

**DEERFIELD WIND PROJECT**

**Visual Impact Assessment**



Prepared by Jean Vissering and T. J. Boyle and Associates  
For  
Deerfield Wind, LLC

July 2006

# **Deerfield Wind Project Visual Assessment Report**

<b>I. Introduction</b> .....	<b>4</b>
<b>A. Purpose of Report</b> .....	<b>4</b>
<b>B. Methodology for Assessing Visual Impacts</b> .....	<b>4</b>
<b>II. Project Description</b> .....	<b>7</b>
<b>III. Character of the Regional Landscape</b> .....	<b>10</b>
<b>IV. Inventory of Views</b> .....	<b>11</b>
<b>A. Computer Viewshed Mapping</b> .....	<b>11</b>
<b>B. Simulations</b> .....	<b>12</b>
<b>C. Field Inventory of Views of the Proposed Project</b> .....	<b>13</b>
<b>D. Visibility and Context</b> .....	<b>13</b>
<b>1. Sensitive Viewing Areas</b> .....	<b>16</b>
<b>a. Local and State Roads</b> .....	<b>16</b>
<b>b. Recreation Areas and Hiking Trails</b> .....	<b>22</b>
<b>c. Historic Sites and Village Centers</b> .....	<b>28</b>
<b>d. Green Mountain National Forest Lands (GMNF)</b> .....	<b>30</b>
<b>e. Private Residences and Businesses</b> .....	<b>40</b>
<b>V. Assessment of Aesthetic Impacts: First Prong of the Quechee Analysis</b> .....	<b>42</b>
<b>A. Relationship of the Project to the Surrounding Context</b> .....	<b>42</b>
<b>B. Visibility and Visual Prominence</b> .....	<b>43</b>
<b>C. Prominence Of The Project Seen At Varying Distances</b> .....	<b>44</b>
<b>D. Perceived Scale of the Project</b> .....	<b>49</b>
<b>E. Impacts Of The Project On Open Space</b> .....	<b>49</b>
<b>F. Impacts Of Lighting On The Visual Character Of The Region</b> .....	<b>50</b>
<b>G. Cumulative Impacts and Visual Clutter</b> .....	<b>51</b>
<b>H. Conclusions: How will the design of this Project fit within its surrounding context?</b> .....	<b>52</b>
<b>VI. Assessment of Visual Impacts: Second Prong of the Quechee Analysis</b> .....	<b>52</b>
<b>A. Does the Project violate a clear written community standard intended to preserve the aesthetics, or scenic, natural beauty of the area?</b> .....	<b>52</b>
<b>B. Would the Project offend the sensibilities of the average person?</b> .....	<b>59</b>
<b>C. Has the applicant failed to take generally available mitigating steps to improve the harmony of the proposed project with its surroundings?</b> .....	<b>60</b>
<b>VII. Assessment of Visual Impacts: Conclusions</b> .....	<b>61</b>

## Embedded Photos

Cover Photo: Simulation of view from Boyd Hill Road; existing GMP turbines and proposed eastern ridge turbines are visible.

1) View of Eastern Project Ridge from Heartwellville, Route 100 near Route 8 (1.3 miles).....	17
2) Route 9 Looking West by Molly Stark State Park (7.4 miles).....	18
3) Route 9 Looking East near Red Mill Pond (1.7 miles).....	18
4) Route 8 North of Eastern Ridge looking south to existing GMP project (1.8 miles).....	19
5) From Route 8 looking northeast toward the existing GMP wind project over the Crozier Cemetery...	19
6) The Eastern Project Ridge over Crozier Cemetery, Route 8 (.6 mile).....	19
7) White Road looking West Southwest (6.4 miles).....	20
8) White Road looking West Northwest (6.4 miles).....	20
9) Ray Hill Road by Wilmington Heights Road (4.8 miles).....	21
10) Boyd Hill Road at the Boyd Farm (4.8 miles).....	21
11) View from Town Hill Road (6 miles).....	22
12) View from Woodford State Park Beach looking East (no visibility).....	23
13) Mountain Mills Boat Launch (3.4 miles).....	23
14) Castle Hill Boat Launch (4.3 miles).....	23
15) View from Ward's Beach Picnic Area (4.5 miles).....	24
16) View from the Water, Harriman Reservoir (4 miles).....	24
17) Mount Snow from Somerset Reservoir.....	24
18) Looking South down Somerset Reservoir from Water (7.7 miles).....	24
19) Lake Raponda looking west southwest at Beach (no visibility).....	25
20) Whitingham Park (6.4 miles).....	26
21) View from Mount Snow Summit (6 miles).....	26
22) View from Haystack Golf Clubhouse (6.9 miles).....	26
23) Telephoto view from Glastonbury Fire Tower (7.7 miles).....	27
24) Near Hill Summits in Aiken Views are Blocked by Dense Trees.....	33
25) Views in Northern portions of Aiken are very limited.....	33
26) Some Views from Steep East Facing Hills are more open and the Project site is visible (Eastern Ridge, 4.3 miles away).....	33
27) Another typical view toward the Project site.....	33
28) Views are blocked by surrounding hills within the open wetland areas.....	33
29) View from opening near "Dome" Summit (1.7 miles).....	38
30) View toward Eastern Ridge from VAST Snowmobile Trail (Stage Road) (1 mile).....	38
31) Medbury Branch: northern Lamb Brook Area.....	38
32) View to South from Freezing Knoll Ledges.....	38
33) View from Freezing Knoll Ledges toward the Eastern Ridge (1.5 miles).....	39
34) Close Up of Existing Turbines seen from the Freezing Knoll ledges (1.5 miles).....	39
35) View from White House Inn, Wilmington (5.4 miles).....	41

## Appendices

### A. Maps

- Map 1: Regional Context Map
- Map 2: Proposed Project Conceptual Layout
- Map 3: Viewshed Analysis Map
- Map 4: Visual Inventory Map
- Map 5: Green Mountain Forest Holdings in the Vicinity of the Proposed Project

### B. Tables

- Table 1: Views of Proposed Deerfield Wind Project from State and Local Roads
- Table 2: Views of Proposed Project from Trails and Recreation Areas

### C. Viewpoint Photos

- VP #1: Route 9 East of Wilmington
- VP #3: White Road
- VP #4: Ray Hill Road
- VP #6: Boyd Hill Road
- VP #8: Route 9 West of Rt. 8 Woodford SP-Little Pond Road (Near Simulation point)
- VP #11: Heartwellville Route 8 and 100 (Near Simulation Point)
- VP #13: Town Hill Road
- VP #17: Harriman Reservoir Mountain Mills Boat Launch and Picnic Area
- VP #18: Harriman Reservoir Castle Hill Boat Launch and Picnic Area
- VP #19: Harriman Reservoir Wards Beach Picnic Area and Boat Launch
- VP #21: Somerset Reservoir
- VP #24: Mount Snow Summit
- VP #25: Haystack Golf Course

### D. Simulations

- Simulation #1: Validating simulation and original photo of existing Searsburg Wind Project.
- Simulation #2: Route 100 Approaching Heartwellville from the South, Readsboro (1.8 miles)
- Simulation #3: Route 9 Looking East, Woodford (1.7 miles).
- Simulation #4: Route 8, Looking South toward Existing GMP Project and Eastern Project, Searsburg (1.6 miles)
- Simulation #5: Boyd Hill Road, Wilmington (4.6 miles)
- Simulation #6: Town Hill Road, Whitingham (6 miles)
- Simulation #7: Harriman Reservoir, Eastern Shore North of Ward's Beach, Wilmington (4 miles)

# I. Introduction

## A. Purpose of Report

This report examines the potential visual impacts of the proposed Deerfield Wind Farm in Searsburg and Readsboro, Vermont. Deerfield Wind LLC has petitioned for a Certificate of Public Good (CPG) for the Project as required under 30 V.S.A. § 248. Under the law, a petitioner must demonstrate that there will be no undue adverse impacts on the aesthetics or scenic or natural beauty of the area. This report will provide an assessment of the visual impacts of the Project including an examination under the so-called Quechee Analysis. The report concludes that the Project's impacts would be adverse but not undue.

## B. Methodology for Assessing Visual Impacts<sup>1</sup>

An assessment of visual impacts begins by collecting basic objective information about the components of the proposed project and about the character of the surrounding area and how the Project would be seen within its surrounding context. This is followed by an analysis of the “fit” of the proposed project within its context. The analysis for assessing visual impacts of wind turbines in Vermont includes the examination of a 10-mile radius around the Project site. Visual impacts within ½ mile (foreground views) and up to 3 miles in the case of wind energy projects are most significant. Visual impacts generally diminish with distance since their apparent size as well as the relative area of the view they occupy becomes increasingly small. Up to 10 miles away the wind turbines may be seen (depending upon climatic and atmospheric conditions and assuming no topographic interference) but their overall impacts become minimal. Following is a summary of the aesthetic assessment methodology:

- A. Project Description: A discussion of the basic visual characteristics of the proposed project including
  1. Turbine Design: height, color, form
  2. Turbine Location: miles of ridgeline, cleared areas, other infrastructure
  3. Turbine Lighting
  4. Access Roads
  5. Transmission Lines: on-site and off-site connectors
  6. Substation
  7. Operations and Maintenance Building and Laydown Area
  8. Public Information Area
  
- B. Regional Landscape Character: A discussion of the visual attributes and scenic resources of the surrounding landscape within a 10-mile radius of the Project.

---

<sup>1</sup> The methodology for assessing visual impacts under Section 248 is different than the methodology used by the U.S. Forest Service for the Green Mountain National Forest. The two methodologies are, however, based upon the same underlying visual principles. .

C. Project Visibility and Inventory of Views

1. Viewshed Maps: These computer-generated maps indicate *potential* visibility within a 10-mile radius based upon topographic interference. The computer viewshed analysis is designed to highlight open areas where visibility is most likely. Nevertheless actual visibility in all areas must be field verified (see next step). It does show with certainty areas from which the Project would not be visible.
2. Field Verification: All public roads, recreation areas, cultural and historic sites, portions of hiking trails, wilderness areas and GMNF lands were inventoried for potential visibility of the proposed project. Some private facilities were visited at the recommendation of local officials. Individual private residences and properties were not visited but the potential for views from private residences will be briefly discussed. Field studies were conducted in both summer and winter. They were documented as follows:
  - Field Notes: a record of location, duration of view (miles, acres), angle of view, context of the view (part of broad panorama, directly ahead, etc.), and the approximate number of turbines which would be visible.
  - Photographs: all visited viewpoints were photographed; photographs used for simulations were taken with a 50mm lens, and global position system (gps) locations, angle of view, camera height, time of day and weather conditions were recorded.
  - Mapping: maps were refined to show locations from which the Project would be visible.

D. Assessment of Visibility and Context: This step is a relatively objective analysis of project visibility and the context in which the wind turbines would be seen. Visually sensitive areas are discussed in greater detail, followed by a description of all viewpoints in Table format.

1. Sensitive viewpoints described in detail include a) public roads, especially state routes and local roads with views to the Project site; b) recreation areas and hiking trails; c) historic sites and village centers; d) wilderness areas and Green Mountain National Forest lands. Potential visibility to residences is also discussed in this section, though individual properties were not inventoried.
2. Data for all Inventoried Viewpoints (attached Tables): data includes duration of views, quality of views and the general prominence of the Project as seen in views. Summer (leaf-on) and winter (leaf-off)

conditions, as well as day and nighttime views of the Project were inventoried for most sites unless otherwise noted.

3. Simulations: photographic simulations illustrate how the Project would appear from a range of different distances and geographic areas.

E. Assessment of Aesthetic Impacts: Under Section 248, the qualitative assessment of visual impacts requires two steps. The first step looks at whether the proposed project would be in harmony with its surroundings, or will it fit the context within which it will be located. This step will determine whether or not the impacts would be “adverse”. It includes an examination of the following:

1. A discussion of the nature of the Project’s surroundings including land uses, topography, vegetation, scenic features and regional focal points.
2. An assessment of whether the Project design would be compatible with these surroundings based upon such features as the scale, forms, and colors of the proposed project.
3. Lighting as part of the Project’s design. Lighting is discussed separately since the night landscape is experienced very differently than during the day.
4. An assessment of the overall visibility of the Project, distances from which it would be seen, the duration of views, and its relative prominence in views.
5. Impacts of the Project on open space.
6. Potential for cumulative impacts and visual clutter (while these are not part of the standard Quechee analysis, they do affect the scenic quality of landscapes).
7. Conclusions: How will the design of this Project fit within its surrounding context; will its impacts be adverse?

F. Assessment of Visual Impacts: Second Prong of the Quechee Analysis. If a Project’s impacts are determined to be adverse, the second part of the Quechee test is applied. This step measures the degree of visual impact based upon the following three criteria. A positive finding on any one of these questions could result in an overall finding that the Project would have undue adverse impacts on the scenic and natural beauty of its surroundings.

1. Does the Project violate a clear written community standard intended to preserve the aesthetics, scenic, or natural beauty of the area?
2. Does the Project offend the sensibilities of the average person?
3. Has the applicant failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the proposed project with its surroundings?

## II. Project Description

The proposed Deerfield Wind Project would be located along two parallel north-south ridges on either side of Vermont Route 8 in the towns of Searsburg and Readsboro. Green Mountain Power (GMP) developed a privately owned portion of the eastern ridge with 11 wind turbines in 1997. Since it is not possible to know this far in advance of construction the exact size or model of the wind turbines that will be available for use in the proposed Deerfield Wind Project, certain turbine sizes and configurations have been assumed that are thought to be representative of “worst-case” conditions from a visual analysis perspective. For the visual analysis, these conditions are represented generally by the use of the maximum number of the tallest wind turbines appropriate for this site that are expected to be available on the market at the time of construction, and siting them as close as possible along the two ridgelines on either side of Route 8 (2.5 rotor diameters is the minimum spacing). This worst case visual scenario would include between 15 and 22 turbines, depending upon the height of the turbine selected. The turbines would be up to 125 meters (410 feet) high at the highest arc of the rotor blade above the turbine base. The height to the nacelle would be up to 80 meters (263 feet). The physical characteristics of the wind turbines are similar to newer wind turbines currently available on the market with a horizontal-axis, three-bladed rotor wind turbine, and also similar to the existing Searsburg turbines except for their size. The turbines would be an off-white color with black blades. (Please refer to the attached Map 2, Proposed Project Conceptual Layout)

Similarly, the locations for the substation, maintenance building, and configuration of the connector roads in the Western Project Area are not now precisely known. For this analysis options have been narrowed to two that will be examined.

### Note

Since the two ridges along which the proposed Deerfield Wind Project would be located are unnamed, the portion of the project along the ridgeline extending south of the existing project will be referred to as the **Eastern Project Area or Ridge**. The proposed project along the ridgeline west of Route 8 will be called the **Western Project Area or Ridge**.

## **Turbine And Road Location In The Eastern Project Area**

The Eastern Project Area where turbines would be located is along the southern portion of the same ridge on which the existing Searsburg Wind Power Facility is located. Nine of the total twenty-two turbines are proposed to be located along the southern portion of this ridge using the assumptions noted above. The existing access road, built 10 years ago, would be used to gain access to the beginning of the new Eastern Project Area. The access road would be widened from approximately 13-14 feet wide to about 16 feet wide to allow the transport of larger equipment. The sharp curve in the road near the base of the mountain and just south of the substation may require additional modification. Along the ridge, a new road would extend south of the existing Searsburg Facility for approximately 1.3 miles (7,100 feet). This road would be constructed with a cleared riding surface of up to 35 feet, but would be reduced to a much smaller maintained width following construction. None of these roads are expected to be visible off site.

## **Turbine and Road Location in the Western Project Area**

On the western ridge, 13 of the twenty-two turbines would be installed along a new ridgeline road approximately 2.1 miles (11,230 feet) in length. As in the Eastern Project Area, the ridgeline portion of this new road would not be visible from off site. This road would be connected to State Route 8 by either a northern or a southern connector road depending upon which route is found to have the lowest negative impacts. The northern connector, the shorter of the two alternatives, would be approximately ½ mile (2,500 feet) and located along an existing logging trail. It would connect the northern end of the ridgeline road to Putnam Road. The junction of the present Putnam Road and Route 8 would need to be widened and re-graded with this option, and could be relocated slightly to the south. The southern connector, if found to have lower negative impacts, would be approximately 7/10 mile (3,650 feet) in length and connect the southern end of the ridgeline road to Route 8 approximately opposite the present junction of Sleepy Hollow Road. The southern connector would require substantial re-grading where it joins Route 8.

## **Turbine Safety Lighting**

Deerfield Wind must file a notice of construction with the Federal Aviation Administration (FAA) prior to constructing the proposed project. FAA will review the Project and offer recommendations on aircraft warning lights. This filing must specify the exact equipment to be used in the Project and thus cannot be done at this time. Based on review of the Applicant's Project, the FAA will determine whether the Project poses a hazard to aircraft navigation. For the purposes of this analysis, it is assumed that FAA will impose the same lighting recommendations as it specified for a similarly-sized project proposed in northwestern Massachusetts: flashing white lights in the daytime and flashing red lights at night mounted on the top of the nacelle for each turbine. The lights would slowly cycle between on and off approximately 22 times per minute.

The FAA Technical Center has researched and provided new recommendations on reduced wind turbine lighting scenarios, which are presently being considered for inclusion in the FAA's guidelines (Advisory Circular). The recommendations include the elimination of daytime lighting, the reduction to a single, red (L-864) nighttime strobe light mounted on top of the turbine nacelle. The recommendations would result in lights being mounted only on the turbines at each end of the turbine string and at a maximum distance of ½ mile from the next lit turbine. The flashes should be synchronized. Applying these recommendations to the Deerfield Wind Project would result in a reduction of nighttime lighting from 22 lights to 8-10 lights.

The only other lighting associated with the Project would be security lighting of the substation and the Operations and Maintenance building.

### **Wind Monitoring Equipment**

At present, temporary meteorological towers are located on each project ridgeline. These would be removed and replaced with 2 permanent towers that would be taller than the original met towers. They will be approximately hub height or about 80 meters (262 feet) high, and of an open metal lattice design with supporting guy wire supports (similar in design to the existing long-term met tower on private land at the Searsburg Facility). They may require lighting depending upon FAA standards. The exact locations of the met towers will be determined at a later time, although they are expected to be located close to the existing temporary met towers.

### **New Power Lines**

All ridgeline power lines would be buried underneath the road. Above ground power lines ("collector system") would be required between the two project ridges and to connect the turbines along the Western Project Area to a substation. Collector lines would run above ground along the Eastern Project Area access road, and cross Route 8 south of the access road near the Crosier Cemetery, an area that would minimize its visibility. It will ascend the Western ridge along the southeast side partially along an old logging road. Collector lines would be buried along the Western Project ridge but at the northern end run a short distance above ground to connect with the substation adjacent to the existing 115kV transmission line (see below). Collector lines would be on single poles approximately 35–45 feet in height. A cleared width of approximately 50 feet would be required for the new collector line connecting the Eastern and Western Project Areas. Existing dense vegetation would minimize its visibility from State Route 8.

### **Substation**

The collector system would connect to a substation either at the existing Green Mountain Power substation at the base of the eastern area, or at a newly constructed substation in the northern end of the Western Project Area near the existing 69 kV transmission line. The location depends on the outcome of further interconnection studies and other considerations. If the existing substation yard is used, the construction would involve the

installation of new transformers and other electrical switchgear within the presently fenced substation yard. If a new substation is constructed it would be in a cleared area in the existing forest and require a fenced-in yard approximately ½ acre in size. Both options would use essentially the same equipment internally, the highest components of which could reach to a height of approximately 35 feet. In either case, the substation would be screened from public viewing places using existing vegetation supplemented with planted vegetation as necessary.

### **Operations & Maintenance Building And Lay-down Area**

Two potential locations for a maintenance building are being considered, depending on which substation and western access connector route are selected and other factors. Both are on private land. One location is at the edge of an open field, near the western terminus of Putnam Road and the second location is next to the existing substation off Sleepy Hollow Road. The maintenance building would be approximately twenty-four by forty feet and constructed of metal frame construction with neutral/non-reflective coloration. A well and waste disposal system will be designed for the building. A 1.5-acre lay-down area for storing turbine components during construction would be outside and adjacent to the building. Both would be screened from public view using existing vegetation supplemented with planted vegetation as necessary.

### **Project Information**

Information about the existing Searsburg Wind Power Facility is provided on a sign at the base of the existing access road. A new or expanded public information area is planned for the Project. The existing Searsburg information area may be expanded and enhanced or a new public information constructed near the access road to the western ridge.

## **III. Character of the Regional Landscape**

The proposed Deerfield Wind Farm would be located in the southern foothills of the Green Mountains, a physiographic region running north-south the entire length of the state. The spine of the Green Mountains includes Vermont's highest mountains and remains a barrier to east-west movement except for a few gaps between mountains. The rugged topography has meant that much of the higher elevations were less suited to development. A significant portion of this land has become part of the Green Mountain National Forest. Some of the more prominent peaks have been developed as ski areas. (Please refer to the attached Map 1, Regional Context Map)

The Project area is south of Route 9, one of a few east-west routes through the Green Mountains. North of Route 9, the mountains are generally higher and often more prominent. The most visually distinct mountains in the area are Mount Snow and Haystack, in the Town of Dover. Both are noticeable in part because of the ski trails, which are particularly prominent in winter, and because of their large size. Haystack's pyramidal shape makes it particularly distinct, and a focal point in this region.

Glastonbury Mountain to the north, in the Town of Glasterbury, is also one of the area's higher peaks but it is more rounded in form and difficult to see from many places. The Long/Appalachian Trail runs along the Green Mountain spine about 6 miles west of the Project site.

The Deerfield River and its tributaries and branches are the major drainage system in the area. Two large reservoirs, Harriman and Somerset, fill portions of the generally north-south running valley of the Deerfield River.

Around the Project, the landscape is complex with numerous lower and higher hills and small mountains. The ridges of the existing Facility and proposed Project are relatively flat or horizontal in form, in contrast to many of the more rounded hills that surround it. Due to the rugged terrain and predominance of woods, the existing Searsburg Wind Power Facility is not visible from many locations, but where openings occur, the turbines can be seen. They are distinct elements in the landscape but most often seen as a small part of this varied landscape in which other higher or more prominent hills and ridges dominate.

Much of the mountainous terrain in Woodford, Wilmington and other surrounding towns is over 3000 feet in elevation. Wilmington is the largest settlement in the region. The Towns of Searsburg, Woodford, Whitingham, Readsboro, Somerset, Glastonbury, Dover and Stamford surround the Project site. Routes 8, 9, and 100 are the major roadways through the area, all located in the valleys between hills and mountains.

## **IV. Inventory of Views**

### **A. Computer Viewshed Mapping**

A computer generated viewshed analysis provided the first step in analyzing potential visibility of the Project on surrounding areas. The viewshed maps assume that no trees exist, so they are very accurate in showing where visibility will not occur due to topographic interference, but may be less accurate in predicting areas from which the Project could be visible. Dense vegetation, evergreen trees, and buildings can limit or eliminate visibility in areas indicated as having potential visibility. Vegetative overlay data indicates areas from which visibility of the Project would be most likely. However, field analysis (on the ground) is essential in many areas to determine how much of the Project would be seen, and the context or scenic quality of the area from which it would be seen.

The Viewshed Maps (see the attached Maps 3A and 3B, Viewshed Analysis Maps) show areas from which any portion of the turbines could potentially be visible within a 10-mile radius of the proposed project. In some areas only a small part of the blades may be visible. These maps also indicate the number of turbines that could potentially be visible from particular areas.

## **Technical Procedures Used to Created Viewshed Maps**

Viewshed analyses were prepared using ArcGIS 9.1 software with the spatial analyst extension. This software is specifically designed for analyzing large geographic areas including viewshed analyses. It utilizes 3-dimensional data files called digital elevation models or DEM files in combination with a point or points identified by the user to represent features in the landscape such as wind turbines. A signal is broadcasted from the specified points of interest and a frequency rating is applied to all areas within the viewshed indicating if the points can be detected at each location. Landform will block the signal or shadow areas preventing the signal to reach them resulting in a frequency rating of 0 or no visibility. Alone, the viewshed is not very descriptive, but overlaid on USGS maps, or combined with other available in GIS data, visibility can be related to roads, topography, water bodies, state and town parks, and other potentially sensitive viewpoints.

## **B. Simulations**

Six photographic simulations were prepared illustrating a range of distances and geographic areas and areas considered to be scenic and/or visually sensitive viewpoints. Representatives of area towns, the Windham Regional Commission, and Green Mountain Forest officials where consulted in selecting simulation locations. (See attachments: Simulations 2-7)

Photographs for the simulations were taken by Jean Vissering using a 35 mm Nikon FM film camera set at a focal length of 50mm. At all locations information was collected including the horizontal coordinates of the camera location, determined by a Global Positioning System (GPS) data, angle of view, height of the camera, time of day and weather conditions. The original photos were shot on slide film and were scanned and sent to AWS Truewind LLC in Albany NY for further processing.

AWS Truewind, LLC, a research and engineering firm that specializes in renewable energy prepared the photo simulations. AWS utilizes the Photomontage module of WindPRO, a software suite created specifically for the design and planning of wind turbine farms. The procedure includes the construction of a computer generated model that consists of the proposed turbines, the surrounding land form, and any other features in the landscape that can help tie the photo together with the simulation such as buildings, towers, or utility poles. For several of the simulations prepared for the Deerfield Project, the existing turbines from the Searsburg Wind Power Facility were visible and therefore utilized to help tie the simulations and photos together. The information recorded by the photographer is used to set up a camera view within the computer model, replicating the exact view taken in the field. An image from the computer is then digitally projected onto the underlying photograph creating the photomontage. The product is then manually inspected to ensure proper size and placement of the turbines, and ambient lighting conditions.

To further test the accuracy of the simulations prepared by AWS, a photo of the existing turbines from Route 8 was provided. However, the existing turbines were first erased from the photo and AWS was asked to simulate these turbines. The original photo and the simulation were then compared to validate the accuracy of the simulation. Please see attached Simulation #1, “Validating simulation and original photo of existing Searsburg Wind Project.”

### **C. Field Inventory of Views of the Proposed Project**

With the viewshed maps as a guide, those locations identified as sensitive areas were examined to document views of the proposed project. Roads including all state and local roads were field inventoried during both leaf-on and leaf-off periods. Several recreation areas including Harriman and Somerset Reservoirs, Whitingham Park, Molly Stark State Park and Fire Tower, Glastonbury Mountain Fire Tower, and the Haystack Golf Course were inventoried only during leaf-on periods, as these are the times of primary use for these recreation areas. Only small sections of the Long/Appalachian Trail were field inventoried due to the great distance to potential viewing areas. Data for sections other than the summit of Glastonbury Mountain were obtained from Green Mountain Club officials. The summit of Mount Snow was inventoried during summer months although it is used during both seasons. Aiken Wilderness and the Lamb Brook portion of the Green Mountain National Forest were inventoried during leaf-off periods only. Areas inventoried and visibility locations are described and illustrated below. Please refer to the attached Map #4 for a layout of inventoried areas. Please also see Viewpoint Photos, which are keyed to the map locations, and Tables 1 and 2 with more detailed information about the views of the Project.

### **D. Visibility and Context**

In assessing visual impacts, the number of viewpoints is important, but equally important is how the Project would be seen in those views. Numerous factors will affect the degree of impact of a wind project. This section provides information on some key attributes of views most of which are objective and verifiable. The analysis is divided into the following types of viewpoints:

- Public roads
- Recreation areas and hiking trails
- Historic sites and village centers
- Green Mountain National Forest Lands
- Private residences.

Some views in these categories tend to be more visually sensitive than others and will be discussed in greater detail. View locations along with enlarged photographs from the more sensitive viewpoints can be found in attached Map #4 and attached Viewpoint Photos. All views along with additional technical information are described in the attached Tables 1 and 2. Photographs used in the text that follows have been kept relatively small. For this reason, and because the camera lens is never as sharp as the

human eye, the existing turbines can be difficult to see in the photographs. Notes and arrows on the photos indicate the locations of the existing and the proposed turbines if they could be seen in the particular view.

Factors affecting the visual impacts of the Project as seen from the various viewpoints are listed below. Because this assessment considers the combined effect of all views and of particularly sensitive viewpoints, any one view is unlikely to create serious impacts. Wind energy projects will inevitably be seen, but how they are seen within views, their relative prominence as seen throughout the region, and the degree to which they interfere with regional focal points will be the most important factors.

- Distance from Project

In general visual impacts are greater when seen at close range, but diminish with distance. In foreground areas (up to ½ mile away) details can be seen and objects appear larger and often occupy a larger part of one's overall view. Middleground views extend up to 5 miles away. At this distance forms such as individual trees can be perceived, and of course individual wind turbines, but they are likely to appear smaller and part of a much larger context. Background views are those greater than five miles where larger landforms tend to dominate the view rather than details. Wind turbines may be seen up to 10 miles away and further under optimal atmospheric conditions, but they are generally seen as very tiny elements at this distance and in most cases, as a very small portion of a larger panorama.

- View Duration

View duration refers to how long the Project is visible as one drives along a road or paddles along a lake, for example. In many cases, views of the Project may be intermittent and seen through groupings of trees or buildings as one moves through the landscape.

- Angle of View

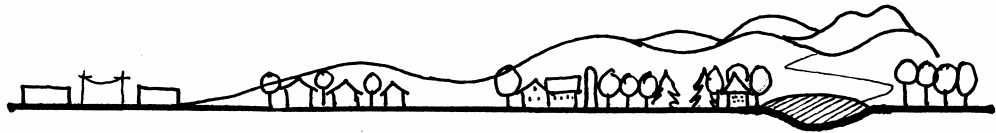
Whether the Project is seen directly ahead in views or to one side may influence the degree to which it is likely to be a focal point in views.

- Panoramic vs. Narrow View

When one sees a project as part of a wide panorama, it may appear to occupy a relatively small part of the view unless particular landscape features make it a focal point (see below). If a project is seen for a long duration as part of a narrow or focused view the impacts may be greater.

- Scenic Quality of View

Highly scenic views are generally those with a high degree of landscape diversity, and with little or no landscape degradation.<sup>2</sup> Many highly scenic landscapes include intact and diverse foreground, middleground and background views, particularly panoramic views and those that include water features. Much of the Vermont landscape is relatively scenic, so that scenic quality must be judged in the context of many scenic areas in the larger region. When these are formally recognized they often become accepted standards



Increasing Scenic Quality (Increasing Diversity) ----->

- Focal Point within a View

Distinct cultural or natural focal points often enhance scenic quality. When a focal point exists, new development should not conflict with or degrade the visual quality and prominence of a focal point.

- Number of Turbines in the View

The number of turbines visible at any one time may affect the prominence or relative scale of the Project. This effect will diminish with distance.

- Sensitivity of the Viewpoint or Viewer Expectations

In this report, we have included a broad range of types of areas as potentially sensitive. Other qualities that may result in greater visual sensitivity include: a) high numbers of observers; and b) expectations of observers for a certain quality of view such as a natural landscape free of human made elements. We included residences in our discussions of more sensitive landscapes due to their fixed position so that views are permanent, not something that may disappear over space or time.

- Scale

We perceive the size of an object in relation to its surroundings. The actual size of a wind turbine is less relevant than its perceived size in relation to the size of the ridge on which it is located. Both vertical scale, the height in relation to the associated landmass; and horizontal scale, the overall project size in relation to views of the ridge or series of ridges and hills, is relevant.

---

<sup>2</sup> Landscape degradation results from development that degrades traditional landscape patterns such as the distinction between village and countryside.

## **1. Sensitive Viewing Areas**

### **a. Local and State Roads**

All roads within a 10-mile radius of the Project site were inventoried. Three state numbered highways traverse the area, Routes 100, 9 and 8. Local roads with views toward the Project site include White, Stowe Hill, Ray Hill, and Boyd Hill Roads in Wilmington, and Town Hill Road in Whitingham. Both the existing character of views, and the way in which the proposed project would be seen, will be discussed. Although there are occasional views from other roads in the area, they are very brief and the Project would be difficult to see. All are discussed in more detail in the attached Tables 1 and 2. Note that distances to the Project are calculated as the distance to the *nearest* turbine.

- **Vt. Route 100**

Route 100 has long been considered important for tourism and its scenic character is an important consideration. In this region it winds its way in a circuitous north-south direction around the numerous hills that characterize the area. Within the 10-mile radius, Route 100 runs for about 52 miles through the villages of West Dover, Wilmington where it intersects with Route 9, Jacksonville, Whitingham, Readsboro, the hamlets of Readsboro Falls and Heartwellville in Readsboro, then south to Stamford and the Massachusetts border. Due to the rugged terrain in this area the Project would be visible from only a few locations, a total of about 2.5 lineal miles. It would not be visible north of Wilmington village, or within the village itself. Heading north on Route 100, there could be a brief glimpse of the Project 0.2 miles east of the village. The view is looking west, though trees, buildings and power lines would make the proposed project very difficult to see.

The Project would not be visible anywhere between Wilmington and Heartwellville, with the exception of two brief glimpses, one in Whitingham (0.1 miles) near Town Hill Road and the other just west of Readsboro Falls (0.1 miles). The Project would be most noticeable in the vicinity of Heartwellville (Please see attached Simulation #2, "Route 100 Approaching Heartwellville from the South"), where the southern end of the Eastern Project turbines would be seen at relatively close range. For travelers heading north along Route 100/8 there would be glimpses of the eastern turbines from the north end of Stamford village, then intermittently as one heads north (a total of about 1 mile of intermittent visibility) with the closer views as one heads over the height of land at Dutch Hill into Heartwellville (about a mile of intermittent visibility). The turbines would be seen at distances ranging from 7.5 miles away at Stamford village to 1.5 miles away in Heartwellville. These views would not include the existing Searsburg Facility turbines.



**Photo 1:** View of Eastern Project Ridge from Heartwellville, Route 100 near Route 8 (1.5 miles)

- **Vt. Route 9**

Route 9 has been designated a Vermont Scenic Byway<sup>3</sup> and is known as the “Molly Stark Trail”. It serves as an important east – west transport route. About 30 miles of Route 9 are in the viewshed. The Project would be potentially visible for about 3.1 miles. Heading west from Brattleboro, the existing turbines come into view as one descends into Wilmington about 1 mile west of the “100 Mile View” near the top of the pass between Hogback Mountain and Mount Olga. Haystack Mountain is seen on the upper portions of the descent and is an important focal point and landmark throughout this region. Near the entrance to Molly Stark State Park, the existing Searsburg Wind Power Facility comes into view and is visible directly ahead. Portions of the proposed project would be seen as well, and would remain in view for about 0.4 miles at which point foreground hills obscure any views of the project ridges. They would be seen at distances ranging from 7 to 9 miles.

Portions of the Project come briefly into view again for about 0.2 miles in the vicinity of the White House Inn, primarily during the winter months. Buildings, trees and power lines along the southern edge of the road would make it very difficult to see. There is no visibility in Wilmington village. Leaving Wilmington village heading west there are intermittent views that would include small portions of the Project especially west of Haystack Road up to Harriman Reservoir (about 0.8 miles total west of Wilmington). The existing turbines are also visible.

Heading east, the existing turbines are seen briefly but views would be primarily of the Western Project turbines. They would come into view about 1 mile west of Woodford State Park (at a distance of about 3 miles from the Project) and would continue to be intermittently visible up to the wetlands north of Yaw Brook and east of Red Mill Campground. The northernmost turbines would be seen directly ahead in some views. From the open

---

<sup>3</sup> Under the state program, a Vermont byway is a highway or other public road that has special scenic, historic, recreational, cultural, archeological, and/or natural qualities, and for which a management plan has been developed at the local level. A Vermont Byway can be designated and managed with a focus on any or all of these six qualities. The program is not intended to incur the restrictions that would apply to a Scenic Road Designation.

wetlands, Haystack Mountain creates a focal point to the north of route 9. The turbines would range from about .6 miles away at the closest point to about 3 miles away). Please see attached Viewpoint Photos, VP #1 and VP #8, and attached Simulation #3, “Route 9 Looking East, Woodford (1.7 miles).”



**Photo 2:** Route 9 Looking West by Molly Stark State Park (7.4 miles)  
Existing turbines are on distant ridge looking ahead and right; proposed eastern ridge turbines would be ahead and left.



**Photo 3:** Route 9 Looking East (1.7 miles)  
The western ridge is seen ahead and to the right. The turbines would be located to the right of the power line cut seen above the foreground power pole.

- **Vt. Route 8**

Route 8 serves as a connector between Route 9 in Searsburg and Route 100 in Heartwellville where it joins Route 100 heading south. The northern part of the route offers a few dramatic views of the existing Searsburg Wind Power Facility. There are several pull-outs along this curvy road where people stop to take photographs of the existing facility. The Eastern portion of the proposed Deerfield Wind Project would be visible along the ridge continuing toward the south. The northern portions of the Eastern Project Area would be seen intermittently at distances ranging from 0.6 miles to about 2 miles over a distance of about 3 miles of Route 8. Numerous trees along this stretch would reduce views substantially during the summer months. If the southern access route is used up the Western ridge, it’s junction at Route 8 would result in fairly substantial changes in the vicinity of Sleepy Hollow Road and the Crozier Cemetery due to the regrading required. The Cemetery is now a pleasing visual element along this route.

South of the cemetery, at the intersection with Hollow Road, the road travels through a steep sided scenic valley for another 2.4 miles. The Eastern Project turbines would be difficult to see along this stretch. Tops of the Western turbines may also be intermittently visible heading north. The Eastern turbines become visible again at the intersection with Route 100 in Heartwellville (see discussion under Route 100) but only when heading north on Route 8. Please see attached Simulation #4, “Route 8, Looking South toward Existing GMP Project and Eastern Project, Searsburg (1.6 miles).”



**Photo 4:** Route 8 North of Eastern Ridge looking south to existing GMP project; eastern ridge turbines would continue along the ridge to the south. (1.8 miles)



**Photo 5:** From Route 8 looking northeast toward the existing GMP wind project over the Crozier Cemetery



**Photo 6:** The Eastern Project Ridge over Crozier Cemetery, Route 8 (0.6 miles)

- **White and Stowe Hill Roads in Wilmington**

Near the intersection of these two roads, views open up to the west. At the northern end of White Road is one of the most scenic views in Wilmington. A large open meadow extending for about 1/3 mile descends toward the west and provides the scenic foreground for a panoramic view that includes Mount Graylock and Dutch Hill to the south, the existing Searsburg Wind Power Facility along with the Eastern and Western Project ridges, and Haystack Mountain and Mount Snow to the north. The existing wind facility is a very small part of this panoramic view. Haystack Mountain forms a prominent focal point in this view and in many others throughout the region. There are numerous other smaller mountains and rounded hills within this view. The horizontal form of the Searsburg/Readsboro ridges on which the Eastern and Western Projects would be located would occupy a larger percentage of this view than the existing wind facility, but still relatively small in relation to the entire panorama. The Town of Wilmington was considering the protection of the foreground meadow. (For a larger copy of White Road views, please see

attached Viewpoint Photo, VP #3). Similar, though slightly more limited views occur as one heads west on Stowe Hill Road. Views are intermittent for about 1 mile and the focus shifts from Haystack Mountain in the north to the southern portions of the Green Mountain foothills. These views are about 6-7 miles away from the proposed project.



**Photo 7:** White Road looking West Southwest (6.4 miles)  
Both the eastern and western projects would be seen on either side of the existing turbines.



**Photo 8:** White Road looking West Northwest (6.4 miles)  
Haystack is a prominent focal point in this view.

- **Ray Hill Road, Wilmington**

Ray Hill Road runs from Wilmington village to Mann Road, which continues past the Haystack Golf Club (see recreation areas). Ray Hill Road ascends steeply up out of the village. It is along the west side of a ridge, and a number of homes look directly across toward the existing Searsburg Wind Power Facility and the Deerfield Wind Project Ridges. Woodlands block views from many of the homes. For drivers along the road, the Project ridges are seen at a right angle to the direction of the road. Trees, homes and forested areas make the views to the west intermittent. Ray Hill Road is about 4.8 miles away from the nearest proposed wind turbine. For a larger copy of the view from Ray Hill Road, please see attached Viewpoint Photo, VP #4.



**Photo 9:** Ray Hill Road by Wilmington Heights Road (4.8 miles)



**Photo 10:** Boyd Hill Road at the Boyd Farm (4.8 miles)

- **Boyd Hill Road, Wilmington (Simulation)**

The Deerfield Wind Project ridges are blocked from view along most of this scenic road, but the open meadows of the Boyd Farm provide one of Wilmington’s most scenic viewpoints. The open meadows south of the farmstead permit views directly across to the Eastern Project Area ridges and to the existing Searsburg Wind Facility at a distance of about 4.8 miles. Harriman Reservoir is in the valley between the two ridges but cannot be seen due to the forested edge of the meadow. For a larger copy of the existing view from Boyd Hill Road, please see attached Viewpoint Photo, VP #6. Please see Simulation #5, “Boyd Hill Road, Wilmington (4.6 miles),” for a simulated view of the proposed Project.

- **Town Hill Road, Whitingham (Simulation)**

Town Hill Road passes Sadawga Pond, then ascends up to a flat open area near the top of a hill with the Whitingham Park. As one descends Town Hill Road heading northwest just below the park there are dramatic views to the north and west across small foreground meadows. Like other views described above, it includes numerous hills and mountains including the proposed project east ridge and the existing Searsburg Wind Facility. Harriman Reservoir can be briefly seen in the valley. The closest turbine would be just over 6 miles away. Views continue intermittently along Town Hill Road for about .4 mile to the intersection with Route 100. Views would continue along Maple Street across Route 100 for another 0.1 mile. Please see attached Viewpoint Photo, VP #13. Please also see Simulation #6, “Town Hill Road, Whitingham (6 miles),” for a simulated view of the proposed Project.



**Photo 11:** View from Town Hill Road (6 miles)

## **b. Recreation Areas and Hiking Trails**

All of the region's more popular parks, recreation areas, water bodies and trails are discussed below since all could be considered to be visually sensitive areas. All areas of potential visibility were inventoried by car, on foot, or by canoe or kayak unless otherwise noted. The Project would not be visible from several of these recreation areas listed below, and is visible from only portions of others. A summary can be found in attached Tables 1 and 2.

- **Molly Stark State Park** is popular for camping and hiking. Woods surround the campsites so there are no views toward both ridges of the Project site. One trail leads to a fire tower on Mt. Olga from which there are panoramic views, allegedly extending as far as Boston, Massachusetts on a clear day. The views also include the existing Searsburg turbines and the Project site to the west about 8 miles away. (No photos available)
- **Woodford State Park** has a sizable lake, the visual focal point, with surrounding campsites and nature trails that are frequently used during summer and during the winter for cross country skiing and snowshoeing. There are **no views of the existing turbines**. The proposed project would not be visible from the park with the exception of one glimpse through dense trees during the winter months at the northeastern boundary of the park near an existing nature trail.



**Photo 12:** View from Woodford State Park Beach looking East (no visibility)

- **Red Mill Campground** is located north of Route 9 and offers semi-primitive campsites in a wooded setting within the GMNF. The proposed project would not be visible from this campground.
- **Harriman Reservoir** is a large body of water that snakes along the valley of the Deerfield River. Its shoreline is relatively undeveloped except for the northern end near Route 9, and three developed boat launch, picnic, and swimming areas. It is heavily used for motor boating, canoeing, kayaking, and occasionally jet-skiing in summer. The existing turbines can be seen from Ward’s Beach, portions of the Mountain Mills Boat Launch area (the most heavily used and developed recreation area), and from a few places along the eastern side of the reservoir itself. There are no campsites at Harriman Reservoir. The topography to the west of the Reservoir is complex, so the proposed project would be difficult to see, but portions of the Eastern turbines would be visible from Ward’s Beach, Mountain Mills Boat Launch and from a few areas along the eastern shoreline and on the water at distances ranging from 3 to 4 miles away. Please see attached Viewpoint Photos, VP #17, VP #18, and VP #19. Please also see Simulation #7, “Harriman Reservoir, Eastern Shore North of Ward’s Beach, Wilmington (4 miles).”



**Photo 13:** Mountain Mills Boat Launch (3.4 miles)  
The turbines are unlikely to be visible from this area.



**Photo 14:** Castle Hill Boat Launch (4.3 miles)  
The Western Ridge is visible behind the foreground ridge to the right. A few turbines south of the transmission line corridor would be visible.



**Photo 15:** View from Ward's Beach Picnic Area (4.5 miles)



**Photo 16:** View from the Water, Harriman Reservoir (4 miles)  
The Eastern ridge turbines would be seen from some places near the eastern shore, but foreground hills would obscure many views.

- Somerset Reservoir** is remote and accessible only to canoes, kayaks and low rpm motorboats. There are primitive campsites, but the shoreline is largely undeveloped. A few trails and the summit structures can be seen on Mt. Snow to the east, and the existing turbines are visible from a very small portion of the reservoir along the western shore. The proposed Eastern turbines would be visible from these areas as well, while the Western Project turbines would be visible to a larger area of the southern portions of the reservoir. They would be seen at a distance of at least 7 miles. Please see attached Viewpoint Photo, VP #21.



**Photo 17:** Mount Snow from Somerset Reservoir



**Photo 18:** Looking South down Somerset Reservoir from Water (7.7 miles)

- Lake Raponda** in Wilmington is surrounded by many camps and homes along its eastern shore. There is a small beach for Wilmington residents on the eastern shore, and a boat launch at the northern end of the lake. A ridge to

the west of the lake blocks views to the Project site. Neither, the existing turbines nor the proposed Deerfield Wind Project would be visible from Lake Raponda or its immediate shoreline. Viewshed maps indicate that the Project may be visible to homes located along a hillside east of Lake Raponda Road (see private residences).



**Photo 19:** Lake Raponda looking west southwest at Beach  
(no visibility)

- **Sadawga Lake** in Whitingham and has a public boat launch. This lake is open and undeveloped in character. The lake itself was not inventoried, but viewshed maps suggest that the Eastern Project turbines are likely to be visible from the eastern edge of the lake at a distance of about 5.8 miles away. (No photo available)
- **Whitingham Recreation Area** includes the **Brigham Young Monument** on Town Hill Road. There is a picnic area, play equipment, and ball field located on a fairly open hilltop. The Brigham Young Monument is tucked in a quiet corner. There are scenic views to the west and southwest. The existing turbines can be seen at about 6.4 miles away from the far edge of the open field just south of the Monument. Similarly, the Eastern and Western Project turbines would be difficult to see from most areas of this park due to intervening trees except for the outfield of the baseball diamond. Similarly, the proposed project would be difficult to see from the Brigham Young Monument, but would be visible from the far edge of the field south of the monument.

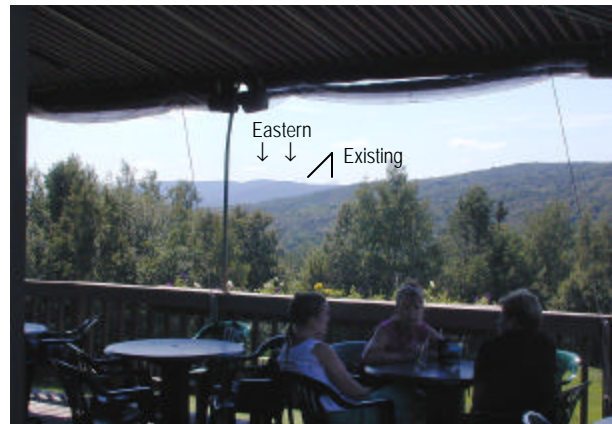


**Photo 20:** Whitingham Park (6.4 miles)  
View from southern edge of ball fields near Brigham Young Monument

- **Sherman Reservoir** in Readsboro is part of the Deerfield Hydroelectric generation system. There is a small picnic area and boat launch. There would be no visibility from this recreation area.
- **Mount Snow** is a major year-round sports center located on GMNF land. Lifts to the summit are only open during the winter months. Views from the summit are panoramic although with abundant foreground ski area development. From the observation deck of the summit lodge there are 360° views that include the existing turbines to the south. The proposed turbines would be visible from this point at 6.2 miles away, as well as from the top of two ski lifts, and from the upper portions of some ski trails. Please see attached Viewpoint Photo, VP #24.



**Photo 21:** View from Mount Snow Summit (6 miles)

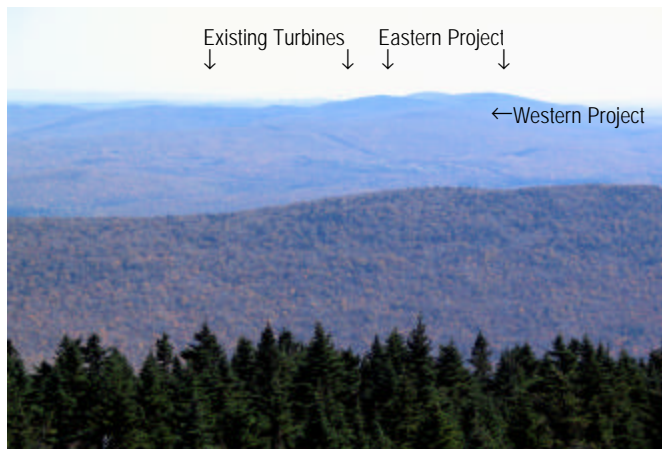


**Photo 22:** View from Haystack Golf Clubhouse (6.9 miles)

- **Haystack Golf Club** is in private ownership, but is popular with area residents. It offers dramatic views from the Clubhouse and many of the greens with Haystack prominent to the northwest and a broad panorama to the south and southwest that includes the existing turbines. The proposed turbines

would also be visible in these views at 4.6 miles away. Please see attached Viewpoint Photo, VP #25.

- **The Long/Appalachian Trail** is over 6 miles west of the Project site at its closest point. Views are limited along this stretch according to Green Mountain Club officials. Most of the trail was not inventoried except for the section over Glastonbury Mountain. The fire tower at the summit provides one of the few opportunities for extensive long distance views. To reach this remote summit requires a 10-mile hike in from either direction but this remoteness is one of the mountain's assets, along with the 360° view. The panorama includes a seemingly endless array of mountains in all directions with Mount Graylock in Massachusetts, Mount Snow, Haystack Mountain, and Equinox in Manchester as identifiable focal points. Somerset Reservoir is also a focal point and lies just to the east. The existing wind turbines on the Eastern ridge along with the transmission line cut are easily visible to the south, but appear as tiny pinpricks from this distance. They are about 9.25 miles away. The proposed turbines along the Eastern ridge would be located just behind these, while the turbines along the Western ridge would be slightly closer, ranging upward from 7.25 miles to about 9 miles away. Both ridges occupy a tiny portion of the view. The communications tower on top of Prospect Mountain is faintly visible, as are a few ski trails along the west side of Mt. Snow. West of Glastonbury Mountain there is a privately owned in-holding where considerable tree cutting has occurred in foreground views. Even with these human-made elements, endless forests seem to dominate the view.



**Photo 23:** Telephoto view from Glastonbury Fire Tower (7.7 miles)

South of Glastonbury Peak, the Long/Appalachian Trail descends to Route 9 and goes over one smaller knob that provides a glimpse to the south. The existing turbines are visible and the proposed project would be about 5.5-7.5 miles away at this point. The section from Route 9 to the Massachusetts border ascends a series of lower ridges. There is almost continuous forest cover with the exception of a small viewpoint west of the Aiken Wilderness

on Harmon Hill from which the Project would be seen along with the existing Searsburg turbines at distances ranging from 6.7 miles from the Western Project Area to over 8 miles to the Eastern Project Areas. The viewshed map indicates potential views from a hill in Stamford. The proposed turbines would be seen at a distance of at least 8 miles, if they could be seen at all.

### **c. Historic Sites and Village Centers**

Historic sites and village centers serve as visual as well as cultural focal points and therefore are considered to be sensitive viewpoints. Within the 10-mile radius there are two historic districts listed in the National Register of Historic Sites (NR), Wilmington Village and West Dover Village. There are also four individual historic sites on the National Register: The Crow's Nest and Medburyville Bridge in Wilmington, the District No. 1 Schoolhouse in Somerset, and the Tudor House in Stamford.<sup>4</sup> In addition, there are approximately 51 individual sites on the State Register of Historic Sites (SR) and an additional 15 State Register properties that are within the two Village Historic Districts in Wilmington and West Dover. Of these there is a potential for visibility from a maximum of 26 sites<sup>5</sup>. There are five sites associated with the Deerfield Hydroelectric Project are not officially listed as historic sites but are considered eligible for the Historic Register. These are discussed below. The Project would be visible from Heartwellville and portions of Stamford and Whitingham, and Wilmington but not from West Dover, Readsboro, Searsburg, Jacksonville or Woodford villages. Several of the historic sites and village centers from which there is potential visibility are discussed below and summarized in the Table that follows. The Potential visual impacts to historic properties are discussed further in the Phase IA Archeological Survey and Historic Resource Screening Study conducted by The Louis Berger Group, Inc..

#### **Wilmington**

- **Wilmington Village Historic District (NR)**  
This Historic District contains twelve buildings listed on the State Register of Historic Sites. Although viewshed maps show small areas of potential visibility within Wilmington Village, both the existing turbines and the Eastern and Western Project ridges are nearly impossible to see due to the density of buildings and trees. While it is possible that there may be views of the proposed project from upper floors of some of the historic buildings, the Project would be difficult to see while walking or driving through Wilmington village. (Distance: 4.5 miles)

---

<sup>4</sup> The Phase IA Archeological Survey and Historic Resource Screening Study includes resources outside the Visual Impacts Assessment study area, such as Bennington and Marlboro. There would be no visibility of the proposed project from any sites in these towns, including from the Furnace Grove Historic District in Bennington.

<sup>5</sup> Actual visibility is likely to be far less. Many of the historic sites are private homes, and visibility could not be verified.

- **Crow's Nest (NR).**  
Located at 36 Sturgis Road, 4 miles north of Wilmington village, the Crow's Nest is a collection of farm structures. The Project will not be visible from this location.
- **Medburyville Bridge (NR).**  
This 1915 steel truss bridge crosses the Deerfield River into Medburyville off Route 9. The Project will not be visible from this location.
- **O.L. Shafer House, Wilmington High School, Wilmington Baptist Church (SR).**  
These structures are outside the Wilmington Historic District and similarly may have some visibility of the project. The Project will difficult to see from most of these locations due to surrounding trees and buildings.

### Dover

- **West Dover Village Historic District (NR).**  
There are four buildings within this Historic Village District that are on the State Register. The Project will not be visible from this location.

### Readsboro

- **Old Coach Inn and Methodist Church (SR).**  
Heartwellville is a small cluster of residential buildings at the intersection of Route 8 and 100 within the Town of Readsboro. The Eastern Project Area, especially the southernmost turbines would be seen within views of these two buildings. The proposed project would not be visible from the Church itself, but could be visible from the interior rooms of the Old Coach Inn. Two other historic buildings are in Readsboro village from which the Project would not be seen. Distance: 1.2 miles.
- **Old Wesleyan Methodist Church (SR).**  
The Church is located in the village of Readsboro. The Project will not be visible from this location.

### Searsburg

Structures associated with the 1922 dam project are eligible for the National Register, and several are located in Searsburg as well as other surrounding towns. The Project would not be visible from these structures.

### **Woodford**

Several historic buildings in the village (SR) would have no visibility of the proposed project.

### **Somerset**

There are two historic properties in Somerset. The proposed Project would not be visible from the District No. 1 Schoolhouse (NR), but there is potential visibility of the Project, especially the Western Project Area from the top of the 1913 dam on Somerset Reservoir (Eligible for NR). (Distance: 6.5 miles)

### **Whitingham**

There would be no visibility from seven historic buildings (SR) located in the village of Whitingham as seen along the main street (Route 100), but it is possible that the Project might be seen from the upper floors of some of these structures. (Distance: 5.1 miles) There would also be no visibility from the 1924 dam (Glory Hole) and outlet control tower/intake that is part of the Deerfield River Hydroelectric project. There would also be potential visibility from the Sadawga Lake House on Route 100 and the Amos Brown House Town Road.

### **Jacksonville**

There would be no visibility from the five structures in Jacksonville (SR).

### **Stamford**

Stamford contains 24 historic sites, one of which is on the National Register (the Tudor House). Most are in the vicinity of the village. Within the village itself, buildings and trees restrict visibility toward the Project site. However it is possible that there would be views of the eastern ridge turbines from the individual properties. There may also be some visibility to one or more properties located on hills outside the village. The Eastern project ridge is seen at a distance of 7.2 miles at the closest point. The Western turbines should not be visible within the village.

## **d. Green Mountain National Forest Lands (GMNF)**

The GMNF Plan is in the process of being revised. The Forest Service issued its final decision on the new plan on February 10, 2006. The following discussion will reflect the standards, guidelines and management areas identified in the new plan.

The proposed Deerfield Wind Project would be located along the outer edge of the GMNF on either side of Vt. Route 8. Private lands are to the north and east of the Western Project Area and to the north of the Eastern Project Area. The Project would be located in an area designated as “Diverse Forest Use” which, “emphasizes a variety of forest uses including timber management, wildlife habitat and a range of recreational opportunities including motorized and non-motorized.

Further west of the Western Project Area is an area designated as “Diverse Backcountry” which separates the Project site from the George D. Aiken Wilderness. Land management under the “Diverse Backcountry” designation “emphasizes relatively large landscapes that provide a mix of backcountry recreational experiences from low use foot trails to motorized use trails.”

The Eastern Project Area is located at the edges of an area commonly known as the Lamb Brook Basin. The proposed project ridge has been designated as “Diverse Forest Use.” In “Diverse Forest Use” areas, “Public use is managed to provide a full range of recreation opportunities...” The remainder of the Lamb Brook area is designated as “Remote Backcountry” with some of the higher elevation ridges and knolls more removed from Route 8 designated as “Remote Wildlife Habitat.” Under the 1987 GMNF Management Plan, the entire area was classified as “Roaded Natural Area.”

The George D. Aiken Wilderness west of the Western Project ridge, and the Lamb Brook Basin area, east and south of the proposed project are discussed in greater detail below. Numerous field visits were made to the entire GMNF around the project site with particular focus on these two sites. Visits were made primarily during the winter months to assess the potential visual impacts to these areas.

## **Aiken Wilderness**

### General Description

The 5,060-acre Aiken Wilderness was designated in 1975, and is one of six federal wilderness areas within the GMNF in Vermont. It is located west of the proposed project and separated by an area designated as “Diverse Backcountry”. Forest Road 74 runs along its eastern edge and provides access to several campsites and to snowmobiles in winter. Yaw Pond Brook runs along the road and along the eastern boundary of the Wilderness toward the Deerfield River.

The terrain in the Aiken Wilderness is hilly and complex, and the vegetation varied. In places the vegetation is thick and barely penetrable, and in others hardwood forests are more open. Numerous wetlands occupy the lower elevations within the interior. These make access difficult in summer, while in

winter it is possible to traverse on skis or snowshoes over frozen ponds, swamps and marshlands.

The Aiken Wilderness is almost entirely surrounded by other GMNF lands or State lands (Woodford State Park is to the north).

#### Visual Character: Aiken Wilderness

The combination of numerous open wetlands, diverse vegetation and topography creates a visually interesting and varied landscape. It is an intimate landscape rather than a dramatic one. There are few distant views and no open mountain summits. The watercourses and especially the numerous ponds are the scenic focal points of this area. The diversity of habitats and opportunity to view wildlife in a remote and wild landscape are important parts of Aiken's aesthetic appeal.

#### Use of the Aiken Wilderness

Several recreation areas surround the Aiken Wilderness including Woodford State Park, Prospect Mountain Sports Center, and two GMNF roads both of which are used by snowmobiles in winter. But only a few venture into the Wilderness itself. Aiken is known for its abundant insects and wetness in spring and summer so that most users come in fall and winter. Any use of Aiken requires good map-reading and compass skills as there are no trails.

The area is popular with bear hunters who set up camp along the forest access roads in the fall. A few dedicated explorers like to climb the various hills within Aiken, and to ski or snowshoe across the numerous wetlands in winter. Backcountry skiers and snowshoers occasionally come into Aiken especially from Woodford State Park. Most follow the drainage ways through numerous semi-open ponds and wetlands. The Green Mountain Club sponsors an annual backcountry ski trip crossing the Wilderness from Route 9 to the snowmobile trail emerging near Heartwellville.

#### Potential Visibility of the Proposed Deerfield Wind Project

Inventorying potential views of the proposed project within Aiken proved challenging due to its large size, the lack of trails, the very complex topography, and varied vegetation. Field visits focused on areas most likely to be visited or to have views of the proposed Project. They covered about seven of the many hills within the Aiken Wilderness, as well as a route through the interior along frozen drainage ways, ponds, and along a portion of an abandoned road. All visits were made during the winter months, the only time when there would be potential views of the proposed Project.

In general the complex topography and diverse vegetation would make the Project difficult to see from most areas within the Aiken Wilderness, even during the winter months. The proposed Project would be most visible from several of the steeper hardwood-covered hillsides especially along the eastern edge of the Wilderness, and from two small hillsides along the southwestern edge of the wilderness, but not along the flanks of Prospect Mountain within the Wilderness boundary. From the typically rounded hilltops, however, dense trees block the visibility. The proposed Project would not be visible from the open wetlands due to their low elevation and surrounding hills. During the summer months, the Project is unlikely to be visible from anywhere in the Aiken Wilderness. The Western Project Area would be seen at 1.7 miles at its closest point. The Eastern Project Area turbines would be seen from 3.4 miles away at the closest point.



**Photo 24:** Near Hill Summits in Aiken Views are Blocked by Dense Trees



**Photo 25:** Views in Northern portions of Aiken are very limited.



**Photo 26:** Some Views from steep east-facing hills are more open and the Project site is visible (Eastern Ridge, 4.3 miles away).



**Photo 27:** Another typical view toward the Project site.



**Photo 28:** Views are blocked by surrounding hills within the open wetland areas.

## **Lamb Brook Basin**

### **General Description**

The Lamb Brook area is loosely surrounded by Route 9 on the north, Harriman Reservoir on the east, Route 100 and Heartwellville on the South and Route 8 on the west. High hills surround the perimeter of the irregular parcel. A portion of the Deerfield Wind Expansion Project is proposed along a gently undulating ridgeline along its western border. Lamb Brook's highest elevation of 3,111 feet occurs at the southern end of the Eastern project ridge. There are two hills along the southern boundary of Lamb Brook, the easternmost being the prominent "Dome"<sup>6</sup> at 2,995 feet in elevation. Several lower hills also run along the eastern boundary including a distinctive ledgy ridge, which will be referred to as the "Freezing Knoll Ledges"<sup>7</sup> (2,651 feet at the highest point). Several streams run between the various hills including Lamb Brook to the south, Wilder Brook to the east, the Medbury Branch of the Deerfield River to the north, and an unnamed brook to the west. Several roads and trails run along the lower elevations between the hills in the southern section of the parcel including Forest Road 266 and the remnants of the Old Stage Road between Albany and Boston. There are no trails in the northern portions.

The Lamb Brook area is loosely surrounded by Route 9 on the north, Harriman Reservoir on the east, Route 100 and Heartwellville on the South and Route 8 on the west. High hills surround the perimeter of the irregular parcel. A portion of the Deerfield Wind Project is proposed along a gently undulating ridgeline along its western border. Lamb Brook's highest elevation of 3,111 feet occurs at the southern end of the Eastern project ridge. There are two hills along the southern boundary of Lamb Brook, the easternmost being the prominent "Dome" at 2,995 feet in elevation. Several lower hills also run along the eastern boundary

---

<sup>6</sup> The Dome does not have an official name, nor is it named on any map. This name has been used by some of the local "peakbaggers".

<sup>7</sup> The Readsboro Town Plan refers to an area described as follows that is south of the ledges noted above: "A geological formation known as 'The Freezing Hole,' located at the end of Freezing Hole Drive, is a bowl formed by three mountain peaks which remains frozen well into the spring."

including a distinctive ledgy ridge, which will be referred to as the “Freezing Knoll Ledges”<sup>8</sup> (2,651 feet at the highest point). Several streams run between the various hills including Lamb Brook to the south, Wilder Brook to the east, the Medbury Branch of the Deerfield River to the north, and an unnamed brook to the west. Several roads and trails run along the lower elevations between the hills in the southern section of the parcel including Forest Road 266 and the remnants of the Old Stage Road between Albany and Boston. There are no trails in the northern portions. Please refer to the attached Map 5: Aiken Wilderness and Lamb Brook Area Context Map.

The Lamb Brook area falls under three management designations in the current Green Mountain Land and Resource Management Plan (February 2006) (See “Management Alternative E, South Half” in Appendix F of the 2006 Forest Plan). The western edges including the proposed project ridgeline are designated as “Diverse Forest Use,” which, as mentioned, “emphasizes a variety of forest uses,” including timber management and motorized and non-motorized recreation. “Public use is managed to provide a full range of recreation opportunities...” Nine new turbines are proposed to be built along this ridge. The northern end of this ridge is the site of the existing GMP Wind Facility with 11 turbines. The 10-15 turbines proposed for the Western Project Area west of Route 8 are outside of the Lamb Brook area. These would not be visible within Lamb Brook except from a few places along the top and west side of the Eastern Project Area.

Interior areas within the Basin itself are designated as “Remote Backcountry.” This designation emphasizes “large expanses of relatively natural landscapes where terrestrial and aquatic ecosystems develop under natural disturbance regimes.” Recreational uses are “restricted to those needed for resource protection.” Existing roads and trails are “managed to the lowest traffic service and maintenance levels possible” and are “closed to public motorized vehicles traffic.”

The southernmost portion of Lamb Brook is designated as “Remote Wildlife Habitat.” This area encompasses two high hills including the prominent “Dome,” and is intended to emphasize wildlife habitat and de-emphasize recreational uses “to minimize continuing disturbance to wildlife.”

Several trips were made into Lamb Brook, two through the southern area, two into the northeastern section and two trips along the ridgeline where the proposed turbines would be located. All were made during the winter, late fall, or early spring months. There are number of old forest roads within the southern portions of Lamb Brook Basin making it more accessible than the northern areas. The two

---

<sup>8</sup> The Readsboro Town Plan refers to an area described as follows that is south of the ledges noted above: “A geological formation known as ‘The Freezing Hole,’ located at the end of Freezing Hole Drive, is a bowl formed by three mountain peaks which remains frozen well into the spring.”

areas are somewhat distinct in their visual character as well. For this reason, they are discussed separately below.

#### Visual Character: Southern and Western Lamb Brook

The terrain is moderately steep throughout this area. The Eastern Project Area encloses the interior of this area to the north and west. The “Dome” is a prominent landform to the south and east. Hardwoods predominate, though there are several areas of softwoods, along drainage ways and in wetter areas. Higher elevations tend to be covered in either softwoods or beech trees. Strong winds near the tops of many of these hills make the beeches dwarfed and stunted. Lamb Brook, Wilder Brook and an unnamed brook are small but visually pleasing focal points in this landscape.

There are two access roads into Lamb Brook. One is a former snowmobile trail off Route 8 and a second is Forest Road 266 off Route 100 south and east of Heartwellville. Currently there is no public signage, and very limited parking. Forest Road 266 is gated at the bottom and continues about 1.5 miles where it enters Lamb Brook. Approximately one-third mile within the boundary there is a second gate at the junction of the Old Stage Road and the Forest Road. At this point, the Forest Road continues as a wide trail for another 1-1.5 miles in a northeasterly direction. The historic stagecoach road (part of the Albany to Boston stage road) crosses the southern portion of Lamb Brook from west to east. Part of it is currently used as a snowmobile trail in winter, and for access on foot in summer. Two other trails intersect with or cross over the Old Stagecoach Road, one north to join the forest road, and another south over The Dome. The latter is also currently used as a secondary snowmobile trail in winter. There is also a temporary trail along the Eastern Project Area, which provides access to two wind measurement towers.

#### Visual Character: Northeastern Lamb Brook

Access to this area is over a steep road on private land that services a surge tank and penstock associated with the Deerfield River Hydroelectric Project. Once inside the GMNF boundaries, this area appears more remote and visually diverse than much of the southern section. There are no obvious trails, and the terrain and vegetation are varied with several points of scenic interest.

The Medbury Branch runs through the center of a valley flanked on the west by the ridge that includes the existing Searsburg Wind Project and the proposed Eastern Project Area. It is a scenic brook with steep softwood-covered banks. Halfway up the valley it divides into two smaller brooks emerging from the flanks of the Eastern Project Area. At one point, along the flank, the Medbury Branch becomes a series of cascades known by some as the “Devil’s Staircase” (not visited).

East of the steep softwood covered banks of the Medbury Branch, the terrain becomes gently sloping. This area is covered predominantly with hardwoods, many of an impressive size. The Eastern Project Area is visible to the west in winter at about 1.3 miles, and the existing turbines can be seen across the valley from the higher slopes. Further east, this plateau begins to slope steeply upward to a ledgy wall. One can scramble up these ledges toward some even steeper and rockier upper knolls, referred to here as “The Freezing Knolls”.<sup>9</sup> To the east, the land drops off with steep beech-covered slopes offering filtered winter views to the east and south. The Eastern Project Area is visible to the west through openings in the softwood cover along the ledges, and one can see views to the north in a few places including Route 9. All views are seen through many tree branches in winter and would be extremely limited in summer.

#### Use of the Lamb Brook Area

Access to Lamb Brook is difficult. Forest Road 266 is gated near Route 100 requiring a mile and a half walk up the road into Lamb Brook itself. There are no signs providing directions or information. Most use occurs in the southern portions of Lamb Brook. This area is currently heavily used by snowmobiles, including by snowmobilers on the VAST trail that runs from Brattleboro nearly to Bennington and follows the Stage Road through Lamb Brook. The Woodford Snowbusters is the largest snowmobile club in the country, and attracts members from many areas. Evidence of numbers of people using the area is difficult to attain. Snowmobile activity in this area may be limited under the new Forest Plan. The Forest Service road provides the primary access to Lamb Brook.

Besides snowmobiles, use of this area has been very limited. One of the more popular hiking destinations is the Dome due to trail access and the possibility of a view at the top. There are a few very small openings just below the summit that permit views to the north. Hikers and hunters use the trail system throughout the southern portions of Lamb Brook. There is evidence that the highest point along the Eastern Project Area is also occasionally visited by off-trail explorers, along with the Freezing Knoll ledges and the cascades at the top of the Medbury Branch<sup>10</sup>.

#### Potential Visibility of the Proposed Deerfield Wind Project

For nearly all of the Lamb Brook area only 9 new turbines would be visible in addition to the existing 11 turbines on the same ridge. The only location where the additional 13 turbines proposed for the Western Project Area would be visible would be from some areas along the summit and higher western flanks of the Eastern Project Area itself. Much of this area is covered in softwoods that would

---

<sup>9</sup> Just to the south is a place where, according to local legend, the snow never melts.

<sup>10</sup> There is an informal register at the top of the Dome, (the last entries recorded as of February 2004 were by hunters in November describing deer sightings), and allegedly one on “Cemetery Peak” at the southern end of the Eastern Expansion ridge.

prevent extensive visibility. Visibility within Lamb Brook would be minimal at all times of the year, but especially during the summer months except for a few very small openings.

- Visibility: Southern and Western Lamb Brook

The proposed project would only be visible during the winter months, and from a few very small openings during the summer. In general the trail locations from which the Project would be visible in winter include the eastern sections of the Old Stage Road and the Dome trail. Visibility is most likely where there is a predominance of hardwoods and relatively steep slopes facing the Eastern Project Area. Where slopes flatten out, distant views disappear due to the density of foreground trees.

Approaching Lamb Brook along Forest Road 266 there may be glimpses of the tops of some of the turbines along the southernmost section of the ridge at a distance of about 1.5 miles. From the second gate heading northeast along the Forest Road trail there would be no visibility of the turbines, nor along the Old Stage Road west of and including Lamb Brook for approximately two-thirds mile due to the dense softwood cover. After crossing Lamb Brook, the road heads up a steep hill where hardwoods become more predominant and the Eastern Expansion ridge comes into view. The turbines along the Eastern Project Area would be seen at just over one mile to about two miles away from the Old Stage Road.

The Dome trail branches off the Old Stage Road in the southeastern corner of Lamb Brook. Descending the Dome Trail, the Eastern Project Area is visible intermittently through trees during winter months. From the small openings at the summit there are limited views to the north toward Mt. Snow, Haystack Mountain, and the Eastern Project Area, and the existing turbines. The Dome may be the only place where distant views would be possible and even here they would be very limited, and include the existing turbines. Trees are extremely dense near the summit making visibility difficult except in the small openings. The Eastern Project Area turbines would be seen at distances ranging from 1.4 to 2.4 miles.

A very wet trail connects the Old Stage Road just east of Lamb Brook with Forest Road 266. At the junction the Forest Road becomes very overgrown (an old abandoned car marks the spot). The Eastern Project Area is seen briefly at the southern end of the connector trail, but is not seen at all from other sections of either the Forest Road trail or the connector trails.



**Photo 29:** View from opening near “Dome” Summit (1.7 miles)



**Photo 30:** View toward Eastern Ridge from VAST Snowmobile Trail (Stage Road) (1 mile)



**Photo 31:** Medbury Branch: northern Lamb Brook Basin:  
northern Lamb Brook Basin



**Photo 32:** View to South from Freezing Knoll Ledges

- Visibility: Northeastern Lamb Brook

In the northern portions of Lamb Brook the Project would be most visible from the middle elevations along the gently sloping hillside east of the Medbury Branch. The closest turbines would be about 1.25 miles away. Abundant softwood cover around the Medbury Branch would minimize winter visibility from this scenic watercourse. Similarly, the ledgy summits of the Freezing Knolls are covered with evergreen trees, though there are small openings from which the Project would be visible from about 1.75 miles away. The existing 11 turbines are part of this view as well, and are seen directly across the valley.

Views of the Eastern Project Area were not field investigated from the western flanks of the Medbury Branch. If the turbines could be seen at all, it would be only the very tops of the new turbines due to the angle of view and the steep terrain. Numerous tree stems and branches are likely to interfere with views. Parts of this area are less than .5 mile from the 11 existing turbines, which are immediately west of this area.



**Photo 33:** View from Freezing Knoll Ledges toward the Eastern Ridge (1.5 miles)  
The existing turbines are along the right hand portion of the photo.



**Photo 34:** Close Up of Existing Turbines seen from the Freezing Knoll ledges (1.5 miles)

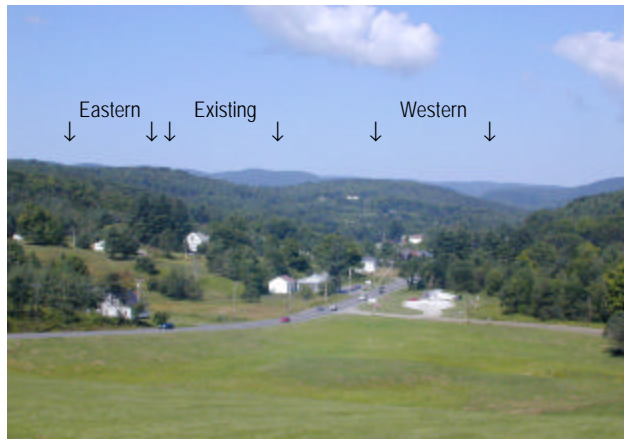
### **e. Private Residences and Businesses**

The emphasis of fieldwork and of this report has been on the public landscape. Individual private properties were not visited, but viewing potential was assessed using landform, landcover and viewshed analysis data, as well as from field analysis. In general, public views are of greater importance since they are enjoyed by a greater number of people. However, views from private residences are fixed so that there is a much greater duration of impact. If a particular ridgeline is seen as an important focal point in the view, or if a large part of the view is altered for a large number of people, the impacts may be significant.

Viewshed and field analyses indicate approximately 2 homes or camps within 0.5 miles of the Project site, approximately 51 homes or camps within 1 mile, and 144 homes or camps within 3 miles. Very few of these homes and camps are likely to have actual visibility of the proposed project. Visibility is most likely from a few homes along Route 8 from which the existing turbines and portions of the Eastern Project Area would be visible; from several homes along Route 9 from which some of the western turbines would be visible, and from about 8 homes in Heartwellville from which all or some of the proposed eastern turbines would be visible. A few homes or second homes in Alpenwald Village, a private development near Heartwellville,

would be able to view portions of the Project through deciduous trees in winter (2.5-3 miles away).

Farther away, there are a number of homes located along Ray Hill Road, and Boyd Hill Road in Wilmington. These are both located about 4.5 miles away along ridges running parallel with the Project ridges. Forest cover and topography block most views of the Project from homes in these areas, but others look directly across at the Project ridges. The existing turbines would be in all views from the east. The Chimney Hill development in Wilmington is another densely developed area, but the homes are surrounded by woodlands and most homes are out of the viewshed. Farther away there are concentrations of homes along White and Stowe Hill Roads in Wilmington (4.8-6 miles away) and on Town Hill, Poverty Row, and Streeter Hill Roads in Whitingham at distances of 6 miles or more away. Some homes at higher elevations west of Lake Raponda Road may also be able to see the proposed project, though this hillside is forested.



**Photo 35:** View from White House Inn, Wilmington (5.4 miles)

## **2. Lighting: Visibility**

Night lighting would consist of a slow pulse from red blinking lights mounted on the nacelle of some turbines, consistent with the FAA's current review process (likely 8-10). The intensity of the lights is focused upwards. Peak intensity occurs between 0° horizontal and 3-5° above this. Between 0° and 1° below horizontal, light intensity diminishes to 50% of peak intensity, and between -1° and -10°, light intensity diminishes to 3% of peak intensity. The same is true for the white lights.

The lights would be visible from all locations described above where the turbines would be visible, with greater visibility during the winter than summer months. Nighttime lighting would be one of the most noticeable changes in this landscape. There are no high elevation lights at the present time with the exception of occasional night lighting at the top of Mt. Snow and residential lighting in the area west of Rt. 100 and north of Rt. 9. The night landscape is experienced very differently than the

day since there are no other landscape reference points. The turbine lights would be oriented upwards with cut-off shielding at  $-10^\circ$  of horizontal. They need to be seen by pilots, but not to light a broad area, and thus do not contribute significantly to light pollution or sky glow. However, they would be visible under clear atmospheric conditions at vantage points in the region where the Project is visible during the daytime hours. Views are extremely limited from recreation areas, trails, village centers, historic sites, the Aiken Wilderness and other GMNF lands, and the lights would not be visible from any camping areas. The views of the lights may be most discernable from some homes with direct views toward the Project site. There are likely to be very few homes with a direct view of the Project ridges at close range. Greater concentrations of homes occur farther away in Wilmington and Whitingham where, from some locations the entire Project may be visible at distances ranging from 4.5 to 6 miles away. As distance from the Project increases, the lights would appear smaller and smaller, and occupy much less of the overall view. Existing foreground lighting is more likely to dominate from most areas. Red lights generally are a darker hue, with less overall contrast in tone than white lights. Unobstructed views would be much more limited during the summer months when use of the outdoor landscape is greatest, due to the presence of vegetation.

## **V. Assessment of Aesthetic Impacts: First Prong of the Quechee Analysis**

This section looks at qualitative issues and examines the degree to which the Project's impacts would be "adverse" using the Quechee Analysis applied in Act 250 proceedings. The first step involves an assessment of the following issues: Would the Project fit or be in harmony with the surrounding landscape? In making this assessment, the scale, forms, colors and materials of the proposed project will be examined in relationship to its context, and the extent to which it would degrade existing views or add excessive visual clutter, especially when seen from visually sensitive viewpoints. This section will also address the proposed project's impacts on open space, and the impacts lighting will have on the nighttime landscape.<sup>11</sup> It concludes with a summary of the overall "fit" of the Project within its context and whether the impacts would be "adverse."

### **A. Relationship of the Project to the Surrounding Context**

Wind energy projects are unlike most other type of development occurring in the Vermont landscape. The scale of the towers, the movement of the blades, and the necessary location on ridgelines are factors that were unanticipated in existing aesthetic review criteria. However, the fact that a wind project already exists in the immediate vicinity of the proposed Deerfield Expansion project provides a useful measure of the form and fit of the proposed facility. The existing 11 towers fit well into the surrounding

---

<sup>11</sup> Historic properties are noted, but not discussed in detail in this report, please see the Phase IA Archeological Survey and Historic Resource Screening Study for a more analysis.

terrain, and have a degree of public acceptance by local residents (according to a post-construction study). There are several reasons why the existing project has had relatively few visual impacts in this region. It is located on a relatively insignificant horizontal ridge that is part of very complex terrain including numerous surrounding hills and mountains. This complex terrain not only minimizes visibility, but also ensures that the ridge and the project are not focal points in this landscape. Haystack Mountain with its distinct triangular shape is the region's most visually prominent and identifiable peak and is located at some distance from the project.

Although the proposed wind turbines will be larger than the existing Searsburg wind turbines (by as much as 212 feet to the tip of the blades), their form and color will be essentially the same. When the two projects are seen from a distance, the difference in height will appear relatively subtle except when the two projects are viewed together at very close range. Route 8 would be the only location where this would occur. The proposed project will be seen from a larger area, and from several areas where the existing project cannot be seen. However, because the project is located on two separate ridgelines and given the varied topography, from most vantage points only a few of the turbines will be visible at any one time.

## **B. Visibility and Visual Prominence**

The previous section of this report discussed the visibility of the project in detail. This section will examine the degree of visual impact of the proposed project within those views based upon the relative sensitivity of the views and the relative prominence of the proposed project within those views. As noted above, the overall visibility of the project within the region is limited due to terrain and the predominance of forest cover. This is not a region with abundant agricultural meadows that permit frequent long-distance views. The following analysis examines the visibility and prominence of the proposed Deerfield Wind Project at varying distances. It is important to note that the discussion will focus primarily on the turbines themselves as there would be minimal visibility of associated infrastructure. In all cases the turbines will be seen emerging from surrounding forest cover.

The emphasis in this report has been on the visibility and relative prominence of the proposed wind turbines. Two meteorological towers will also be located on the project ridgelines (one on each ridge). Two "met" towers already exist on the ridges and have been there for several years for wind monitoring purposes. These will be replaced with slightly taller towers which will be approximately at the same height as the nacelle of the proposed wind turbines. The lattice construction and gray colored metal would make them difficult to see. Within a mile of the project it may be possible to observe some details of the tower such as its lattice construction on a clear day. Beyond this distance, they will appear as a faint vertical line on the horizon. Beyond five miles they are likely to be invisible without binoculars. In general, these towers will have a very minimal visual impact.

## **C. Prominence Of The Project Seen At Varying Distances**

- **Up to ½ mile away**

Most of the terrain within this distance is part of the Eastern and Western Project ridges, and is within the GMNF. There are two important viewing areas within this zone. From Route 8 there is little doubt that wind turbines would dominate the views near and north of the cemetery. The proposed Eastern turbines would be seen continuing down the ridge behind the existing turbines as one looks south from the few clearings along Route 8. The view presently is quite dramatic. The additional turbines would intensify the drama of this view but limited number of turbines visible and the repetition of similar forms should prevent any sense of visual clutter.

This is the only area from which project elements other than the turbines themselves could be visible. The tops of the new power poles along Eastern ridge access road may be visible during the winter months. The new collector line extending across Route 8 would be slightly noticeable but poles and the clearing would be screened from view except for a brief glimpse at the crossing. This extended collector line would be located south of the Crozier Cemetery and screened from the cemetery by existing trees. If the southern access road to the Western ridge is constructed, there would be some significant changes in the vicinity of Sleepy Hollow Road and the Crozier Cemetery which would be directly across. The substantial grading would result in the loss of numerous trees in this currently wooded hillside. The northern access route to the Western ridge, by contrast, would have minimal visual impacts. This route follows the approximate route of an existing road, and though it would require slight widening, the visual effects would be minimal. The primary impacts for this route would be to a neighboring property owner, but tree planting to screen the road would adequately address these concerns. The placement of the substation and Operations and Maintenance Building off Putnam Road would also substantially reduce visual impacts from Route 8.

Other than the Crozier Cemetery, there are no other scenic elements along the northern portion of Route 8 that would be impacted. From the Cemetery, the existing turbines are visible and the new Eastern turbines would also be visible. Route 8 south of the cemetery is also quite scenic in character and this stretch would remain undisturbed. The Project would not be visible along this stretch of road until Heartwellville (see below). Two residences are located just at the ½-mile distance zone.

The other sensitive viewpoint within a half-mile of the Project will be the GMNF areas surrounding the Project ridges. There are no trails within this viewing zone. These foreground areas extend along the flanks of the two ridges. Visibility of the Project would be minimal due to the angle of view, though clearly some areas along the tops of the ridges would be developed.

- **Up to 1 mile away**

This radius would include a larger portion of Route 8, and portions of Route 9. Views of the Project in general, are likely to be limited due to topography and forest cover, but when the turbines are seen, they would be prominent in the view. The views along the northern portions of Route 8 were described above. As Route 8 continues south from the intersection of Sleepy Hollow Road the views of the Project disappear as one enters a narrow ravine. From Route 9 there are limited views within this distance range, though the Western turbines would be seen while heading east on Route 9 in the vicinity of Bishop Road. GIS data indicates the potential for about 35 residences within this area. Most of these homes appear to be out of the viewshed except for a few along the northern portions of Route 8 from which the existing turbines are quite visible. Please see attached Simulation #4.

Portions of the Lamb Brook trails are within this distance zone. The Project would only be visible during the winter months from this area, and primarily from sections of the Old Stage Road and “Dome” trail. As discussed earlier, the views would be through numerous trees but the ridge is visible during seasons when leaves are off the trees. Based upon extensive field visits within this forest, much of which is in close proximity to the existing Searsburg wind turbines, they do not in any sense dominate the experience within this vast forest area. The proposed turbines, though larger, would not appear much larger from this distance. The scenic resource is the forest itself, and at certain times the quietness of the area (when snowmobiles are not present). Both of these qualities can continue to be enjoyed even with the presence of the turbines.

- **Up to 3 miles away**

There are four significant viewpoints within this distance zone. Heartwellville, Route 9, the eastern half of the Aiken Wilderness, and the eastern and southern portions of Lamb Brook which include some of the higher elevation areas. There are a number of homes within this zone, but field inventory work found few with obvious views toward the Project ridges. Woodford State Park and Red Mill campground (GMNF) are within this area but there would be no views toward the proposed project from either recreation area. No local or forest roads within this zone had views toward the proposed project ridges.

Travelers along Route 100/8 in the vicinity of Heartwellville as well as those living in this hamlet would see the turbines at relatively close range. There appears to be about 3-4 homes with direct views of the Project ridgeline. About half of the Eastern Project turbines would be visible. Though seen directly ahead heading north on this section of Route 100/8, the Eastern ridge is not presently a notable focal point. It is one of several rounded hills in the vicinity including Dutch Hill, and various other hills around the Project ridge. The size of the turbines would not overwhelm the size of the ridge, nor would they degrade the scenic quality of the surrounding landscape, or features such as the historic Coach Inn and Methodist Church. Please see attached Simulation #2.

From some portions of the Aiken Wilderness, the Project would be visible through trees during winter, especially east facing slopes. As noted earlier, the Project would be difficult to see from the summits of the numerous hills in Aiken due to the density of trees. It would also not be seen from the numerous frozen waterways and wetlands in Aiken due to their relatively low elevation. These are the more common routes for skiers through the wilderness. Views of the turbines would be difficult to see and would not dominate views or alter the experience of this vastly complex and varied forest landscape. As in Lamb Brook, this is a landscape that is enjoyed through the intimate experience of being in the forest, and the Project would not interfere with that.

The eastern turbines would be seen from some of the higher elevation areas of Lamb Brook such as the “freezing knoll ledges” and the summit of the “Dome” from this distance zone. At these elevations, the existing turbines can be seen. The views are limited and like much of the forest, it is the nearby forest landscape and not the distant ridge views that are important. In all cases the turbines would be seen through foreground trees, which would significantly diminish their presence.

- **Up to 5 miles away**

Impacts diminish further at this distance since the turbines not only begin to appear smaller, they also tend to be seen as part of a much broader landscape that diminishes their overall prominence. Sensitive viewing areas at this distance include Harriman Reservoir, Wilmington Village, Boyd Hill and Ray Hill Roads, portions of Route 9 and 100/8, and the western portions of the Aiken Wilderness.

Visibility of the proposed turbines from Harriman reservoir would be limited. They would be seen primarily in proximity to the existing turbines from a few places along the eastern edges of the reservoir. There would be views from all three of the recreation areas primarily of the eastern turbines. The western turbines would only be seen from the very northern end of the reservoir, and a small portion south of Ward’s Beach. The complex foreground terrain west of the reservoir would soften and minimize views of the proposed turbines as they do of the existing turbines. The proposed turbines would not dominate views and would be barely noticeable along most of the reservoir. Please see attached Simulation #7.

Views from Wilmington village and its gateways would be negligible. The predominance of buildings, trees and power lines make it difficult to see into the distance. Wilmington is a classic densely organized village and is attractive enough to be a strong and compelling focal point.

There are homes along the various west-facing hills near Wilmington that offer the potential for views to the Project site from residences. All of these views would include the existing turbines, and most likely numerous other undeveloped hills and ridgelines. Thus the Project would occupy only a small part of views and would not be a focal point in most views. Boyd Hill Road serves as a typical example. The road rises out of Wilmington village, but it is only near the top where the open

meadows of the Boyd Farm permit views to the Project site. This view encompasses, like so many in the area, numerous hills and mountains, so the Project appears much smaller in scale and importance in the scene. Driving along Boyd Hill Road, the view is ever changing, and the distant views disappear quickly as one enters more forested areas.

As noted above, there are no views along Route 9 in Wilmington village. However, leaving Wilmington, small portions of both the Eastern and Western Project Areas would be visible intermittently. The Project would not be a focal point. It would disappear from view west of the reservoir. Some of the more dramatic views of the Project would occur heading east from Woodford State Park. The Western Project Area would be visible intermittently and in some cases directly ahead of the driver. Only a few of the turbines would be visible in most viewpoints. This is not a highly scenic stretch of roadway and the western ridge is not presently a focal point in views. Haystack Mountain is seen to the north traveling thorough the wetlands near Red Mill Pond.

Views from the eastern portions of the Aiken Wilderness were described in the previous section. They are infrequent, always occurring through trees and only during the winter months. Generally, any views also include the existing turbines. These attributes and the distances from which the turbines would be seen would make their impacts extremely negligible.

Finally, at five miles away, one could see the turbines intermittently heading north on Route 100 between Stamford and Heartwellville. Although in some locations the Eastern Project turbines would be seen directly ahead, the distance, intermittency of views, and the complexity of foreground and middleground terrain would minimize any visual impacts. Dutch Hill seen at closer range in these views is a prominent landform.

- **Up to 7 miles away**

There are relatively few areas of visibility within this zone, and the Project would appear relatively small from this distance. Viewing areas include the Town Hill Road/Sadawga Pond area of Whitingham, White and Stowe Hill Roads in Wilmington, the summit of Mt. Snow, the Long/Appalachian Trail extending roughly from Glastonbury Mountain (the fire tower is just beyond this zone) south to the vicinity of Stamford Meadows, and Route 100/8 north of Stamford village.

Town Hill Road in Whitingham offers very scenic views toward the west, southwest and northwest. The existing Searsburg Facility, and the proposed Project, especially the Eastern Project Area would be visible as one descends Town Hill Road toward Route 100. Trees begin to block views further south and the Project ridge is difficult to see from roads in the immediate vicinity, though there may be a number of houses that look toward the ridgeline. In all views, the terrain is complex so that the Project would be seen along with many other undeveloped hills and mountains. Haystack Mountain is visible as a focal point from several vantage points in the area. As noted

in the previous section, views from Whitingham Park are limited, especially in summer which is the time of most frequent use. From Sadawga Pond the eastern turbines would be visible but not at all prominent.

There is little visibility due to topographic interference within Wilmington with the exception of White and Stowe Hill Roads. The view from White Road provides an excellent illustration of why the impacts of this Project in this region are relatively minimal. This is one of the few areas of foreground meadows in the area, but the extensive view is panoramic with numerous hills and mountains, so that the Project is seen as a very small part of a much larger undeveloped landscape. It is also nearly always seen from eastern areas with the existing turbines as part of the view. Because the western ridge is behind the existing turbines, and because the eastern ridge has a slight curve to it, the overall area that the Project would occupy in the view is also relatively small. This view also illustrates how Haystack Mountain's distinct shape forms a strong focal point in views. The Project site is at some distance from Haystack Mountain and doesn't interfere with views of this prominent mountain. Please see embedded photos #7 and #8, and attached Viewpoint Photo, VP #3.

Views from the summit of Mount Snow are also panoramic, but with abundant foreground development including lifts, buildings and signs. The existing wind turbines appear tiny from this vantage point and part of a much bigger panorama. The proposed project would not substantially enlarge the area it occupies, or make it any more of a focal point. The existing turbines do not degrade this landscape, nor would the new turbines.

The proposed project would similarly have little effect on views from the very limited views along the Long/Appalachian Trail south of Glastonbury Mountain. Although the foreground is more pristine, the existing turbines are visible and the slightly more extensive development would have little additional impact. This is especially true since the repetition of form and color would reduce any visual clutter.

Along Route 100 north of Stamford village, the Eastern Project Area may be glanced intermittently, but foreground and middleground views will include numerous undeveloped ridges, most notably Dutch Hill, a prominent foreground hill from this vantage point.

- **Up to 10 miles away**

Beyond 7 miles away the Project would become more and more difficult to see and less and less significant in views. It would be glimpsed descending into the Wilmington valley heading west on Route 9 by Molly Stark State Park, from the fire tower on Glastonbury Mountain, and glimpsed from Stamford village. It would not be obtrusive from any of these locations because it would be seen for relatively short duration and as a very small part of the greater landscape.

## **D. Perceived Scale of the Project**

Scale is always perceived in relation to its surroundings, and several factors influence, and in this case reduce, the perceived scale of the Project:

- In nearly all views of the Project, the developed hills are seen as part of a large complex of many other undeveloped hills and mountains, some of which are more visually prominent, so that the developed area appears relatively small.
- From most distances, the size of the proposed turbines would appear similar to the existing turbines and none would overwhelm the overall size of the ridge on which they are located.
- Since the Project would be located on two separate ridges and due to intervening topography, there are very few places where the entire Project would be visible at one time. In most cases, only a few of the turbines would be visible at any one time.
- The two ridges are closely associated visually and one is already partially developed so the Project would appear as an integrated cluster.
- The Project would not contribute to visual clutter since only the turbines and not the surrounding clearings, transmission wires or substations would be visible, and the repetition of similar forms and colors of the two projects would create a visually harmonious project.
- There are few areas where the Project is seen for any extended periods of time (duration of view) while driving, hiking, biking, or boating within the region. The only partially sustained view would be heading east along route 9. Even here, the views are intermittent, and only some of the western turbines are visible at any one time.

## **E. Impacts Of The Project On Open Space**

Trees would be cleared as part of the proposed project, but the cleared areas would not be visible off site. Clearing has been minimized by sharing the existing access road to the Eastern Project turbines. Up to 80 acres would be occupied along the two ridges as part of construction of the Project. Some areas would be allowed to revegetate after construction. Although the clearing would not be visible off site, two concerns might be raised in relation to the Project's impact on open space.

First, the proposed turbines would occupy a ridgeline location, which may be considered to have value as high elevation open land. Ridgeline locations have been considered sensitive for two reasons: 1) they are noticeable because they are the place where earth meets sky; and 2) the uniformity of forest cover creates a sense of order and repetition in

the landscape. Development has historically been associated with valleys, rivers and flatter terrain and this pattern reinforces the sense of order in the Vermont landscape. However, part of this order has to do with development being located where it is best suited to the resources that support it. For wind energy projects, the resource is on the ridgelines so that there is logic to their placement in these locations. By contrast, a house located on a ridgeline seems disconnected and out of place. The cold winds on a ridgeline do not provide a benevolent location for humans to live in. But they are necessary for wind energy, and the movement of the blades visually reinforces their function. The turbines would be seen emerging from apparently unbroken forest cover, minimizing the visual appearance of reduced open space.

A second concern may be the Project's proposed location on Green Mountain National Forest land. This is not a boundary that is visually evident off site. Instead, the Project would appear to be a logical extension of the existing wind facility along the same ridgeline. These two horizontal ridgelines are not focal points; they are unnamed and are not recreational destinations. They appear from many vantage points visually related to each other so that the turbines would appear as a small cluster in a much larger landscape. The use of these two sections of ridges is relatively minimal and the location of the turbines on the ridge would not diminish the experience of the significant amount of surrounding GMNF and State lands.

## **F. Impacts Of Lighting On The Visual Character Of The Region**

Given the presence of the existing Searsburg Wind Power Facility in this region, the greatest change in the landscape would come at night. Under the FAA's current review process, some turbines will require red, pulsing lights at night (likely 8-10 turbines). Due to the nature of the terrain, there would be relatively few locations where all the lights would be seen at once. These locations tend to be further away such as Boyd Hill Road, White and Stowe Hill Roads, Ray Hill Road in Wilmington, all of which are about 4.5 to 6.6 miles away; and Town Hill Road in Whitingham which would be 6 to 9 miles away. There would be relatively few homes with direct views of the Project, and most of these would be in the areas just mentioned. The lights would also be visible from both the Haystack Country Club and the White House Inn (though not all the turbines would be visible), but to no other businesses in the area. The lights may be visible up to 10 miles away in very clear conditions; however, they become very tiny and less and less noticeable with distance.

The lights would be most noticeable when the Project is located directly ahead of travelers. This would occur between Woodford State Park and Red Mill Pond on Route 9 where the northern portion of the Western Project Area would be seen directly ahead and at relatively close range (about .8 to 3 miles away). In most locations about 5-8 lighted turbines in the Western string would be potentially visible. This would also be true heading south along portions of Route 8, but for a shorter distance and more intermittently, and along Route 100/8 near Heartwellville, and intermittently north of Stamford. As explained in the previous section, sight viewing angles below horizontal

result in significantly less light intensity. Light intensity also diminishes as distance increases.

The lights would not be visible from any designated camping areas. As noted earlier, neither the turbines, nor the lights would be noticeable during the summer months in the Aiken wilderness, from adjacent camping areas, or the Lamb Brook area. During the winter months, lighting could be seen from portions of Aiken wilderness, from the campsites along Forest Road 74, and from the Lamb Brook area. Winter camping is likely to occur on flatter terrain, and as noted the density of trees greatly reduces visibility of the Project in flatter terrain.

The experience of the night landscape is very different than during the day since the normal landforms that provide a sense of scale and orientation are missing from view except during bright moonlight. The usual landmarks aren't visible so that lights are experienced in a more isolated context. Nevertheless, it is the night lighting of the Project, which would result in the greatest change in this rural landscape where there are relatively few lights during the nighttime hours. Because the lighting would be out of context with the surroundings, the visual impacts of this aspect of the Project would be adverse.

## **G. Cumulative Impacts and Visual Clutter**

Numerous objects of different form, scale and color can be visually distracting and result in visual clutter. This would not be the case with the proposed project. The proposed wind turbines will be the same in form and color to the existing turbines. Any differences in blade color (white vs. black) and length, and the taller turbine tower would not appear to be significant from the distances at which the turbines are most likely to be publicly viewed. Two meteorological towers would be the only other visible structures on the ridge, and their slim gray profile would not be visually prominent or distracting. They will be barely visible beyond one mile of the project, and invisible beyond 5 miles. Since no other site infrastructure would be visible off site, the off-white turbine towers will be seen emerging from uniform forest cover along two horizontal ridgelines. From many vantage points (e.g. Ray Hill and White roads in Wilmington) the two ridges appear to be a single horizontal ridgeline, and the turbines would appear to be a cluster of repeated soft-white forms. This repetition of forms unifies the project, retains simplicity and does not create a sense of visual clutter. Also important is that in nearly all views except for immediate foreground views, there is abundant open space remaining, with the project occupying only a small part of most views. The scale of the project remains small within the broad context of the surrounding rural and forest landscapes, so that the vast forested landscape in this region remains the dominant visual element.

## **H. Conclusions: How will the design of this Project fit within its surrounding context?**

This landscape may be one of the best suited to a wind energy project in Vermont. The overall characteristics of this landscape – its topography, numerous ridges, and abundant surrounding forestlands, greatly reduce potential aesthetic impacts of a wind energy project in this location. The existing wind turbines provide a good illustration of the relative fit of these elements in this context. The discussion in this report has focused on the few areas from which the Project would be seen, but there are a multitude of areas from which it would not be seen. Although the Project should fit reasonably well in this landscape, there are two changes that would make the Project's impacts adverse. The first is the lighting required for the Project which would alter the experience of the nighttime landscape. The second is the Project's proposed location within the GMNF. Although the Project would occupy only a small portion of the National Forest, it would nevertheless have some impact on public open space. Consequently, under the narrow test of fit in the first prong of the Quechee Analysis, the proposed Project would result in adverse visual impacts.

## **VI. Assessment of Visual Impacts: Second Prong of the Quechee Analysis**

If a project's impacts are determined to be adverse, the second part of the Quechee test is applied. This step measures the degree of visual impact based upon the following three criteria. Each question needs to be answered in the negative in order to determine that a project will not have an undue adverse effect.

### **A. Does the Project violate a clear written community standard intended to preserve the aesthetics, or scenic, natural beauty of the area?**

Community standards are generally contained in documents that have been officially adopted by a town, region, or the State. Town and regional planning documents commonly provide guidance for land use issues. A clear written community standard must define a specific resource or area and provide clear guidance that a developer can follow in making appropriate decisions with respect to design or other aspects of a proposed project. Standards that apply generally to the community at large rather than to specific scenic resources do not rise to the level of a clear community standard under the Quechee analysis.

The Project would be located in the Towns of Searsburg and Readsboro both of which are within the Windham Region. The Town of Searsburg has no Town Plan or Zoning ordinance. The recently updated Readsboro Town Plan and the Windham Regional Plan have provisions that generally address issues of aesthetics. However, neither plan contains clear written community standards specifically designed to

protect the scenic or natural beauty of a specific area that would directly apply to this Project.

### **READSBORO TOWN PLAN**

The Readsboro Town Plan contains four different sections that generally address issues of aesthetics within the Town. The Plan reflects a thoughtful approach by the Town to articulate broad principles related to scenic resources. As discussed below, however, these provisions do not rise to the level of “clear written community standards,” as defined through Act 250 cases, that would specifically apply to the Project area.

1. Scenic Roads (p. 28).

The Scenic Roads section is not applicable to the Project area. According to the Town Plan: “No public highways in Readsboro have been designated as scenic under Vermont’s 1977 Scenic Highway Law. However, an informal inventory undertaken by the Planning Commission has identified three specific highway locations with particularly significant vistas.”

The Project is not adjacent to, and will not be visible from any of the three locations identified in the informal road inventory.

2. Special Natural Areas (p.37).

The Special Natural Areas section of the Town Plan identifies five special natural areas, including the Howe Pond Area, the Freezing Hole, the Balanced Rock area, the Glacial Rock area, and the Lamb Brook area in the GMNF.

The proposed Project would be located along a ridgeline on the border of an area identified as a “special natural area” in the Readsboro Town Plan (Lamb Brook). The Project however is proposed on National Forest lands, which are governed by the Green Mountain National Forest Plan. The Readsboro Town Plan describes the Lamb Brook area as “a special natural area that is host to a variety of wildlife – moose, bear, deer, and migratory birds and should be protected from development and preserved in their natural state.” There is no discussion or mention in the Plan of this area’s scenic or natural beauty. The Plan provides two Policies relevant to the scenic qualities of special natural areas. It states:

1. *Mountaintops and ridges should not be used or developed in any manner that will cause*

*undue adverse impact to their natural and scenic beauty.*

2. *Support the protection of the identified special natural areas through conservation easements or other means of permanent protection.*

To the extent that these policies are relevant to the Project, they simply provide general guidance. The first standard repeats the general standard under Act 250 criterion 8, which is addressed by this report, that development should not cause “undue adverse impacts,” but offers no additional guidance or standards that a developer can follow in making appropriate decisions with respect to project design and siting. It also does not appear to directly apply to the Lamb Brook area, as the Plan focuses on that area’s wildlife rather than its scenic values. The second policy simply encourages the development of conservation easements or other means of permanent protection in the future. These provisions do not rise to the level of a clear, written community standard under criterion 8.

### 3. Scenic Resources (p. 43-44)

The Scenic Resources section of the Town Plan identifies several special scenic areas, including:

*the Village Center, the West Branch of the Deerfield River, King Hill Road with King’s Farm and the vistas of the Harriman Reservoir, the Lord’s Peak Overlook located in the South Hill area with views of the Village, the rock ledge area in the Lion’s Park which overlooks the Village and has views of the Deerfield River Valley, the view of Harriman Reservoir from the former Boyd Farm on Potter Hill Road, and a scenic open plateau on West Hill near the corner of West Hill Drive and Wiley Mountain Drive with views south to Massachusetts and east to New Hampshire.*

The Project is not located in, and will not be visible from any of the areas identified as scenic resources.

### 4. Wind Energy (p.46-48).

The Wind Energy section of the Town Plan identifies “important issues to consider” during review of a wind farm, including economic, aesthetic, environmental and safety issues. The provision does not, however, prohibit wind farm development, and it does not

purport to protect the aesthetic or scenic beauty of any particular area. Nor does it reach any conclusions as to whether the aesthetic impact of wind turbines would be adverse or undue.

### **WINDHAM REGIONAL PLAN (October 24, 2006)**

The Windham Regional Plan also does not contain any clear written community standards that are specifically directed towards preserving the scenic or natural beauty of particular areas affected by the Project. Like many regional plans, the Windham Regional Plan does provide a number of general scenic resource policies, but the plan does not identify any specific scenic resources for protection or preservation. Although not clear, written community standards applicable to the Project, several sections of the Plan deserve additional discussion.

#### 1. Resource Lands (p. 26).

The Windham Regional Plan identifies certain locations, including lands over 2,500 in elevation as “Resource Lands” The Plan generally encourages preservation and protection of Resource Lands, but does not prohibit development in these areas. The Plan encourages development and land use in this area to be designed to have minimal impact on the natural resources in the area.

The Project has been designed to reduce and minimize impacts to surrounding natural resources. The Project’s foot print is limited in size, builds off of existing infrastructure, and will not conflict with significant focal points or particularly scenic views in the area.

Land use policies relevant to Rural Lands (including Resource Lands) in the Windham Regional Plan include the following:

- Avoid extension of roads, energy transmission or distribution facilities, or other utility services into or through Resource Lands. (Land Use Policy #16. p. 36)
- Construct corridors for new energy transmission or distribution facilities only when needed, and then only within or adjacent to existing operational energy transmission facility corridors to the maximum extent possible. Minimize their visual impact on ridgelines, slopes and open areas, and avoid important natural and historic resources.(Land Use Policy #17, p.36).

To the extent that these policies apply to the Project under a section 248 review, the Project is consistent with both policies. The project is extremely well sited to reduce both the construction of new roads and new transmission and distribution facilities. The Eastern Project Area utilized an existing access road so that only a relatively short extension of roadways along the remainder of the ridge is required. The Western Project Area utilizes existing local and logging roads for most of the access requirements to the project. The project is located in very

close proximity to an existing 69kV transmission line so that there will be no new transmission line required. The only new collector system will occur between the bottom of the existing Searsburg access road and the Western Project ridge. Collector lines along both ridges will be buried adjacent to roadways.

## 2. Wind Energy and General Energy Policies (p. 43 & 47)

The Windham Regional Plan contains an extensive discussion of energy issues, including the development of wind energy resources in the area. The Plan notes that wind power is a clean, renewable source of power, but acknowledges that wind power projects can be controversial because of perceived aesthetic impacts, among other things. See Plan at Page 43. This discussion of wind energy does not contain any specific recommendations or guidance on development of wind projects in the area.

The Plan also contains several generic energy policies, including, among others the following:

- With regard to new or improved energy transmission or distribution facilities:
  - a. Prefer and select existing transmission and distribution corridors over creation of new corridors;
  - b. Avoid extension of energy transmission or distribution facilities into or through Resource Lands; and
  - c. Avoid extension or alteration of energy transmission or distribution facilities in any manner that would significantly impact Resource Lands or significantly diminish important natural resource values (Energy Policy #5, p. 47).
  
- Avoid extension of energy transmission or distribution facilities, or other utility services into or through Resource Lands, or near them in a manner that significantly reduces their resource value (Energy Policy #6, p. 47).

To the extent that these policies are relevant to the Project under a section 248 review, the Project is consistent with both policies. The Project avoids creation of new transmission corridors to the extent possible by co-locating the facility with an existing project and existing transmission and distributions corridors. The visual impact of the Project has been minimized to the extent possible, and the limited extension of collector and transmission lines will not significantly impact Resources Lands or significantly diminish important natural resource values . Aesthetically the extension of the collector lines would have very minimal impacts. Within resource areas, the lines would be undergrounded and occupy a relatively small area of land. They would not be visible off-site. The collector poles along the existing access road to the Eastern Project Area would be slightly taller than the existing poles. The new corridor connecting the Eastern and Western Project Areas would be generally well screened from view and additional plantings will reduce visibility at the road crossing. Transmission and collector

lines in the Western Project Area would not be visible from any public viewing areas and are unlikely to be visible from any private residences.

### 3. Natural Resources and Scenic Resources (p. 67)

As is the case with most regional plans, the Windham Regional Plan contains sections which generally discuss the natural and scenic resources of the region, and provides examples of potential protection measures that the region's town may use to preserve particularly scenic areas. These general measures include, among other things,

- purchase of scenic lands;
- scenic easements, or acquisition of development rights;
- review of the scenic impact of public investment activities;
- designation of scenic roads;
- public education; and
- regulation through zoning and subdivision regulations and the Act 250 development review process.

These general measures are not specifically applicable to the Project. As noted above, the Town of Readsboro has taken advantage of some of these preservation techniques, including, for example, the designation of particularly scenic resources, and an informal survey of scenic roads. The Project will not be visible from these locations.

In addition to these general provisions, the Plan also includes several Natural Resource Policies relevant to scenic resources, including the following:

- Improve sites that diminish a scenic view, particularly along state and federal highways and within scenic corridors. (Scenic Resource Policy #1, p. 73).
- Encourage scenic easements and implement appraisal practices that encourage donation of scenic easements to public and private natural resource/conservation agencies and organizations. (Scenic Resource Policy #2, p. 73).
- The scale, siting, design, and management of new development shall maintain or enhance the landscape and shall protect high quality scenic landscapes and scenic corridors. (Scenic Resource Policy #3, p. 73).
- Minimize visual impacts of communication towers and other high-elevation or ridgeline structures through co-location, design, siting, and color choice. Design and site communication and other high-elevation towers so that they do not require nighttime illumination. (Scenic Resource Policy #4, p. 73).

- Illuminate structures and exterior areas only at levels necessary to ensure safety and security of persons and property. (Scenic Resource Policy #5, p. 73).
- Arrange all exterior lighting so that the light source (lamp) is not directly visible from public roads, adjacent residences or distant vantage points. Shield exterior lighting so that the light does not project above the lamp. (Scenic Resource Policy #5, p. 73).
- Discourage exterior area illumination of regionally prominent physical features and landscapes. Ensure that any such illumination will not significantly reduce the natural appearance of the nighttime landscape, will not be obtrusive in the viewshed, and will not distract unduly from the nighttime horizon or night sky. (Scenic Resource Policy #5, p. 73).
- Plan new or improved roads to maintain or enhance scenic resources. (Scenic Resource Policy #5, p. 73).
- Screen new development from I-91 and other scenic roads to the greatest extent practicable using vernacular perimeter plantings of hedges, hedgerows, and street trees.

Many of these policies contain generic statements not specifically applicable to the Project. To the extent that some of the policies may be relevant to the Project under a section 248 review, the Project complies with each policy.

As noted above, the Project has been sited and designed so as to avoid high quality scenic areas identified in relevant town plans. The aesthetic impacts of the Project have been minimized by co-locating the facility with existing infrastructure. The project will use existing roads to the extent possible, and has proposed new road locations so that they are not visible from important scenic resources.

The Project has also been designed to minimize the visual impact of night lighting to the extent practicable. The developer intends to work with the FAA to developing light plans which will minimize the number of lights required for the proposed turbines to the extent possible, while at the same time ensuring the safety and security of persons and property. The lights which will be used on the turbines are navigational beacons designed to help pilots identify aviation hazards. These beacons will not substantially contribute to sky glow. Unlike major light sources which contribute to sky-glow, the navigation lights are not intended to illuminate areas of the surrounding landscape. The turbine lights will not significantly reduce the natural appearance of the landscape, will not be obtrusive in the viewshed, and will not distract unduly from the nighttime horizon or night sky.

#### 4. Sky Glow (p. 67)

In addition to the general scenic resource discussion, The Windham Regional Plan also acknowledges and discusses the problem of “sky-glow.” The Plan explains sky-glow as a “cumulative and increasing problem, especially near the urban clusters along the region’s eastern border, and near major resort development centers” and notes that “as these urbanized areas continue to expand, special consideration needs to be given to lighting design in order to minimize this cumulative adverse effect.”

As noted above, the Project has been designed to reduce and minimize any nighttime light effects, in a manner which seeks to balance potential aesthetic concerns with equally important safety concerns. Moreover, the red pulsing lights recommended by the FAA for wind turbines would not contribute to sky-glow. Thus, to the extent they are relevant, the Project complies with provisions in the Regional Plan related to sky-glow. In addition, the Project will not be located in or near the urban clusters and major resort development centers which are identified in the Plan as being especially problematic locations.

### **B. Would the Project offend the sensibilities of the average person?**

The Project would not be offensive to the average person. The discussion above under adverse impacts describes why the Project fits reasonably well into this landscape. The two issues identified which would result in adverse impacts, night lighting, and the Project’s location within the GMNF would not be offensive to the average person.

Night lighting, as noted, would be the most dramatic change in this landscape. However, the visibility of the lights is limited, particularly during the summer months when people spend more time outdoors in the evening. The lights would be small, of low intensity, and oriented upwards, not outwards or downwards. The locations from which all the lights would be visible tend to be at some distance (over 4 miles away) so that the lights would appear to be a much smaller part of the overall landscape. Few residences in close proximity to the Project are oriented toward the Project ridgelines. The lights are not visible from any of the camping areas in the vicinity, nor from any camping area along the Long/Appalachian trail.

The location within the GMNF would not result in an undue adverse effect because of the visually logical extension of the Project along the ridge. The average person would not be able to see the boundary between private property and GMNF land from any vantage points. These two horizontal ridges are relatively indistinct, have no particular recreational or scenic values, and are located in an area where overall visual impacts would be minimal. The forest landscape would appear to continue around the turbines and along the ridge. The Project would not destroy the essential

recreational or aesthetic values of these two ridges, or the experience of the surrounding GMNF landscape.

**C. Has the applicant failed to take generally available mitigating steps to improve the harmony of the proposed project with its surroundings?**

Appropriate siting rather than the design of the wind facility itself is most significant in reducing visual impacts. As discussed throughout, this Project has been sited in an area where, due to topography, forest cover, and land use patterns, the visual prominence is minimized. In the design of the actual facility, options are much more limited. Several design features are discussed below:

- a. Wind Turbine design: wind turbines are considered by many to be quite beautiful possibly because they are designed to respond precisely to the qualities of a natural element. The only options in their design relate to color and size. Experiments have been tried with two bladed and horizontal rotation wind turbines but none have proved to be more efficient than the three bladed types similar to the existing Searsburg turbines. From a visual point of view, turbines which are similar in form to the existing turbines are preferable in order to provide consistency and avoid visual clutter. Some have argued for the use of a gray color similar to that required by cell towers to reduce contrast between the wind turbines and the sky. However, gray is a much more industrial color, in contrast the white which is a cleaner and more “cheerful” color. It may be, in part, the white color that makes wind turbines more visually appealing than cell towers. In addition the white color is recommended by FAA for both day and nighttime visibility. No bright colors or logos would be used on the turbines.
- b. Site Clearing and Roads: All site clearing and road widths would be kept at a minimum. Neither the widened access road nor the new ridgeline road along the Eastern Project Area would be visible off site. The southern access route to the Western Ridge would have impacts along Route 8, but if the northern access route can be used, it would substantially reduce the impacts of the proposed Project. In addition to utilizing an existing road, the Operations and Maintenance Building and the substation would be completely removed from view from Route 8, Sleepy Hollow Road and the Crozier Cemetery. The road would follow an old trail and quickly disappear from view as it heads up the western ridge, and would be well screened for its entire length except for the junction with Route 8. Screening of the road from a nearby residence would be provided. Putnam Road now dead-ends after less than a half mile. The road widening would affect one other landowner along this road who could have visibility of the entrance to the access road. Traffic on this road, other than during construction, would be minimal.

- c. Power Lines and clearing: All power lines along the ridge would be underground. Other power poles and lines would be screened from view by vegetation in most instances. The tops of a few poles along the Eastern Project Area access road can now be seen during the winter months, and the tops of the new poles could also be seen though they would be seen with the backdrop of the ridge, which would make them far less noticeable. The collector line crossing Route 8 would be designed with care to take advantage of existing vegetation to hide new poles from view, and to minimize visibility of the clearing continuing up the Western ridge. Poles would be set back from the road. The transmission line clearing would angle down the south face of the Western slope so that it could not be seen from Route 8 except very briefly while driving by. Vegetation in this area is dense with a substantial evergreen component. Power lines would be screened from view from the Cemetery. Additional evergreen plantings would be used to further supplement existing vegetation if needed. Clearing for this line would require a 20-30-foot wide cleared area.
- d. Substation: one of two substation locations would be used, both of which would be well screened. One option is to use the existing substation which is now well screened from Route 8, though it is possible to pick out the taller structures during mid-winter conditions. The second option is a site near the existing 69kV transmission line on the western ridge. This site would be completely screened from view.
- e. Operations and Maintenance Building and Lay-down Area: There are two possible locations for this facility, both of which can be designed with minimal impacts. One location would be near the existing Green Mountain Power maintenance building. The new building would be similarly screened from view and located in an area that is already developed. The second possible location would be removed from all public view and would utilize an existing open area off Putnam Road for the building and lay-down area.
- f. Public Information: It is not unusual to see people stopping along Route 8 to photograph the existing Searsburg Wind Power Facility, and reading the information posted in a small parking area next to Sleepy Hollow Road. A similar area would be planned for the new facility that provides a safe and attractive public information area. This area may be combined with the existing information area or a separate facility provided near Putnam Road and the Western Project Area access.

## **VII. Assessment of Visual Impacts: Conclusions**

This report has examined specific visual characteristics of the site on which the Project would be located, and the qualities of views from many different vantage points. The analysis makes it clear that there would be some areas from which the Project would be in view. However, in looking at the aesthetics as a whole, this assessment concludes that

the proposed Deerfield Wind Project would have adverse but not undue visual impacts on the scenic and natural beauty of the region. There is no doubt that wind turbines are visually prominent structures and that their scale, color, materials, lighting and movement would tend to draw the eye. But there are significant attributes of the design of this particular wind project and its relationship to its particular surroundings that would minimize the Project's impacts and make it acceptable to the public at large. These attributes include the following:

- The Project would be located on two ridges that are not among the more prominent ridges or focal points in the region. They are horizontal in form and visually indistinct.
- The complex topography and abundant forest cover in the region would make the Project difficult to see from many vantage points.
- The complex topography gives the region a generally high “visual absorption capacity.”
- The Project is intermittently visible in the foreground from only one mile of State Road; no other highly sensitive foreground views of the Project would occur.
- The Project is located on two separate ridges so that from most viewpoints, especially those in the foreground or middleground, only a few of the turbines are visible at one time.
- In all highly scenic views the Project occupies only a small portion of the view and would not be a focal point, or interfere with the experience of scenic resources.
- From view locations where both the existing and proposed turbines can be seen, the Project would appear as a logical continuation of the turbines along the same ridgeline; it would also seem compatible with the existing GMP Project in form, scale, and color.
- The Project would be minimally visible from the Aiken Wilderness during the winter months (leaf off periods), and not visible at all from the scenic wetland areas or during the summer.
- The Project would be seen from the Long/Appalachian Trail from only three viewpoints, and at a substantial distance; in all of these, the Project would be seen in the background and as a very small part of the overall view.
- From the Lamb Brook area any views would be seen through numerous tree branches; in the few areas where openings occur, the existing turbines would

be seen as well. The Project would not be visible at all from many areas and would not be a focal point or dominant element in any views.

- There has been public acceptance of the existing turbines, and it has increased after construction as compared with prior to construction. Although further study needs to be done, support for the Deerfield Wind Project seems to be strong as well.