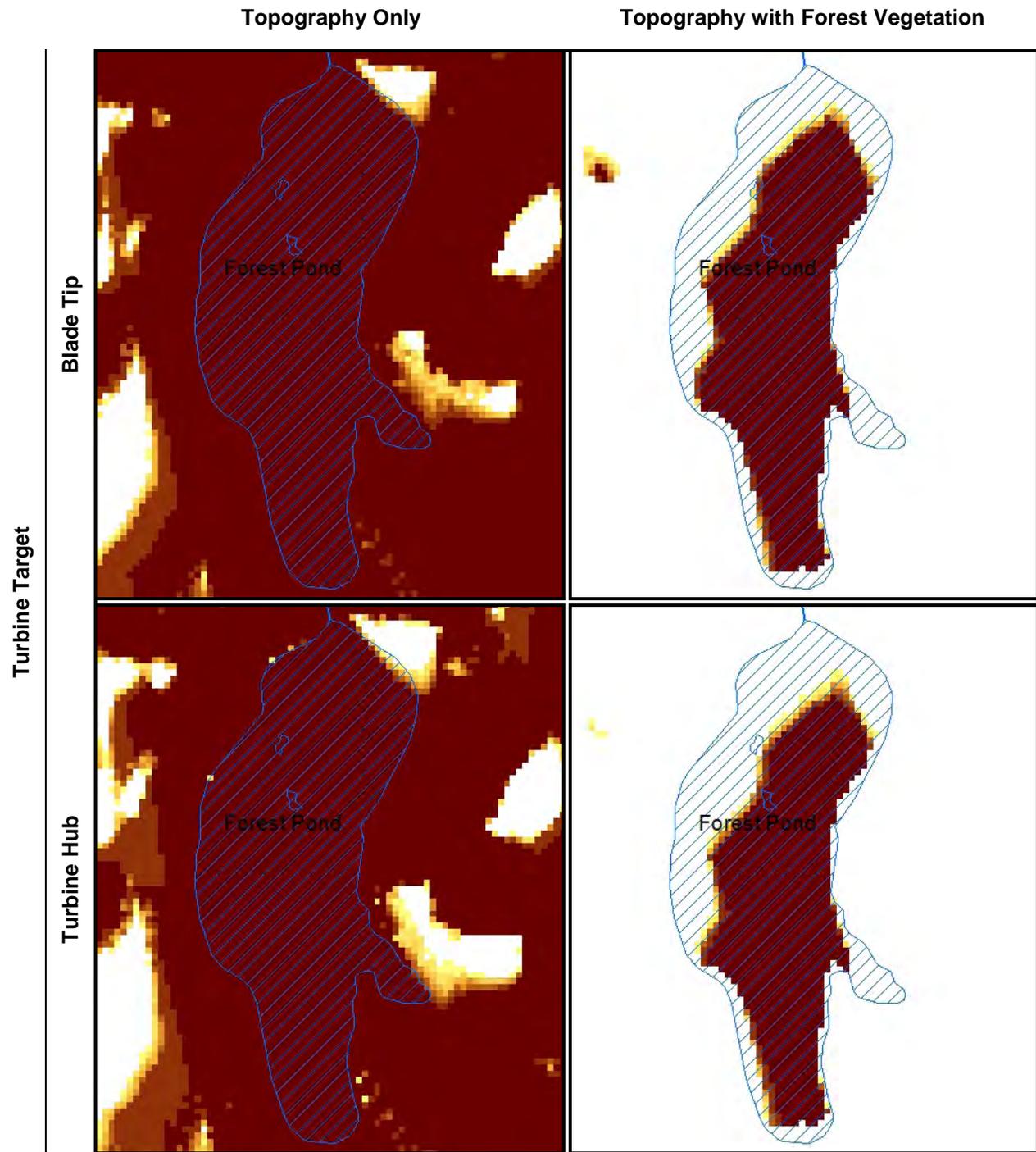


Figure 6. Visibility maps for the Forest Pond in Canton. The scale is approximately 1:10,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

Screening

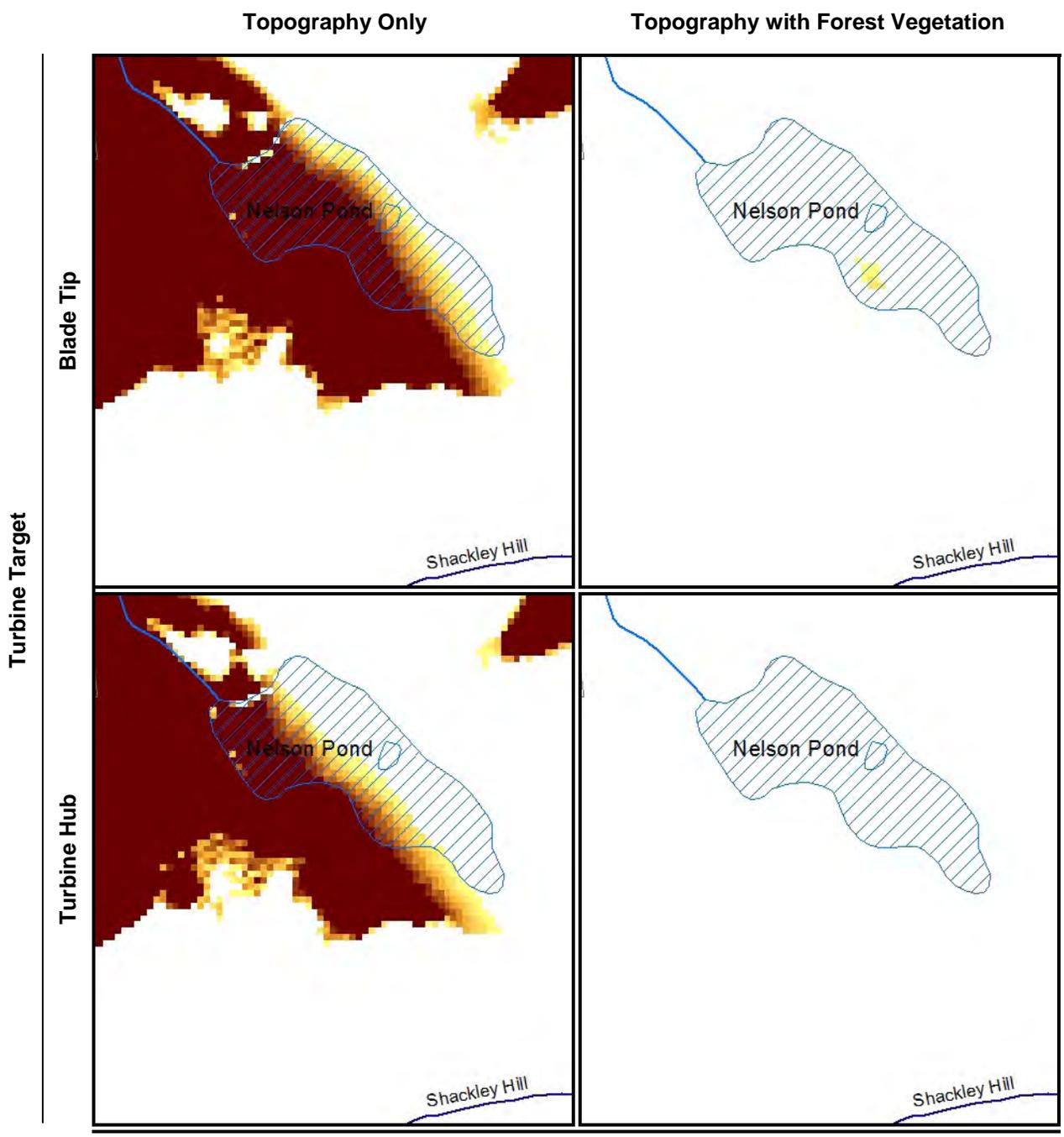


Figure 7. Visibility maps for the Nelson Pond in Livermore. The scale is approximately 1:10,000. The visibility target is an upraised blade tip or the turbine hub. The analyses evaluate the potential screening from topography only and topography plus forest vegetation. Areas that are the darkest brown have the potential to see eight turbines and those that are yellow have the potential to see one turbine. Areas that are white have no turbine visibility.

3.3 ArcScene Visualizations

This review used ArcScene, the perspective representation tool from the GIS program ArcMap, to construct visualizations from the same viewpoints and camera lens as T.J. DeWan and Associates used to create their photosimulations. These visualizations are primarily used to evaluate the reasonableness with which the photosimulations are representing the “scope and scale of the potential effect of view of the generating facilities on the scenic resource of state or national significance.”⁵ When considering the scene represented by the visualizations, it is important to remember that the forest canopy is set to only 40 feet, though mature trees could be 20 to 30 feet taller. In the absence of field data about tree height, it is generally accepted to use this lower value. In addition, only areas of upland forest cover are represented; there are other areas that may also have land cover of varying density and heights, including forested wetlands, and forested areas harvested after 1995, as well as buildings and trees in settled areas. Some of these limitations become apparent when one compares the visualization to the photograph used in the photosimulation. In particular, vegetation and buildings in settled areas may obscure more of the view than is represented by the visualizations. These visualizations are presented in Appendix 3 at the end of this review. Additional information about the visualizations and photosimulations can be found in section 2.5 Visual Simulations.

3.4 Field Review

A field review of the Canton Mountain Wind Project was conducted on Tuesday February 29 2012. In addition to James Palmer, the party included Terry DeWan (TJDA). The purposes of the fieldwork included:

- Verification that the VIA presents a reasonable characterization of the landscape condition, particularly from state or nationally significant scenic resources.
- Verification that the visibility analysis maps are reasonably accurate and that the viewpoints used for the photosimulations are both reasonable and from the locations reported in the VIA.
- Identify the existence of any particularly sensitive state or nationally significant scenic resources not discussed in the VIA.

In general, the fieldwork found the visibility maps and photosimulations to be reasonable representations of the existing visible conditions and what the visible conditions will be if the project is built as proposed. While the length of our observation was limited, it seems clear that scenic appreciation is not a central factor in the use of the historic sites, and neither lake is heavily used.

4. Evaluation of Scenic Impacts

4.1 Evaluation Criteria

Eight places were identified as potential state or nationally significant scenic resources under the Wind Energy Act criteria. This section evaluates the scenic impact to these resources based on my understanding of the Wind Energy Act’s scenic impact Evaluation Criteria.⁶

⁵ 35-A MRSA, § 3452, sub-§3(F)

⁶ 35-A MRSA, § 3452, sub-§3

Public access: The definition of a SRSNS requires that it be “owned by the public or to which the public has a legal right of access.”⁷

- A **Significance of resource:** Consider the role of scenic quality in the designation, and the level of significance relative to similar designations. Indicators may be obtained from the designation reports or forms, supplemented by descriptions from widely used guide books.
- B **Character of surrounding area:** Describe the landscape visible from the scenic resource and how it may be experienced by the viewer. Consider contrasts within the existing landscape and the presence of other contrasting elements. User surveys may provide a direct measure of the existing scenic quality. This may also be based on a descriptive landscape characterization, typically prepared by a landscape professional. Apparent ROS class may also be an appropriate indicator.
- C **Typical viewer expectation:** Consider the resource’s scenic reputation for the most common activities, and the centrality of scenic quality to the typical user’s experience. User surveys may provide an indicator of expectations. In the absence of direct empirical data, distance traveled or descriptions from widely used guide books may provide alternative indicators.
- D **Development’s purpose and context:** This criterion incorporates the Wind Energy Act’s goal of achieving significant wind energy development into the Evaluation Criteria for scenic impacts. Consider site quality—wind suitability, proximity to transmission line, and potential power generation if all potential turbine sites in the area are used. Low evaluation means that if all sites in the area are developed, it makes a major contribution to Wind Energy Act’s goals or contributes to reducing wind energy sprawl (i.e., a lower contribution to overall scenic impact). High evaluation means the area makes a minor contribution when all potential sites are developed or significantly increases wind turbine sprawl (i.e., a higher contribution to overall scenic impact).
- E.1 **Extent, nature and duration of uses:** Consider the number of users, role of scenic quality in use of the resource, and typical length of stay. User surveys provide the most direct indicators, but trail logs or traffic counters may also be useful. Potential accessibility may be an indicator in the absence of empirical data. Apparent ROS may be used to determine the appropriate intensity of use (Hass et al. 2004, USDA 1982).
- E.2 **Effect on continued use and enjoyment:** If the project were built, what is the likelihood of users returning, and the impact on their enjoyment of the scenic resource? User surveys incorporation accurate photographic visual simulations may provide indicators.

⁷ 35-A MRSA, § 3451, sub-§9

- F **Scope and scale of project views:** Consider the number of visible project elements, their relative magnitude, and the proportion of total angle of view occupied by the project. Accurate photographic simulations and visibility analyses may provide indicators.

The levels of severity for the Evaluation Criteria are as follows:

- **None.** The Evaluation Criterion makes no contribution to scenic impact. For some criteria a rating of None means that there is No Adverse Impact (e.g., there are no people present at possible viewpoints—Criterion E, or the project is not visible—Criterion F).
- **Low.** The severity of the contribution is low. While the scenic impact may be Adverse, it appears to be within the acceptable range for any type of development (e.g., only one or two turbines will be partially visible at a distance of nearly 8 miles—Criterion F).
- **Medium.** The severity of the contribution is medium, which is Adverse but typical of wind energy development, and within the range of impacts that the Wind Energy Act anticipates (e.g., other towers or large scale structures are present that contrast highly with the surrounding landscape).
- **High.** The severity of the contribution is high from this criterion, which in association with other criteria may make the overall scenic impact Unreasonably Adverse (e.g., a possible scenario suggesting an Unreasonable Adverse impact might be that the scenic resource is a national icon—Criterion A is High, though there are only modest numbers of viewers—Criteria E.1 is Low, and to a person their enjoyment will seriously decline—Criteria E.2 is High).

The Evaluation Criteria for each of the state or nationally significant scenic resources are discussed below, and summarizes in Table 3 the Evaluation Criteria ratings for the Canton Mountain Wind Project. The VIA has employed a very similar approach using slightly different criteria to summarizing the impacts to the state and nationally significant scenic resources (TJD&A 2011, pages 23).

4.2 Bass Boarding House in Wilton

Public access. This historic site is privately owned and does not have public legal right of access. Therefore it is not a state or nationally significant scenic resource under the Wind Energy Act and will not be considered further.⁸

Criterion F: Scope and scale of project views. As a result the field observation, it is clear that local buildings and vegetation completely screen the project from ground-level views at this site. Since there is no possible visibility, there is no scenic impact.

⁸ 35-A MRSA, § 3451, § 9

Overall scenic impact. None, since there is no public legal right of access and no possible project visibility.

4.3 Goodspeed Memorial Library in Wilton

Public access. This is a publicly owned property.

Criterion F: Scope and scale of project views. As a result the field observation, it is clear that local buildings and vegetation completely screen the project from ground-level views at this site. Without visibility there can be no visual impact. Therefore it will not be considered further.

Overall scenic impact. None, since there is no possible project visibility.

4.4 Holmes-Crafts Homestead in Jay

Public access. This is a privately owned property. There is no indication that the public has a legal right access.

Criterion F: Scope and scale of project views. As a result the field observation, it is clear that a hedgerow of pines completely screen the project from ground-level views at this site. Since there is no possible visibility, there is no scenic impact.

Overall scenic impact. None, since there is no possible project visibility.

4.5 Jay-Niles Memorial Library in Jay

Public access. This site is publicly owned.

Criterion A: Significance of resource. This historic site was nominated in 1987. The State Historic Preservation Officer Certification is not signed and does not designate a level of significance. However, nothing in the nomination form suggests that it is other than locally significant. Scenic quality is not mentioned in the nomination form (MHPC 1987). The impact rating is Low.

Criterion B: Character of surrounding area. This is a typical, very small western Maine village with modest houses and public buildings. The library has a view of the village over Sevenmile Stream, with the top ridges of surrounding hills being visible through the village trees. The impact rating is Low-Medium.

Criterion C: Typical viewer expectation. People at locations where they may see the project will be in the library parking lot and entering or exiting the library. There is no obvious reason why people engaged in these activities would have high scenic expectations, or why people would visit this location for the primary purpose of looking at the view. The impact rating is Low.

Criterion D: Development's purpose and context. At 22 MW, the Canton Mountain Wind Project is of modest size. However, this project is clustered with permitted projects on Saddleback Ridge and Spruce Mountain. In addition, it shares a substation and a portion of the generator lead line right-of-way with the Saddleback Ridge Wind Project. The impact rating is Low.

Criterion E.1: Extent, nature & duration of uses. One assumes that the uses are typical of a community library: checking out and returning books, doing school work, or attending library programs. There is no information about how many users the library has or how long they stay. The impact rating is Low.

Criterion E.2: Effect on continued use and enjoyment. These primary uses of the site are not related to landscape scenic quality, and occur inside the library, where there is little to no visual access toward the project. As a result, visual access to the project is likely to have little to no potential effect to these uses. The impact rating is None to Low.

Criterion F: Scope and scale of project views. Topography does not screen the turbines from this SRSNS, though village trees largely partially screen the project, particularly when the trees are in full-leaf. There will be views of some blades tips or turbine hubs from the parking lot and entry, though the turbines will be 3.6 to 4.5 miles. Photosimulation 1A in the VIA clearly represents the visual presence of the project (TJD&A 2011). The impact rating is Low.

Overall scenic impact. A turbine with a few additional blade tips will be visible through the trees from the Jay-Niles Memorial Library. The significance of this SRSNS is low, the number of users is expected to be low, and scenic appreciation is not normally associated with its use. As a result, the overall scenic impact is Low.

4.6 North Jay Grange Store in Jay

Public access. The North Jay Grange Store is private property, and while the building may still be used for social purposes, the “Grange Store” seems to be closed and the business signs on the porch roof removed. There are no indications of public access or use of the grounds behind the building where views may be possible.

4.7 Nelson Family Farm in Livermore

Public access. This is a privately owned property. There is no indication that the public has a legal right access.

Criterion F: Scope and scale of project views. As a result the visibility analysis, it is clear the topography completely screens the project from ground-level views at this site. Since there is no possible visibility, there is no scenic impact.

Overall scenic impact. None, since there is no possible project visibility.

4.8 Forest Pond

Public access. Though it is surrounded by private property and does not have vehicular access, the public has a legal right of access to all Great Ponds.

Criterion A: Significance of resource. This is a scenic resource of statewide significance (Parking et al. 1989). In the *Scenic Lakes Character Evaluation in Maine’s Organized Towns*, it received a score of 45, the lowest score possible for a significant scenic resource (Parkin and Lortie 1989). Its rating is Low.

Criterion B: Character of surrounding area. This is a small lake⁹ surrounded by low-lying hills covered with a mixed forest. Views from on the lake are in all directions. The most dominant landform is Jewett Hill along the west shore, though Canton Mountain is the focal point when looking up the lake from the south. Though the lake is undeveloped, there is active forest management within this general area. The probable WROS class for the lake is Rural Natural Setting.¹⁰ The rating is Medium.

Criterion C: Typical viewer expectation. There are no existing data to directly address this criterion. An alternative approach is to apply deductive reasoning to respond to this criterion using common knowledge and assumptions. Because it is not empirically grounded, it may not be valid or reliable.

This lake and the surrounding area are not a well-known scenic or recreation destination in Maine; it is expected that it is only known by local residents. While the lake is undeveloped, the surrounding forest is being actively harvested. Potential activities are fishing, paddling, walking, and camping. There is some evidence that scenic quality may be important to people engaged in hiking or paddling (Palmer 1999). Its rating is Medium.

Criterion D: Development's purpose and context. At 22 MW, the Canton Mountain Wind Project is of modest size. However, this project is clustered with permitted projects on Saddleback Ridge and Spruce Mountain. In addition, it shares a substation and a portion of the generator lead line right-of-way with the Saddleback Ridge Wind Project. The impact rating is Low.

Criterion E.1: Extent, nature and duration of uses. This is unknown. However, field observation found few indications of use. The rating is Low.

Criterion E.2: Effect on continued use and enjoyment. This is unknown for the Canton Mountain Wind Project. However, we can apply indirect evidence and deductive reasoning to respond to this criterion.

To date surveys of people hiking, fishing, and boating generally have found that proposed grid-scale wind projects in Maine will have a slightly negative effect on their recreation enjoyment, though it will not significantly affect their continued use. One survey investigated the effect on water-based activities. It found that the Bull Hill wind turbines would have no effect on respondents' likelihood of returning to Donnell Pond¹¹ for water activities such as boating, paddling, swimming or fishing, and it is likely to be similar here (Robertson and MacBride

⁹ The *Scenic Lakes Evaluation for the Organized Towns in Maine*. (Parking and Lortie 1989, page 6) defines a small lake as being less than 500 acres, a medium sized lake as between 500 and 1,999 acres, and a large lake as larger than 2,000 acres.

¹⁰ Recreation Opportunity Spectrum (ROS) was used to help describe how Plum Creek's proposed concept plan might change the character of the Moosehead Lake region. Hass, et al. (2004) developed a guidebook to apply the ROS to water-based recreation resources. The WROS class suggested here is of a preliminary nature, since a WROS study has not been conducted.

¹¹ Donnell Pond is identified a significant scenic resource in the *Maine Wildlands Lake Study*. It is adjacent to the Donnell Pond Unit Maine Reserved Land which is designated as a significant scenic resource (Maine DOC 2009a)

2010). Respondents were not asked about its effect on enjoyment. In another survey, users of Pleasant Lake thought views of turbines would have a trivial effect on their enjoyment and continued use, however users of Mattawamkeag Lake thought that the change would have a medium negative effect on their enjoyment and continued use (Robertson and MacBride 0211; Palmer 2011b, page 19). In addition, fishing is anticipated to be the primary use and Palmer (1999) found that fishing was an activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled. It is assumed that the effect on continued use and enjoyment is Low-Medium.

Criterion F: Scope and scale of project views. Views toward the Canton Mountain Wind Project are to the north. The nearest visible turbine is 3.8 miles from Photosimulation viewpoint 3, but it is possible that at the northern edge of turbine visibility on the lake, the nearest turbine may be 3.5 miles distant. The forested viewshed analysis indicates that all 8 turbines will be visible from the southern end of the lake; the only areas without turbine visibility are close to the northern and western shores, in the visual shadow of the shoreline vegetation.

The photosimulation and visualization from viewpoint 3 show 8 turbines on the horizon that occupy a horizontal arc of about 11°. To put this in perspective, the “visual angle of the width of the thumb held at arm’s length is about 2 degrees” (O’Shea 1991). If the fingers and thumbs of one hand was held at arm’s length with the palm facing outward it would span approximately the area occupied by the proposed project. While a visual angle of 11° is obvious on the landscape, it is not sufficient to create a sense of being surrounded by turbines. In addition, the turbines will be too far away to give a sense of “looming” over users of the lake. However they will have a very significant visual presence because views from the southern end of the lake will focus attention in their direction, and several turbines or hubs will be visible from most areas of the lake.

It is expected that at night the FAA warning lights will be visible from the much of Forest Pond’s surface and shoreline. Based on an assessment of the visualizations, lights on 5 turbines will be visible from viewpoint 3. A viewer that can see the lights looking over Forest Pond may also see them reflected as “pillars” on the surface of the water.

The rating for scope and scale is Medium.

Overall scenic impact. The turbines will have a significant visual presence above the horizon line from much of Forest Pond, including as close as 3.5 miles. It is anticipated that there is very little recreation use on Forest Pond. Scenic quality is not generally thought to be central to the types of activities that are expected to be most common—fishing and paddling. Therefore the Overall Scenic Impact is set at Low-Medium.

4.9 Nelson Pond

Public access. Though it is surrounded by private property and does not have vehicular access, the public has a legal right of access to all Great Ponds.

Criterion F: Scope and scale of project views. It is very likely that all views of the project will be screened by shoreline vegetation.

Overall scenic impact. None, since there is no project visibility.

4.8 Cumulative Visual Impacts

The WEA does not explicitly address the cumulative visual impacts of wind energy projects. In response to the 125th Maine Legislature's Resolve 93 (LD 1366), the Office of Energy Independence and Security (OEIS) is assessing methods by which permitting authorities should consider the cumulative impact on scenic resources of state or national significance. A draft report has been released (OEIS 2012), but no direction about how or whether to consider cumulative impacts has been provided by either DEP or LURC.

Nonetheless, the eight-mile area of zone of visual impact (ZVI) for the permitted Saddleback Ridge and Spruce Mountain Wind Projects overlaps the Canton Mountain Wind Project's eight-mile ZVI. There are no SRSNSs in the over-lapping area with the Spruce Mountain Wind Project. However, in the overlap with the Saddleback Ridge Wind Project there are four SRSNSs:

- Bass Boarding House in Wilton
- Goodspeed Memorial Library in Wilton
- Jay-Niles Memorial Library in Jay
- North Jay Grange Store in Jay

The potential visibility of each project from these four historic sites based on the visibility analyses conducted for the VIA reviews is shown in Table 2. The viewshed analysis indicates that there will be no cumulative visual impact to the Bass Boarding House and Goodspeed Memorial Library because landform will scree views of the Saddleback Ridge Wind Project. However, the potential for cumulative visual impacts exists at the Jay-Niles Memorial Library and North Jay Grange Store. The North Jay Grange Store does not provide the public a legal right of access, so it does not meet all of the requirements to be considered a SRSNS. That leaves just the Jay-Niles Memorial Library as a potential site of cumulative scenic impacts.

As described above, views of the turbines on Canton Mountain are filtered by trees in the village and the overall impact is judged to be Low. The Saddleback Ridge Wind Project VIA (TJD&A 2010) and the review of the VIA (Palmer 2011a) found that the Saddleback Ridge wind turbines were nearly 8 miles distant from the Jay-Niles Memorial Library. In addition, field observation indicated that mature coniferous trees would likely provide greater screening than indicated by the visibility analysis (i.e., the trees were likely 60 or more feet tall rather than the 40 feet assumed in the analysis). Overall, the Saddleback Ridge wind turbines were expected to have a minor visual presence when viewed from this location with an overall scenic impact of None to Low (Palmer 2011a). Given this situation, it is not anticipated that the cumulative visual impact represent a concern at this time.

Table 2. Potential Cumulative Visibility of the Canton Mountain and Saddleback Ridge Wind Projects

Visibility	Potential SRSNS
------------	-----------------

Analysis	Bass Boarding House [†]	Goodspeed Memorial Library	Jay-Niles Memorial Library	North Jay Grange Store [†]
Topography-Blade Tips				
Canton	8	5	8	8
Saddleback	0	0	12	10
Topography-Turbine Hubs				
Canton	7	0	8	8
Saddleback	0	0	12	10
Forested-Blade Tips				
Canton	7	5	8	8
Saddleback	0	0	12	10
Forested-Turbine Hubs				
Canton	0	0	8	8
Saddleback	0	0	12	10

Notes: [†] The public does not have a legal right of access to these sites listed on the national Register of Historic Places, and therefore they are not scenic resources of state or national significance as defined by the Wind Energy Act (§ 3451 (9)).

4.9 Summary of Impacts

Table 3 summarizes the above findings from applying the scenic impact evaluation criteria to the 7 resources identified within 8 miles of a turbine and possibly having state or national significance as a scenic resource.

Table 3. Summary of Evaluation Criteria Ratings for the Canton Mountain Wind Project

Scenic Resources of State or National Significance in the Surrounding Area	Scenic Impact Evaluation Criteria							Overall Scenic Impact
	A	B	C	D	E.1	E.2	F	
Listed Historic Sites								
Bass Boarding House †	*	*	*	*	*	*	0	None
Goodspeed Memorial Library	*	*	*	*	*	*	0	None
Holmes-Crafts Homestead †	*	*	*	*	*	*	0	None
Jay-Niles Memorial Library	Low	Low-Med	Low	Low	Low	Low	Low	Low
North Jay Grange Store †	—	—	—	—	—	—	—	None
Nelson Family Farm †	*	*	*	*	*	*	0	None
Great Ponds								
Forest Pond	Low	Medium	Medium	Low	Low	Low-Med	Medium	Low-Med
Nelson Pond †	—	—	—	—	—	—	—	None

Notes: The Evaluation Criteria are: (A) Significance of resource, (B) Character of surrounding area, (C) Typical viewer expectation, (D) Development's purpose and context, (E.1) Extent, nature and duration of uses, (E.2) Effect on continued use and enjoyment, and (F) Scope and scale of project views.

* Since there is no project visibility, there is no scenic impact.

† The public does not have a legal right of access to these sites listed on the national Register of Historic Places, and therefore they are not scenic resources of state or national significance as defined by the Wind Energy Act (§ 3451 (9)).

5. Summary and Conclusions

This review evaluates the adequacy of the VIA for the Canton Mountain Wind Project which includes *Visual Impact Assessment Canton Mountain Wind Project* (TJDA 2011). Overall this VIA is accurate and clearly presented. Additional analyses were conducted for this review; including visibility mapping of turbines, fieldwork at each of the potential scenic resources of state or national significance, and visualizations at the photosimulation viewpoints that indicated which turbines would have FAA warning lights.

The apparent scenic impact to the state and nationally significant scenic resources (SRSNSs) is Adverse at some locations but it is my judgment that the scenic impact to SRSNSs does not rise to the level of Unreasonably Adverse.

Observations and recommendations. The preparation of this review has resulted in several observations and recommendations that are worth repeating.

1. There is real difficulty in obtaining existing information about the “extent, nature and duration of potentially affected public uses of scenic resources.” No attempt was made to gather original data about use of impacted SRSNS. Future VIAs need to obtain or develop reasonable estimates of the extent, nature and duration of use for locations in significant scenic resources with potential views of wind energy development components.
2. No information was collected about the “expectations of the typical viewer” or the “potential effect of the generating facilities' presence on the public's continued use and enjoyment of the SRSNS.” Not only was no information collected about the specific SRSNSs within 8 miles of the Canton Mountain generating facilities, but there is no general information about the role of scenic quality in most of the activities found at SRSNS in the study area.
3. Nighttime visibility of FAA warning lights, particularly over open water where the lights may create a “pillar” reflection has become a topic of concern at public hearings for grid-scale wind energy projects in Maine. No analysis of this possible scenic impact is presented. At a minimum, future VIAs need to prepare visibility maps for FAA warning lights mounted on turbines and permanent met towers. It may also be useful to present some form of visualization or photographs of existing FAA lights located in a similar manner to those considered in the VIA.
4. There is the potential of cumulative visual impacts between the Canton Mountain and Saddleback Ridge Wind Projects. However, it is uncertain whether or how to evaluate cumulative impacts. While this issue does not appear to be significant in this case, there is a need for clear guidance from the permitting agencies before projects are proposed where the potential for cumulative impacts becomes a serious concern.

6. References

ESRI. 2010. *ArcGIS Desktop*. Redlands, CA: ESRI.

Expedited Permitting of Grid-Scale Wind Energy Development. MRSA Title 35-A, Chapter 34-A. <http://www.mainelegislature.org/legis/statutes/35-A/title35-Ach34-A.pdf> (accessed February 23, 2010).

Haas, Glenn, Robert Aukerman, Vernon Lovejoy, and Darrell Welch. 2004. *Water Recreation Opportunity Spectrum Users' Guidebook*. Lakewood, CO: USDI, Bureau of Reclamation. http://www.usbr.gov/pmts/planning/wros/wros_report.pdf (Accessed April 27, 2011).

Jones, Judy J. 1986. *Scenic Lakes Evaluation for the Unorganized Towns in Maine*. Augusta, ME: Maine Department of Conservation and Maine State Planning Office.

Maine, Department of Conservation. 2009a. Designated Scenic Viewpoints of State or National Significance, Located on Public Reserved Land or on a Publicly Accessible Trail Used Exclusively for Pedestrian Use, for Consideration in the Permitting of Expedited Wind Energy Development. <http://www.maine.gov/doc/DraftRule/DraftScenicRule.pdf> (accessed March 11, 2010).

Maine Historic Preservation Commission. 1972. National Register of Historic Preservation Registration Form: Holmes-Crafts Homestead.

Maine Historic Preservation Commission. 1974. National Register of Historic Preservation Registration Form: North Jay Grange Store.

Maine Historic Preservation Commission. 1987. National Register of Historic Preservation Registration Form: Niles Memorial Library.

Maine Historic Preservation Commission. 1988. National Register of Historic Preservation Registration Form: Goodspeed Memorial Library.

Maine Historic Preservation Commission. 1988. National Register of Historic Preservation Registration Form: Bass Boarding House.

Maine Historic Preservation Commission. 1992. National Register of Historic Preservation Registration Form: Nelson Family Farm.

Maine, Department of Conservation, Bureau of Parks and Lands. 2009b. *Maine State Comprehensive Outdoor Recreation Plan 2009-2014*. <http://www.maine.gov/doc/parks/programs/SCORP/contents.html> (accessed March 3, 2010).

Mitchell, Christi A. 2012. RE: Canton Mountain Wind impacts to historic sites. Email to James F. Palmer dated March 12, 2012.

- Mohoney, Kirk. 2011. Scenic Impact Question. Email to James F. Palmer dated May 3, 2011.
- Office of Energy Independence and Security. 2012. Report of OEIS Assessment of Cumulative Visual Impacts from Wind Energy Development. (Draft) Augusta, ME: OEIS.
- O'Shea, Robert P. 1991. Thumb's rule tested: visual angle of thumb's width is about 2 deg. *Perception* 20(3): 415-418. <http://www.perceptionweb.com/abstract.cgi?id=p200415> (Accessed January 15, 2010).
- Palmer, James F. 2011a. Review of the Saddleback Ridge Wind Project Visual Impact Assessment. Burlington, VT: Scenic Quality Consultants.
- Palmer, James F. 2011b. Review of Pleasant Lake/Mattawamkeag Lake Wind Power Project Intercepts. Burlington, VT: Scenic Quality Consultants.
- Palmer, James F. 2000. Reliability of rating visible landscape qualities. *Landscape Journal* 19(1/2):166-178.
- Palmer, James F. 1999. Recreation participation and scenic value assessments of clearcuts. In *Proceedings of the 1998 Northeastern Recreation Research Symposium*, edited by H.G. Vogel song. Gen. Tech. Rep. NE-255. Radnor, PA: USDA, Forest Service, Northeastern Forest Research Station. pp. 199-203.
- Palmer, James F. and Robin E. Hoffman. 2001. Rating reliability and representation validity in scenic landscape assessments. *Landscape and Urban Planning* 54(1-4):149-161.
- Parkin, Drew, John Lortie, Robert Humphrey, and Fred DiBello. 1989. *Maine's Finest Lakes: Results of the Maine Lakes Study*. Augusta, ME: Maine Critical Areas Program, State Planning Office.
- Parkin, Drew, and John Lortie. 1989. *An Evaluation of Lake Scenic Quality in Maine's Organized Towns*. Augusta, ME: Maine Critical Areas Program, State Planning Office.
- Robertson, Brian and Jennifer MacBride. 2011. *Research Report: Pleasant Lake/Mattawamkeag Lake Wind Power Project Intercepts*. Portland, ME: Market Decisions.
- Sheppard, Stephen R. J. 1989. *Visual Simulation: A User's Guide for Architects, Engineers, and Planners*. New York: Van Nostrand Reinhold.
- Terrence J. DeWan and Associates. 2010. *Visual Impact Assessment: Saddleback Ridge Wind Project, Carthage, Maine*. Yarmouth, ME: TJD&A.
- Terrence J. DeWan and Associates. 2011. *Section 30. Visual Impact Assessment Canton Mountain Wind Project*. <http://www.maine.gov/dep/ftp/WindPowerProjectFiles/>

CantonMountainWind/section_30_visual_quality_scenic/section_30_generating_facility.pdf
(Accessed December 28, 2011).

Terrence J. DeWan and Associates. 2012. Canton Wind Project Data Request Response
02.27.12. DVD format.

USDA, Forest Service. 1995. [page revisions 2000] *Landscape Aesthetics: A Handbook
for Scenery Management*. Agricultural Handbook Number 701.
<http://www.esf.edu/es/via/> (accessed March 11, 2010).

USDA, Forest Service. 1982. *ROS User's Guide*.
http://www.fs.fed.us/cdt/carrying_capacity/rosguide_1982.pdf (accessed June 3, 2011).

USGS. 2009a. *National Elevation Dataset (NED)*.
http://eros.usgs.gov/#/Find_Data/Products_and_Data_Available/NED (accessed April 26,
2010).

USGS. 2009b. *Vertical Accuracy of the National Elevation Dataset*.
http://ned.usgs.gov/downloads/documents/NED_Accuracy.pdf (accessed April 26, 2010).

Appendix 1

Maine's Wind Energy Act and the Evaluation of Scenic Impacts

Maine’s Wind Energy Act and the Evaluation of Scenic Impacts

James F. Palmer

On April 18, 2008, Governor John Baldacci signed *An Act to Implement Recommendations of the Governor's Task Force on Wind Power Development* (the Wind Energy Act). It establishes a favorable State policy encouraging grid-scale wind energy development in appropriate locations. In particular, it designates a large portion of the state for expedited grid-scale wind energy development. While most environmental impacts are evaluated in the same manner as previously, special provisions are made for scenic impacts.

While the provisions of the Wind Energy Act can be viewed as an effort to simplify and clarify visual impact assessments, questions of interpretation still remain. There are several major determinations that effect how a visual impact assessment is to be conducted. This Q&A presents the Wind Energy Acts’ approach to scenic impact evaluation.

What is the standard of scenic impact evaluation? The standard is “Unreasonably Adverse,” and it only applies to views from significant scenic areas. “The primary siting authority shall determine...whether the development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance;”¹² whether the development “fits harmoniously into the existing natural environment” is explicitly not required.¹³

Is this standard applied to all proposed facilities? It is clear that this standard applies to “generating facilities”—turbines and transportation lines. However, there is the possibility of an exception for certain “associated facilities,” making it somewhat less clear how to approach them.¹⁴ Associated facilities include “elements of a wind energy development other than its generating facilities that are necessary to the proper operation and maintenance of the wind energy development, including but not limited to buildings, access roads, generator lead lines and substations.”¹⁵

“If the primary siting authority determines that application of the standard [unreasonably adverse, not harmonious fit] to the development may result in unreasonable adverse effects due to the scope, scale, location or other characteristics of the associated facilities”¹⁶ then “the primary siting authority shall evaluate the effect of associated facilities of a wind energy development in terms of potential effects on scenic character and existing uses related to scenic character in accordance with Title 12, section 685-B, subsection 4, paragraph C or Title 38, section 484,

¹² 35-A MRSA, § 3452, sub-§1

¹³ 35-A MRSA, § 3452, sub-§1

¹⁴ 35-A MRSA, § 3452, sub-§2

¹⁵ 35-A MRSA, § 3451, sub-§1

¹⁶ 35-A MRSA, § 3452, sub-§2

subsection 3, in the manner provided for development other than wind energy development.”¹⁷

In other words, if the primary siting authority determines that there may be unreasonably adverse impacts under the Wind Energy Act’s standard due to the associated facilities, then they shall evaluate the associated facilities using the standards for non-wind projects. Further, “The primary siting authority shall make a determination pursuant to this subsection within 30 days of its acceptance of the application as complete for processing.”¹⁸

What evaluation criteria are to be used? The Wind Energy Act lists six evaluation criteria:¹⁹

- A. **“Significance of...affected scenic resource;”** The Wind Energy Act does not explicitly describe how significance should be considered. One possible interpretation is that all scenic resources are equally significant. Another interpretation might be to distinguish between state and nationally designated scenic resources. However, this difference does not seem to have much to do with scenic quality, *per se*. Perhaps the most appropriate interpretation of this criterion is the significance of scenic quality to the identification and designation of a particular scenic resource. Sometimes the level of significance is indicated in the report responsible for the designation (e.g., designation as significant or outstanding scenic quality in the *Maine’s Finest Lakes* or *Maine Wildlands Lake Assessment* studies, or local, state or national significance on a Nation Register of Historic Places nomination form).
- B. **“Existing character of surrounding area;”** The Wind Energy Act explicitly states that whether “a wind energy development fits harmoniously into the existing natural environment in terms of potential effects on scenic character and existing uses related to scenic character is not required.”²⁰ Since harmonious fit cannot be the criterion, perhaps it is whether perception of the landscape’s character type is significantly changed. For instance, does the visible presence of many wind turbines change the perceived landscape character from “wooded hillside with scattered residences,” to “industrial facility”?
- C. **“Expectations of the typical viewer;”** Viewers may have certain expectations for the visible character of certain scenic resources. For instance, they may expect that views from a particular state park or hiking trail be predominately natural appearing. However, it is reasonable to question the appropriateness of viewer expectations, such as when people describe lands intensively managed for timber as “wilderness.” In addition, viewer expectations change in reaction to changed circumstances. A few turbines may be approved because the project is small—once built people’s expectations change, making it possible to build additional turbines. Consideration of this incremental cumulative change may be the point of the next criterion.
- D. **“Expedited wind energy development’s purpose and...context;”** The Wind Energy Act makes it clear that the Legislature believes tapping the state’s wind resource is desirable, and has set substantial wind energy generation goals.²¹ In addition, the

¹⁷ 35-A MRSA, § 3452, sub-§2

¹⁸ 35-A MRSA, § 3452, sub-§2

¹⁹ 35-A MRSA, § 3452, sub-§3

²⁰ 35-A MRSA, § 3452, sub-§1

²¹ 35-A MRSA, § 3402, sub-§2

Legislature recognizes that “wind turbines are potentially highly visible landscape features that will have an impact on views.”²² It seems reasonable that the Legislature intended that areas determined to be suitable for grid-scale energy development be utilized to their full capacity. This criterion may require consideration of the wind energy potential of the surrounding context, and evaluating the scenic impacts of fully building-out the area’s capacity to produce wind energy. The greatest impact comes from the initial wind turbines built in an area; additional turbines will add a smaller incremental scenic impact, making it very difficult to determine where to stop further development. It may be most responsible to consider potential cumulative wind development impacts to an area as part of an initial proposal.

- E. **“Extent, nature and duration of the... public use of the scenic resource... and the... effect... on the public’s continued use and enjoyment of the scenic resource;”** This evaluation criterion says that we need to know what activities are occurring at significant scenic resource sites, how many people engage in these activities, for how long, and what the impact of seeing the project will have on the enjoyment of these activities. Said another way, “Is an Adverse scenic impact Unreasonable if turbines are only visible from a rarely visited viewpoint, or is visible only to people engaged in an activity for which scenic quality is not central to its enjoyment?”
- F. **“Scope and scale of the... effect of views of the generating facilities... including... number and extent of [visible] turbines, ... distance [to visible facilities]... and effect of prominent features of the development on the landscape”** The issue is whether the generating facilities become dominating elements in the landscape, primarily because of their proximity to the viewer and the area they occupy in the visual field.

What constitutes a significant scenic resource? The Wind Energy Act specifies that only designated state or nationally significant scenic resources be evaluated and provides a list of qualifying designations. In this review further reference to scenic resources will assume that they are state or nationally significant.

- A national natural landmark, federally designated wilderness area or other comparable outstanding natural or cultural feature.
- A property listed on the National Register of Historic Places.
- A national or state park.
- A great pond identified as having outstanding or significant scenic quality in the *Maine’s Finest Lakes* study or *Maine’s Wildlands Lake Assessment*.
- A segment of a river or stream identified as having unique or outstanding scenic attributes in the *Maine Rivers Study*.
- Viewpoints from state public reserve land or on a trail that is used exclusively for pedestrian use, as designated by the Department of Conservation.
- Scenic turnouts on scenic highways constructed by the Department of Transportation.
- Scenic viewpoints located in coastal areas that are ranked as having state or national significance in terms of scenic quality in inventories published by the Executive Department, State Planning Office.

²² 35-A MRSA, § 3402, sub-§2(C)

While a major step toward specificity, it is anticipated that interpretation of this list will be contested. For instance, this list includes resources typically designated for non-scenic reasons (e.g., national landmark or listed historic place), and only minor portions of resources that are designated for scenic reasons (e.g., only the turnouts of a scenic byway). In addition, “the public [must have] a legal right of access” if the significant scenic resources is not on public land (e.g., listed historic place or coastal viewpoint).²³

What is the area of potential effects (APE)? The regulations presume that potential scenic impacts to scenic resources must be evaluated within 3 miles of generating facilities (i.e., turbines and transmission lines). The primary siting authority may also require the evaluation of potential scenic impacts to state and nationally significant scenic resources located between 3 and 8 miles from generating facilities if there is substantial evidence that it is needed.²⁴ Interested parties have 30 days after the acceptance of the application to submit such information.²⁵ The Wind Energy Act states that scenic impacts from generating facilities (i.e., turbines or transmission lines) located 8 or more miles from a scenic resource are “insignificant.”²⁶

What is the Process of Conducting a Visual Impact Assessment?

While the Wind Energy Act has identified specific resources from which views are to be considered and established criteria and a standard for their evaluation, there is no apparent reason that the process by which a visual impact assessment (VIA) is conducted would be changed. While there are slight variations, a professionally conducted VIA includes the following:

1. **Project Description.** The foundation of any VIA is an accurate and complete description of the visible attributes of all project elements—their location, dimensions, form, color, reflectance, surface texture, etc. It is also important to describe the surrounding site and how it will change. For instance, accurate information must be provided about the location and heights of trees that may screen the project, and the extent of site clearing and regrading. The purpose and context of the project must be described, as it is one of the evaluation criteria.²⁷
2. **Landscape Character.** The description of the landscape character establishes the context for evaluating any visual change from introducing the proposed development.²⁸ What is the visual character of the landform and vegetation? What is the visual character of the settlement pattern and road network? How does the project site relate to the larger regional landscape context—is it unusual or mundane? The US Forest Service describes landscape character this way:

Landscape Character descriptions are a combination of the objective information contained within ecological unit descriptions and the cultural values that people assign to landscape. Together they help define the meaning of “place”, and its scenic expression (USDA FS 1995, page 1-1).

²³ 35-A MRSA, § 3451, sub-§9

²⁴ 35-A MRSA, § 3452, sub-§4

²⁵ 35-A MRSA, § 3452, sub-§4

²⁶ 35-A MRSA, § 3452, sub-§3

²⁷ 35-A MRSA, § 3452, sub-§3, criterion D

²⁸ 35-A MRSA, § 3452, sub-§3, criterion B

The regional landscape character is described first. Often there are several distinct landscape units to describe. The character (e.g., ecological zone) and scenic attractiveness (e.g., vividness, intactness, unity) of each landscape unit is summarized (USDA FS 1995, page 1-15). A somewhat more detailed description is given for the project site and its APE.

3. **Visibility Analysis.** A visibility or viewshed analysis identifies those areas with potential views of the proposed development. The minimum professional standard is to map the topographic viewshed for the highest point of each major project element. This shows those areas that have a potential view of the tip of an upright turbine blade if all land cover were removed. Since it is possible that views to a project could be opened by the removal of land cover, a topographic viewshed is considered a useful conservative assessment of the maximum area of potential project visibility.

Typically, a second visibility analysis includes the screening effect of forest cover. However such analyses should be used with caution and carefully field checked, since vegetation data can change quickly. The three forest classes (deciduous, evergreen and mixed) of the National Land Cover Database are most commonly used. Forest height is typically set to a regionally appropriate 40 feet for the analysis, though the minimum tree height for an area to be classified as forest is 16 feet. This use of generalized rather than location specific tree heights is another reason to use the vegetated visibility analysis with caution.

Additional visibility analyses might show how many turbines are visible, or the viewshed for larger portions of each project element (i.e., the nacelle rather than the upright blade tip). Current practice has been to only evaluate visibility of the turbines, but the transmission line must also be considered. It may also be appropriate to include associated facilities, such as access roads, substation, maintenance building and other structures.

Normally only views from scenic resources within the topographic viewshed are evaluated in detail (though the accuracy of the analysis must field checked). A visibility analysis may also be helpful in describing the potential number, extent, and distance of visible turbines.²⁹

4. **Significant Scenic Resources.** Identify the state or nationally significant scenic resources within the study area, based on the list in the statute.³⁰ A description of each identified scenic resource needs to be presented in sufficient detail that the criteria for evaluating scenic impacts can be applied.³¹ Each scenic resource will be documented as part of the fieldwork, include the general scenic character of the resource, the “worst case” potential views of the proposed development, and perhaps other views.
5. **Public Use and Expectations.** The extent, number and duration of public uses of the identified scenic resources, and the expectations of the “typical viewer” must be described.³²

²⁹ 35-A MRSA, § 3452, sub-§3, criterion F

³⁰ 35-A MRSA, § 3451, sub-§9

³¹ 35-A MRSA, § 3452, sub-§3, criterion A

³² 35-A MRSA, § 3452, sub-§3, criteria E and C

6. **Evaluation of Potential Impacts.** The findings from applying each of the criteria for evaluating scenic impacts should be reported.³³

Accurate visual simulations are particularly useful when conducting this evaluation. The selection of viewpoints for the visual simulations is frequently a source of controversy. Opponents are likely to want simulations that represent “worst case” views, while the developer and other proponents will argue that “typical views” provide a fairer representation. Worst case views are closer, show larger portions of the project, represent situations where the project appears less compatible with its surroundings. Typical views normally do not show the project at its worst, but are at viewpoints that might have many viewers, or that are selected to represent a diversity of viewing conditions (e.g., distances from the project, types of screening, and levels of incompatibility). It is very unusual for a scientific method (i.e., probability sampling) to be used to select the typical viewpoints—normally they are simply declared “typical” by the analyst. Both types of simulations are useful to decision makers. However, it is difficult to imagine why they would not want to be aware of the very worst case situations.

7. **Mitigation.** It is normal in a professional VIA that the approaches taken to mitigate adverse effects are described. Typically, if Unreasonably Adverse scenic impacts were found, approaches to further mitigation would be discussed. This might include revisions to project siting or design, or screening at impacted viewpoints. However, mitigation is not one of the evaluation criteria for scenic impacts.³⁴ The Attorney General’s Office has advised both DEP and LURC that it does not believe mitigation can be required for scenic impacts—if scenic impacts are Unreasonably Adverse, the project should be denied, otherwise it should be approved.

³³ 35-A MRSA, § 3452, sub-§3

³⁴ 35-A MRSA, § 3452, sub-§3

Appendix 2

Review Maps

Map 1: Topographic Viewshed for Blade Tip

Map 2: Forested Viewshed for Blade Tip

Map 3: Topographic Viewshed for Turbine Hub

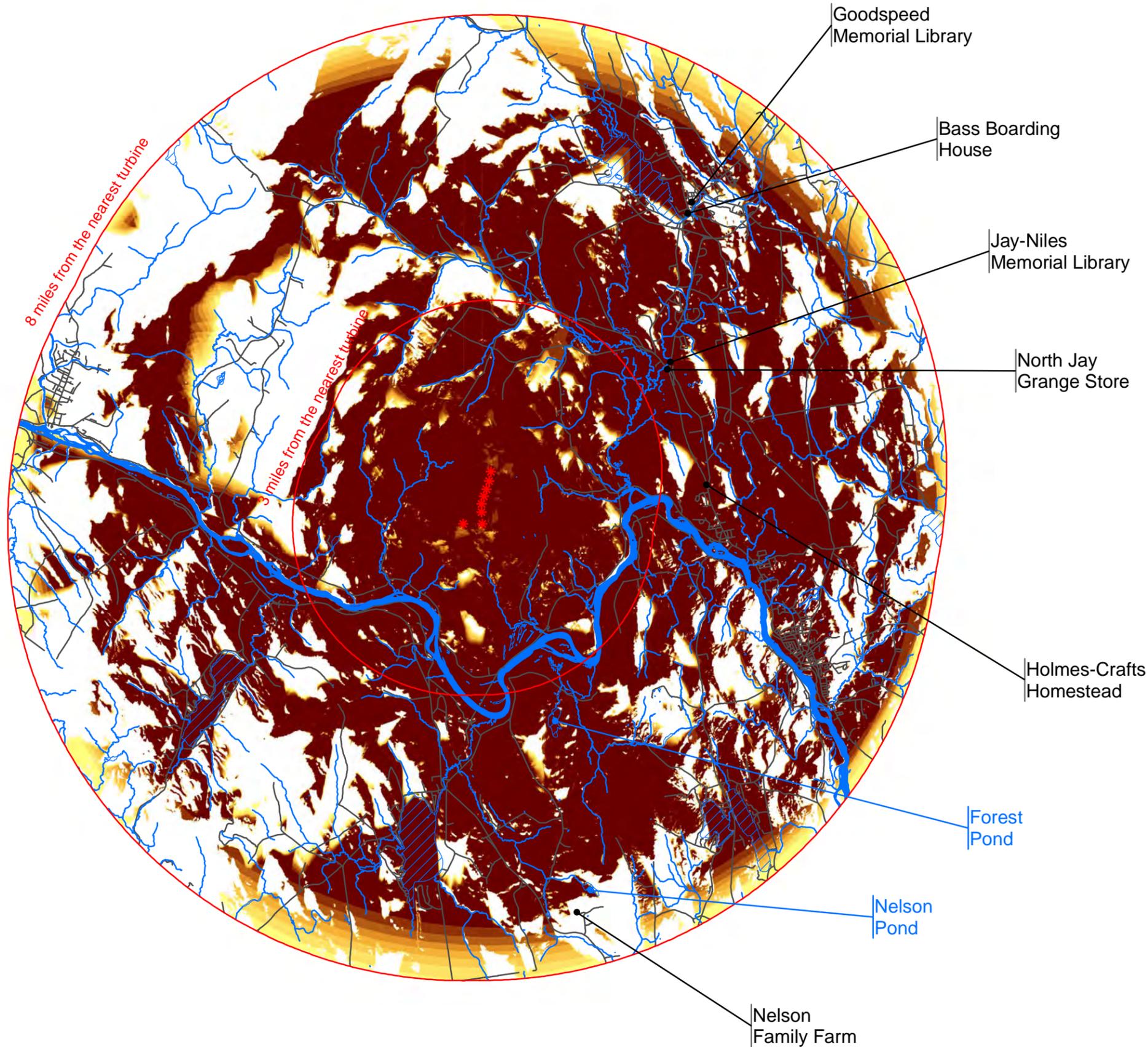
Map 4: Forested Viewshed for Turbine Hub

Visibility analysis determines whether a line-of-sight exists between two specified points. A geographic information system (GIS) is used to map the viewsheds from which the Canton Mountain Wind Project's turbines are potentially visible. In principle this is an objective exercise in geometry highly suited to a computer application. In practice however, since the data are only approximations of the actual condition and may include errors and assumptions, the resulting viewshed maps are best considered a preliminary analysis of potential visibility under specified conditions. The maps are useful for providing a preliminary investigation of the overall potential visual impact. If potential visual impacts appear to exist for significant scenic resources, they need to be confirmed through field investigation and other visualization techniques.

Map 1 Topographic Viewshed for Blade Tips

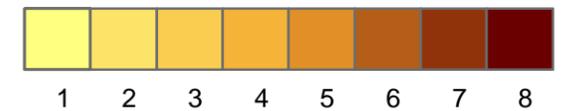
Canton Mountain Wind Project

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field investigation and other visualization techniques.



Legend

Number of Blade Tips



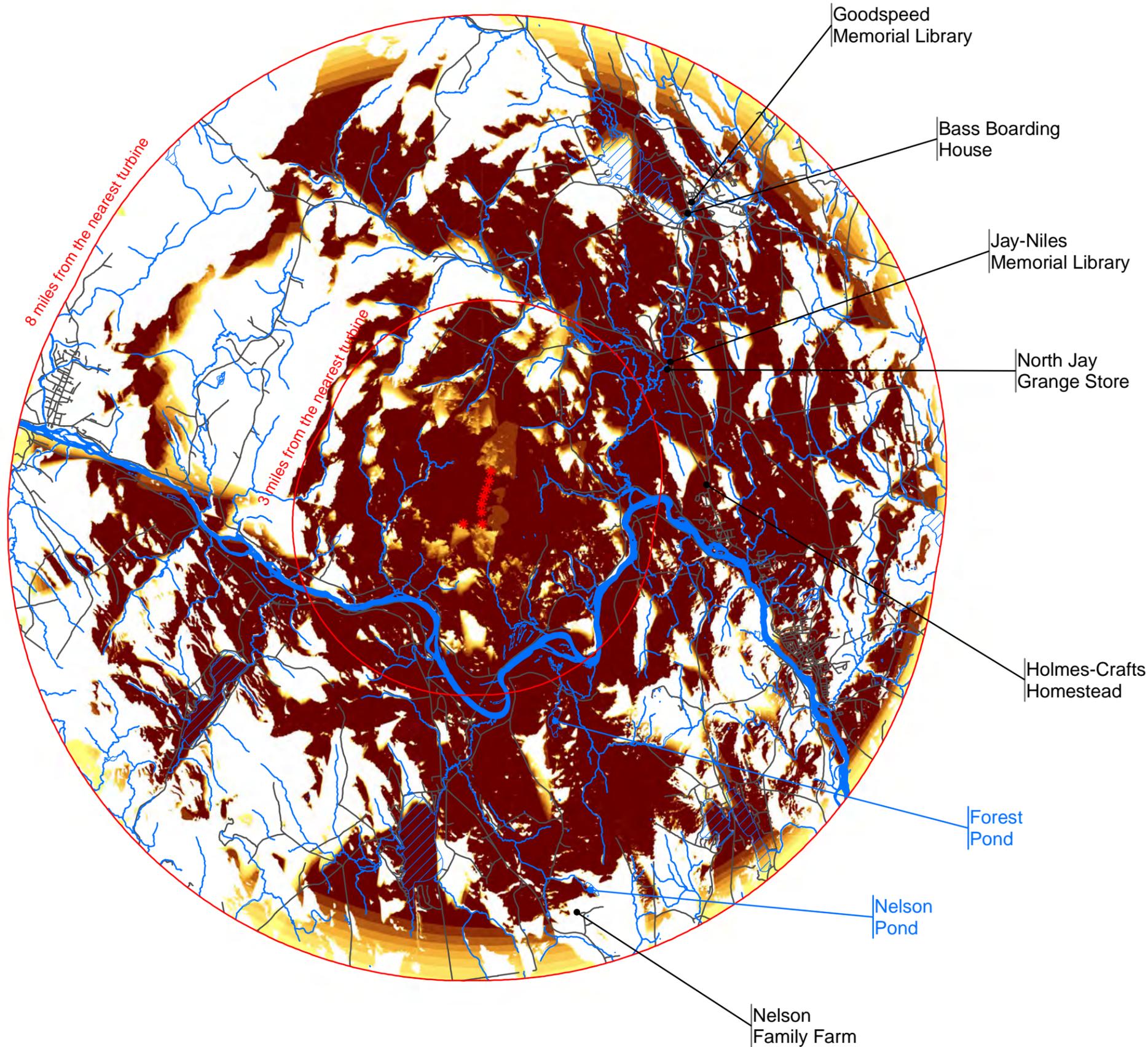
Scenic Resources of
State or National Significance



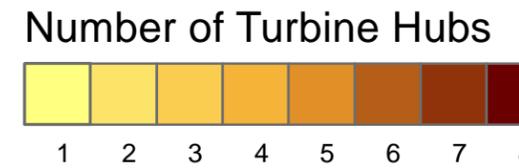
Map 2 Topographic Viewshed for Turbine Hubs

Canton Mountain Wind Project

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field investigation and other visualization techniques.



Legend



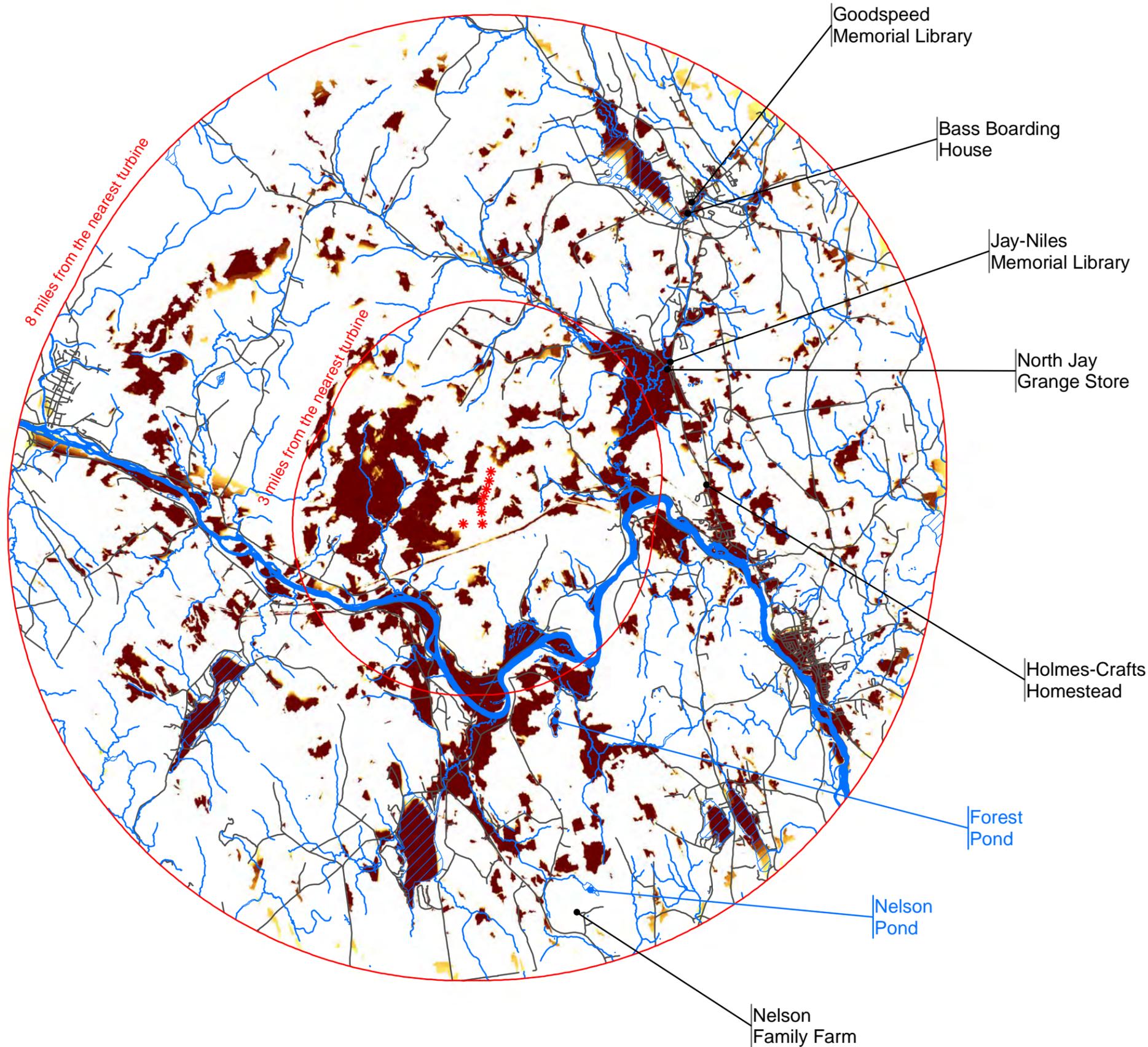
Scenic Resources of State or National Significance



Map 3 Forested Viewshed for Turbine Tips

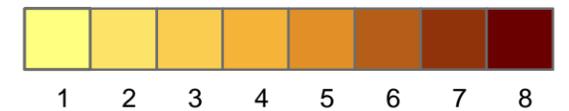
Canton Mountain Wind Project

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field investigation and other visualization techniques.



Legend

Number of Blade Tips

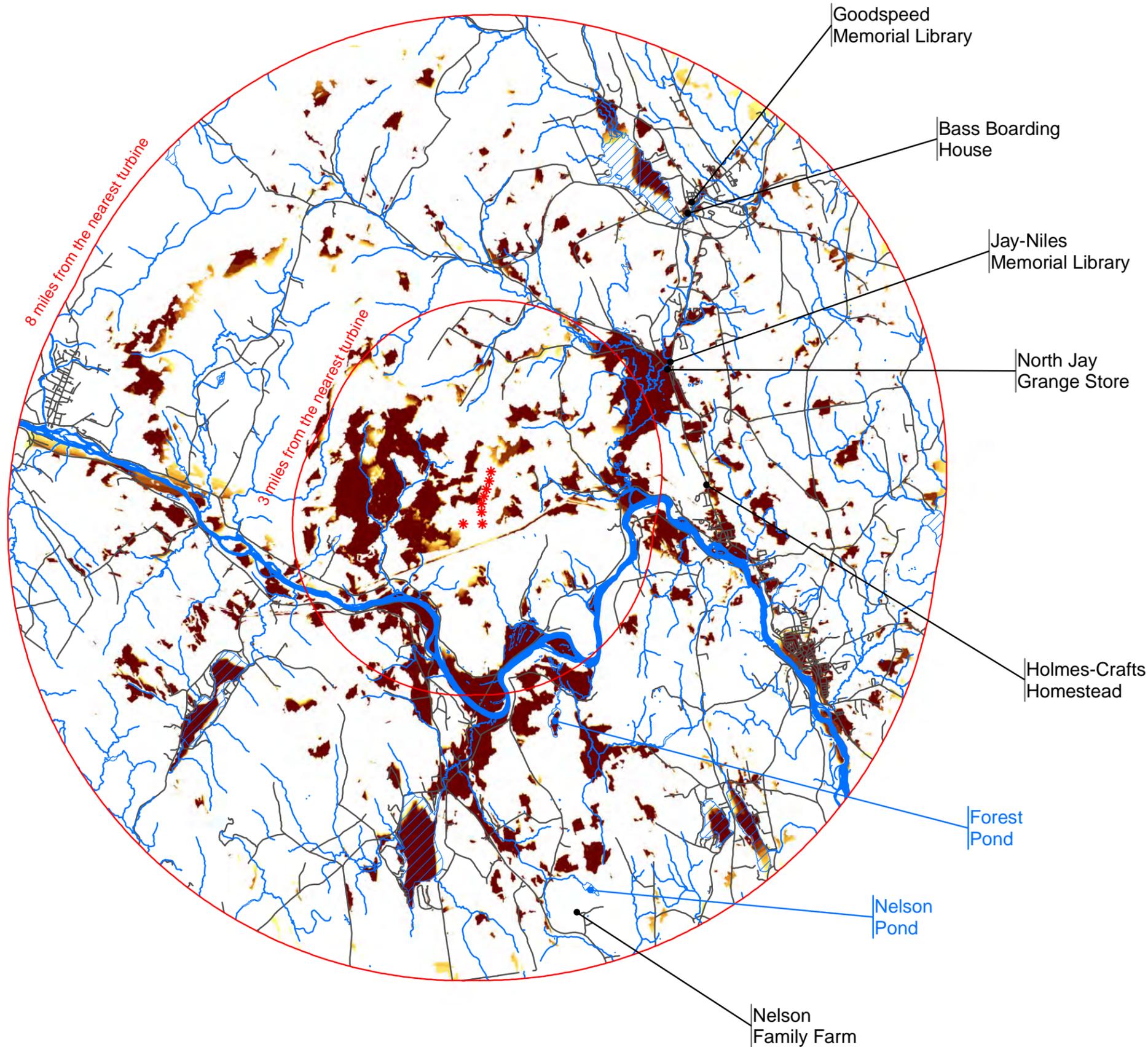


Scenic Resources of State or National Significance

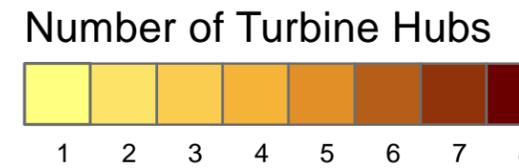


Map 4 Forested Viewshed for Turbine Hubs Canton Mountain Wind Project

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field investigation and other visualization techniques.



Legend



Scenic Resources of State or National Significance



Appendix 3

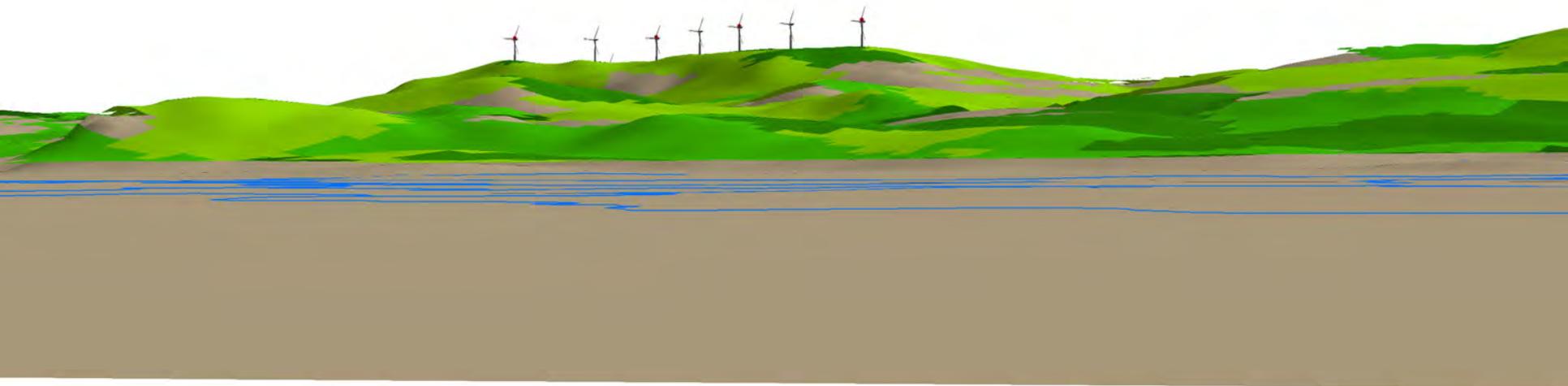
ArcScene Visualizations

Visualization 1: Jay-Niles Memorial Library (Photosimulation 1A)

Visualization 2: North Jay Grange Store (Photosimulation 2A)

Visualization 3: Forest Pond (Photosimulation 3A)

The purpose of these visualizations is to validate the relative accuracy of the *Visual Impact Assessment Canton Mountain Wind Project* photographic simulations (TJDA 2011). They are created using the location and camera information from the photograph metadata and GIS database that were used to prepare the photosimulations. Forest cover is set to 40 feet and does not include forested wetlands or areas harvested since 1995. The representation of foreground vegetation may not be accurate. Turbines marked with a red dot have FAA warning lights. The horizontal angle of view is 40 degrees, which is similar to the VIA photosimulations, and the visualization will be in proper perspective when viewed from a distance slightly greater than its width.



Visualization 1: Jay-Niles Memorial Library (Photosimulation 1A)

The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Canton Mountain wind Project*. Forest cover is set to 40 feet and does not include forested wetlands or areas harvested since 1995; the representation of foreground vegetation may not be accurate. Turbines marked with a red dot have FAA warning lights. The horizontal angle of view is 40 degrees, and the visualization will be in proper perspective when viewed from a distance of approximately 1.5 times its width.



Visualization 2: North Jay Grange Store (Photosimulation 2A)

The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Canton Mountain wind Project*. Forest cover is set to 40 feet and does not include forested wetlands or areas harvested since 1995; the representation of foreground vegetation may not be accurate. Turbines marked with a red dot have FAA warning lights. The horizontal angle of view is 40 degrees, and the visualization will be in proper perspective when viewed from a distance of approximately 1.5 times its width.

Visualization 3: Forest Pond (Photosimulation 3A)

The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Canton Mountain wind Project*. Forest cover is set to 40 feet and does not include forested wetlands or areas harvested since 1995; the representation of foreground vegetation may not be accurate. Turbines marked with a red dot have FAA warning lights. The horizontal angle of view is 40 degrees, and the visualization will be in proper perspective when viewed from a distance of approximately 1.5 times its width.

