Pre-Filed Direct Testimony of David Raphael on behalf of Champlain Wind, LLC

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CHAMPLAIN WIND, LLC	)	Pre-Filed Direct Testimony of
CARROLL PLT./KOSSUTH TWP.	)	David Raphael on behalf of
PENOBSCOT/WASHINGTON COUNTY	)	Champlain Wind, LLC
#L-25800-24-A-N/#L- 25800-TE-B-N	)	

On behalf of the applicant Champlain Wind, LLC ("Champlain Wind"), David Raphael is submitting this pre-filed direct testimony in support of the Bowers Wind Project.

I. QUALIFICATIONS AND BACKGROUND

My name is David Raphael and I am a Professional Landscape Architect and Planner and owner of LandWorks, as well as a Lecturer in the School of Natural Resources at the University of Vermont. I began my career as a landscape architect and planner working for the State of Massachusetts Department of Environmental Management. Since 1986 I have been the Principal and owner of LandWorks, a multidisciplinary planning, design and communications firm based in Middlebury, Vermont. LandWorks serves both public and private sector clients in Vermont and the Northeast. Our areas of expertise include visual, aesthetic and environmental assessment, site and master planning, graphic communications and GIS mapping, permit planning, participatory and community planning, downtown revitalization, open space and conservation planning, zoning ordinance and design review development, landscape architecture and environmental design. At LandWorks we have worked for communities, appellants, state agencies, and private corporations.

LandWorks has extensive experience with regard to visual impact assessments (VIA's) and the design and installation of utility facilities and structures. We have been a consultant in this capacity for the Vermont Department of Public Service as well as the Maine Department of

Environmental Protection. We have evaluated the aesthetic and environmental impact of transmission lines and corridors (throughout the state of Vermont and New Hampshire); transmission structures (throughout the state of Vermont and the PV20 line removal along the Route 2 causeway in Milton/South Hero, VT); solar farms (four in Vermont that have been approved or are in the review process); biomass facilities; proposed telecommunication facilities and windpower turbines (multiple projects in the states of Vermont, Maine and Massachusetts). I have provided VIA's for a number of utility scale wind power projects including the Sheffield Wind Farm, Kingdom Community Wind, and the Georgia Mountain Community Wind projects in Vermont, which have all received Certificates of Public Good from the Board, as well as the Rollins Wind and Oakfield Wind projects in Maine, which were permitted by the Maine Department of Environmental Protection.

I have served as a member of the Design Issues Study Committee appointed by the Secretary of the Vermont Agency of Natural Resources, an initiative which clarified the application of the Quechee Analysis for aesthetics, and which resulted in the publication of *Vermont's Scenic Landscapes: A Guide for Growth and Protection*. In addition we have prepared zoning ordinances and Management Plans based on scenery preservation and environmental protection guidelines (such as the Town of Stowe Ridgeline and Hillside Overlay District, the Shawangunk Byway Guide to Scenic Protection, and the award winning Lake George Upland Protection Program Manual), prepared scenic highway corridor studies (Interstate 91 in Brattleboro, The Molly Stark Byway Management Plan, Green Mountain Byway Management Plan, and the Route 100B Scenic Byway Management Plan) and authored a study and state policy which was adopted for permit review of the night lighting of ski areas (Agency of Natural Resources).

Additionally, I have been a delegate to the Addison County Regional Planning Commission and continue as chairman of my town's Design Review Board and Planning Commission, a position I have held for over 20 years.

My education, knowledge and experience described above qualify me as an expert and I have presented and served as an expert witness before most of the District Commissions in Vermont and the Environmental Board, as well as the Public Service Board. I have also served as an expert witness in Vermont Superior Court and Environmental Court. My resume is attached as Exhibit 1.

II. INVOLVEMENT WITH THE BOWERS PROJECT

My staff and I were responsible for field evaluation, site photography, and preparation of the visual impact assessment (VIA) for the Bowers Wind Project. The VIA was based on a review of the Bowers Wind Application, including the civil design plans. In addition, the VIA reflects extensive fieldwork conducted on June 5, July 16, and July 17 of 2010, and May 18 and June 27 of 2011. We visited all areas with state or national significance that would have potential views of the Project to observe the Project site and determine its relative visibility. We visited the study area by automobile, motorboat, and on foot in 2010 and again in 2011. Fieldwork was limited to lands that were open to the public; no attempt was made to investigate potential impacts on individual private properties. In addition to the field work, we have conducted research and analysis related to nature and extent of the use of the resource and viewer expectations. This analysis relied on a host of diverse sources, including survey information, interviews with local guides, business owners, and selectboard members, background polling, studies, guide books, publications, online media, anecdotal sources, as well as general field observations, that, coupled with our years of experience in assessing recreational resources, and

in participating personally in recreation in Maine, inform and support our conclusions in the VIA.

I also oversaw the preparation of viewshed analysis and computer-generated models of the Project by members of my staff. A detailed description of the process used to prepare the photosimulations and other computer mapping is included in Section 2.3 of the VIA.

I also was responsible for preparation of the VIA in the prior Bowers project that was considered by the Land Use Regulation Commission, and I am familiar with and have considered the differences in visibility between the two projects. In the course of the prior proceeding I had the benefit of hearing testimony from interested persons, both proponents and opponents to the Project, as well as the deliberations and questions from the Commissioners and third-party reviewer on scenic impacts. My analysis here reflects the information reviewed not only for this project, but the substantial information obtained during the course of the prior proceeding.

My testimony provides a summary of key aspects of the VIA prepared for Bowers Wind project and my opinion on the Project's compliance with the scenic impact standard set forth in the Wind Energy Act. I have not repeated all the details presented in the VIA, which is included as Exhibit 30A to the Application. There are also several studies that are key to my analysis, including in particular the Bowers Wind Project User Surveys conducted by Kleinschmidt in 2012 (the "Bowers User Survey"), the Baskahegan Lake User Surveys prepared by Kleinschmidt in 2012 (the "Baskahegan User Survey"), and the Assessment of the Kleinschmidt Bowers Wind-Farm and Baskahegan Lake Recreational User Surveys prepared by Kevin Boyle and dated October 1, 2012 (the "Boyle Report"). Each of the reports is discussed in the VIA and the Bowers User Survey and the Baskahegan User Survey are exhibits to Kevin Boyle's Pre-Filed

Direct Testimony. I have not provided details on those reports, but have simply summarized the key aspects of those reports that inform my conclusions here.

III. SUMMARY OF KEY FINDINGS

The VIA was prepared in accordance with the scenic impact assessment requirements of the Wind Energy Act (found at 35-A M.R.S.A. § 3452, et seq.). As a result of our work, both in the VIA and as reflected in the supplemental materials provided to the DEP, we have concluded that the proposed Project conforms with the provisions of the Act, is well sited and designed and would not have an unreasonable adverse effect on the scenic values and existing uses related to the scenic character of the area, or on uses of or views from scenic resources of state or national significance.

Within the eight-mile study area, there are no national or state parks; national natural landmarks, federally designated wilderness areas or other comparable outstanding national or cultural features; scenic rivers or streams identified as having state or national significance; scenic viewpoints on state public reserve land, or on a trail that is used exclusively for pedestrian use designated by the Department of Conservation; Maine Department of Transportation scenic turnouts on scenic highways; or scenic viewpoints located in the coastal area. There is one National Historic Register site, Springfield Congregational Church, but the Project is not visible from this location. There are 14 great ponds identified within the Project viewshed having outstanding or significant scenic quality. Of those, only 2 will have potential visibility of the Project within 3 miles. There are 7 other lakes of scenic significance in the study area that have potential visibility of the Project within 3-8 miles. Five additional lakes of state or national significance will have no Project visibility within eight miles due to intervening topography and/or vegetation. A map depicting these nine lakes is attached as Exhibit 2. A summary of

scenic resources of state or national significance and their potential visibility is provided in Table 1 below.

Table 1. Summary of Resources of State or National Significance Within 8 Miles

	Town	Status [Significant (S), Outstanding (O)]	Nearest Visible Turbine	Distance to Nearest Visible Turbine[1]	# of Turbines Potentially Visible within 8 Miles[1] (16 total)
GREAT PONDS					
Within 3 miles of the Project					
Duck Lake[2]	Lakeville	State (S)	T 1	2.7 mi.	0-14
Pleasant Lake[3]	Kossuth Twp & T6 R1 NBPP	State (O)	T 13	2.4 mi.	0-16
Within 3-8 miles of the Project					
Bottle Lake	Lakeville	State (S)	T 1	5.1 mi.	0-10
Horseshoe Lake	Lakeville	State (S)	No Project Visibility within 8 Miles		
Junior Lake	Lakeville & Pukakon Twp	State (S)	T 1	3.2 mi.	0-13
Keg Lake	Lakeville	State (S)	T 1	3.7 mi.	0-12
Lombard Lake	Lakeville	State (O)	No Project Visibility within 8 Miles		
West Musquash Lake	Talmadge & T6 R1 NBPP	State (O)	No Project Visibility within 8 Miles		
Norway Lake	Pukakon Twp	State (S)	No Project Visibility within 8 Miles		
Pug Lake, West Grand Lake	Pukakon Twp	State (O)	T 1	7.7 mi.	0-6
Scraggly Lake	Pukakon Twp & T6 R1 NBPP	State (S)	T 1	4.1 mi.	0-16
Shaw Lake	Pukakon Twp & T6 R1 NBPP	State (S)	T 13	3.5 mi.	0-14
Sysladobsis Lake	Lakeville	State (S)	T 1	6.3 mi.	0-10
Upper Sysladobsis Lake	Lakeville	State (S)	No Project Visibility within 8 Miles		
NATIONAL REGISTER OF HISTORIC PLACES					
	Town		**Project Visibility**		
Springfield Congregational Church	Springfield		None		

[1]Based on visibility from the hub and accounting for topography and 40-foot vegetation.
[2]About 3/4 of the lake is within the 3-mile radius.
[3]About 1/4 of the lake is within the 3-mile radius.

Although the Project area has landscape qualities and recreational resources that are appealing to those who live in and travel to the area, these resources do not have characteristics that are unique only to this region, or possess highly sensitive visual qualities that preclude the addition of an array of wind turbines within their viewshed. The landscape, with its low rolling

hills and nondescript vegetation, does not include distinctive geomorphological characteristics, and is similar to other nearby areas and lake-region landscapes elsewhere in Maine. There is widespread agreement among aesthetic experts that landscapes that are very scenic or outstanding and very sensitive to change usually have intact, prominent distinctions between landforms, such as open water in combination with a steeply rising mountain, or have unique focal points and distinct, memorable characteristics that cannot be found elsewhere. Those types of features are not present here and, as a result, the landscape in the Project area is generally able to accommodate the presence of turbines without fundamentally changing the character of the area or adversely impacting recreational uses of the lake resources.

Aesthetic experts also measure scenic quality by the intactness of the landscape. The Project area is not pristine, and has long been a working landscape that has been used and developed for its timber and water resources. It is a hub of commercial forestry, and millions of surrounding acres are in active forest management. For more than 100 years, recreation and timber harvesting have existed in concert with one another here. These uses are not mutually exclusive pursuits, and the hunters, snowmobilers, wildlife watchers and the users of the study area lakes use the network of land management roads constructed by timber companies. Based on this history of use, the perception of an untouched, unalterable environment is not present here. Furthermore, the Legislature has identified areas suitable for expedited permitting of grid-scale wind energy development to help reduce disagreement over siting. The Bowers Wind Project has been sited in an expedited area that has been determined from a landscape level to be compatible with the existing land use patterns.

Research indicates that the Project lakes are not a hub of visitor and tourism activity. The more frequented locations, such as Grand Lake Stream, are located well outside the 8-mile study

area. Moreover, boat counts and intercept surveys, as well as personal observation and other research, confirm the overall low use of the Project lakes. The principal activities that occur on the lakes include relaxing, fishing and motor boating.

In addition, there is a growing body of evidence that the presence of wind turbines in the viewshed of the types of uses and resources present here will not unreasonably adversely impact either scenic quality or, importantly, the continued use and enjoyment of those resources. This evidence includes intercept surveys conducted in the study area and elsewhere in Maine, the Baskahegan User Survey that documents visibility of turbines on users of Baskahegan Lake has had minimal impact on perceptions of scenic quality or recreational use and enjoyment of a lake that shares important attributes to the Project lakes, studies done in New England and elsewhere on the impact of wind turbines on tourism in the area, public polling, and more anecdotal information gathered from people who live, work and recreate in the Project area. Finally, in terms of size of the Project, 16 turbines is relatively small in comparison to other wind projects (e.g. Stetson) in Maine. The limited number of turbines, as well as the topography and vegetation of the area, lessens the overall visibility of the Project, including the nature and extent of view, duration of view, and angle of view. Moreover, the distance most turbines will be viewed will be greater than 3 miles. Only a portion of two lakes have the potential to view turbines within three miles (the closest at 2.4 miles).

IV. Regional context

a. The Project area

The proposed Project is part of two hills ranging in elevation from about 760 to 1120 feet above sea level and consist of moderately steep to gentle sloping sides. The relief as viewed from lakes in the area is not dramatic or distinctive. All of these rolling hills are located directly south of Route 6 and cross the town boundary from Carroll to Kossuth. Together they form a

divide between stream drainages to the Baskahegan Stream in the north, and to streams flowing to lakes and ponds in the south.

Much of the land in the 8-mile study area is privately owned and has been heavily harvested, showing evidence of extensive historic and recent forest management activity. There are also a number of publicly and privately conserved lands in the study area, which include nearly 31,500 acres of the Sunrise Conservation Easement, and the 890-acre lot owned by the Bureau of Parks and Lands (BPL) situated between Keg and Duck Lakes. The Sunrise Conservation Easement is part of a larger conservation effort to support the continued use of the area as a working forestry, to conserve and enhance wildlife habitat, to maintain an undeveloped shoreline, and to protect historic public recreation. It is owned by Typhoon, LLC and managed by Wagner Forest Management, primarily for commercial timber operations. The BPL land is currently managed primarily for forestry and wildlife related uses. In addition, there are two Native American lands within the study area – the Passamaquoddy in Pukakon Township and the Penobscot in Lakeville. Specifically, the Passamaquoddy Tribe holds significant lands along the shores of Junior, Scraggly, Shaw and Sysladobsis lakes. The Penobscot Tribe holds significant lands along the shore of Sysladobsis lake.

This part of Maine is most notably known for its very low population, undeveloped areas, and vast woodlands used primarily for forestry related uses. Most of the residential development, predominantly characterized by seasonal camps, is scattered along Route 6 and along the many miles of shoreline in the 8-mile study area. Many seasonal camps are occupied for limited periods of time, primarily for hunting and fishing. All of the region's major employment centers, like Lincoln, are relatively far. The immediate area around the Project site is used locally but is not a significant destination area for tourism.

b. The Grand Lake Stream region

The Downeast lakes area attracts tourists for hunting, boating, and other activities. The nearest tourist destination to the Bowers Project is the Grand Lake Stream area, located approximately 18 miles away. Project opponents have placed emphasis on the area's importance as a tourist destination and its centrality to the region. We do not dispute that West Grand Lake and the village are important tourist areas, but they are located well beyond the 8-mile limit set by the Act for evaluating impacts to scenic and recreational resources. There will be no visibility of the Project from the village, where activity and services are centrally located including the public beach, boat dock and ramps, tennis and basketball courts, and playground. The comprehensive body of evidence reviewed also indicates that recreational and guiding activities based out of that area take place predominantly on West Grand Lake, Big Lake, Pocumcus Lake and in the immediate vicinity, not on the lakes within the 8-mile Project radius. Thus, visibility of turbines from the lakes within the Project radius is not expected to significantly impact the tourist activities based out of the West Grand Lake and Grand Lake Stream area.

c. The greater Downeast region

Although the Project area is not itself a tourist destination, it is located at the northern edge of the Downeast Lakes Data Region. The Downeast Lakes Data Region is one of seven regions identified in the 2010 Comprehensive Land Use Plan (CLUP) and is recognized for its natural features, including lakes and forests, and acknowledges the importance of the traditional forestry and fishing uses that occur therein and the communities they support. The greater Downeast region also includes significant conservation lands – most notably the Downeast Lakes Forestry Partnership's conservation project, which encompasses nearly 25% of Washington County. The Down East Lakes Land Trust ("Land Trust") is based in Grand Lake Stream and is

dedicated to protecting lakeshores, improving fish and wildlife habitats, providing public recreation opportunities, offering educational programs, and supporting jobs in the forest and on the water. Among its many management duties, the Land Trust provides recreational opportunities in the Downeast region, including canoeing and kayaking. The Land Trust's water trail excludes the lakes within the 8-mile study area (see Figure 1).

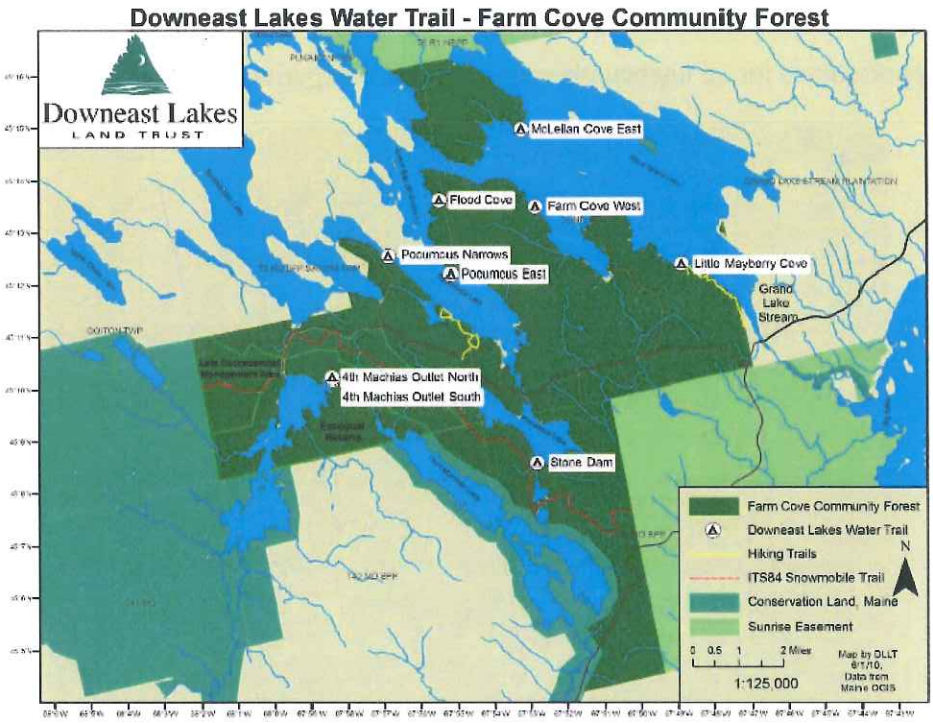


Figure 1. This map, available on the Downeast Lakes Land Trust website, does not extend to any lakes in the Bowers study area

The Sunrise Easement is located at the northern edge of the Downeast Lakes Region and lies just south of the Project area. The Project site sits outside of this area of protected lakes, rivers, streams and forests, and the 8-mile study area includes only the very periphery of this expanse of conserved land.

In addition, the Bowers Project area includes a minor portion of the greater Downeast region, defined by the Maine tourism region and up to Routes 6 and 2. As shown in Figure 2, this area encompasses over 3.2 million acres within which there are 602 great ponds (ponds ≥ 10

acres), as well as a complex pattern of rivers and streams. The 8-mile Project area represents only 4% of the greater Downeast region. The geomorphology of the region also limits where turbines may be placed, and the legislature has identified the areas appropriate for expedited permitting. Several projects have been proposed or are currently operating (e.g. Rollins, Oakfield) in these areas, including the Bowers Project. The Project area lakes are at the periphery and are not the primary focal point of the greater Downeast region. There are countless opportunities for an unencumbered water-based experience if that is what is desired.

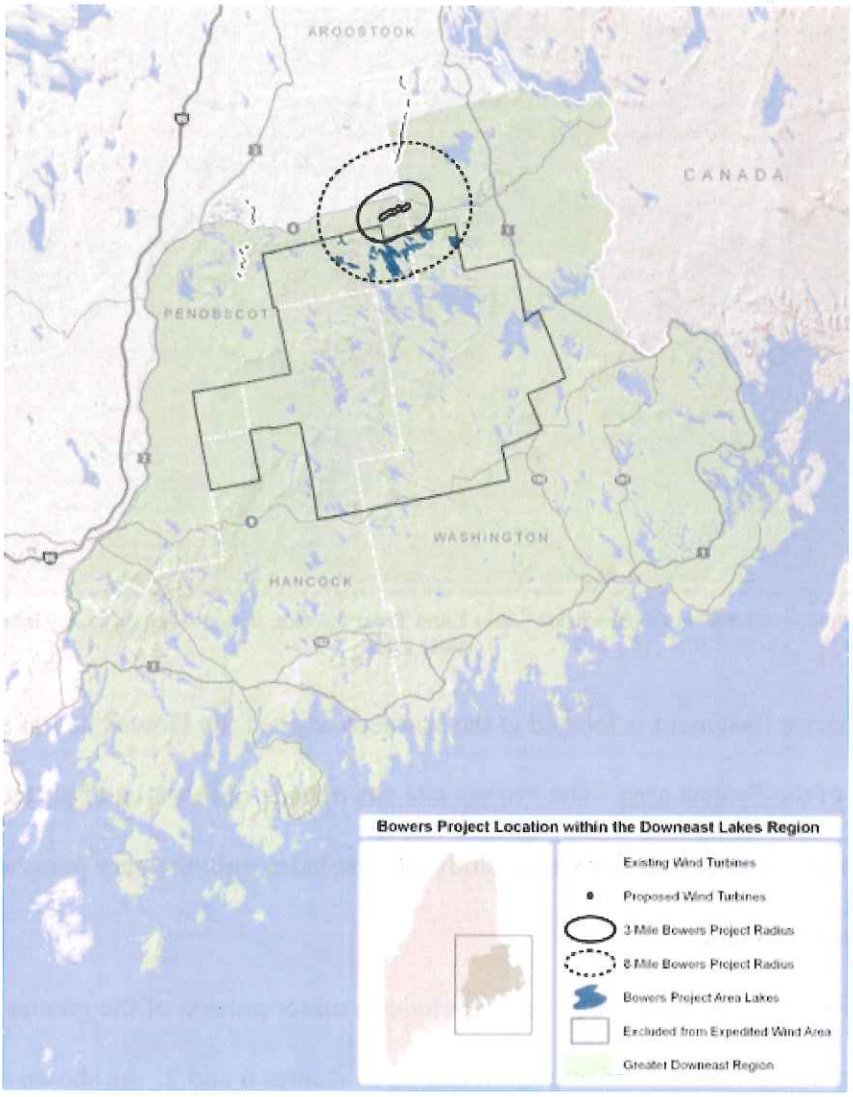


Figure 2. Map depicting the Bowers Project within the Greater Downeast Region

V. EVALUATION OF VISUAL IMPACTS UNDER THE WIND ENERGY ACT

The scenic impact standard under the Wind Energy Act asks whether a project "significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character" of the resource. 35-A M.R.S.A. § 3452(1). The statute requires consideration of six specific criterion in making that determination, each of which is discussed below. Importantly, the Act does not prescribe a hierarchy of considerations or mathematical formula for measuring each of these criterion, nor for synthesizing and weighting each criterion. Instead, the determinations regarding these criteria are based on the exercise of professional judgment informed by expertise, experience, and established methodologies. The approach taken by LandWorks in interpreting and applying the criterion and standard under the Wind Energy Act reflects these considerations.

Based on the evaluation of the indicators, each criterion is given a rating of Low, Medium or High (i.e. if the significance of a resource [criterion A.] is found to be Low, then that criterion's potential effect on scenic impact is also Low). Likewise, one criterion can affect the interpretation of another criterion (e.g. the character of the surrounding area [criterion B.] can influence viewer expectations [criterion C.]). For example, a pristine lake with a unique and diverse landscape would have a greater effect on viewers' expectations of scenic quality than a highly developed lake with discordant intrusions. The key factors considered for each of the statutory criterion are summarized below.

A. Significance of the Scenic Resource [§ 3452.3.A]

The assessment of this criterion is based on official state documentation of the resources (including but not limited to the resource ratings in *Maine's Wildlands Lake Assessment* and

Scenic Lakes Character Evaluation in Maine's Unorganized Town's), field observations and subsequent analysis, surveys conducted for the project, and research of recreational and tourism guides/websites. We also rely on our understanding of and familiarity with scenic attributes throughout Maine and Northern New England to provide perspective on scenic beauty and the relative singularity or sensitivity of some resources compared to others. In some instances but not necessarily all a well-used resource could indicate a higher value or significance ascribed to that resource, if the high use is due to the resource's exceptional or one-of-a-kind feature(s). In contrast, low use of a resource may be evidence of its high value if the low use contributes to or is associated with high expectations of scenic quality.

Of critical importance in evaluating the significance of the resource is whether it possesses unique, distinctive or exceptional scenic traits. This criterion requires consideration of the physical character of the resource (i.e. landform, vegetation, shoreline configuration, and other special features), and the integrity and condition of the landscape. Landscapes that are very scenic or outstanding usually have intact, prominent distinctions between landforms, such as open water in combination with a steeply rising mountain, or have unique focal points and distinct, memorable profiles. The striking view of Mount Katahdin from the Penadumcook Lakes is a good example of a unique and memorable feature, as compared to the undifferentiated profile of Bowers Mountain from Pleasant Lake (see photos and diagrams that follow).

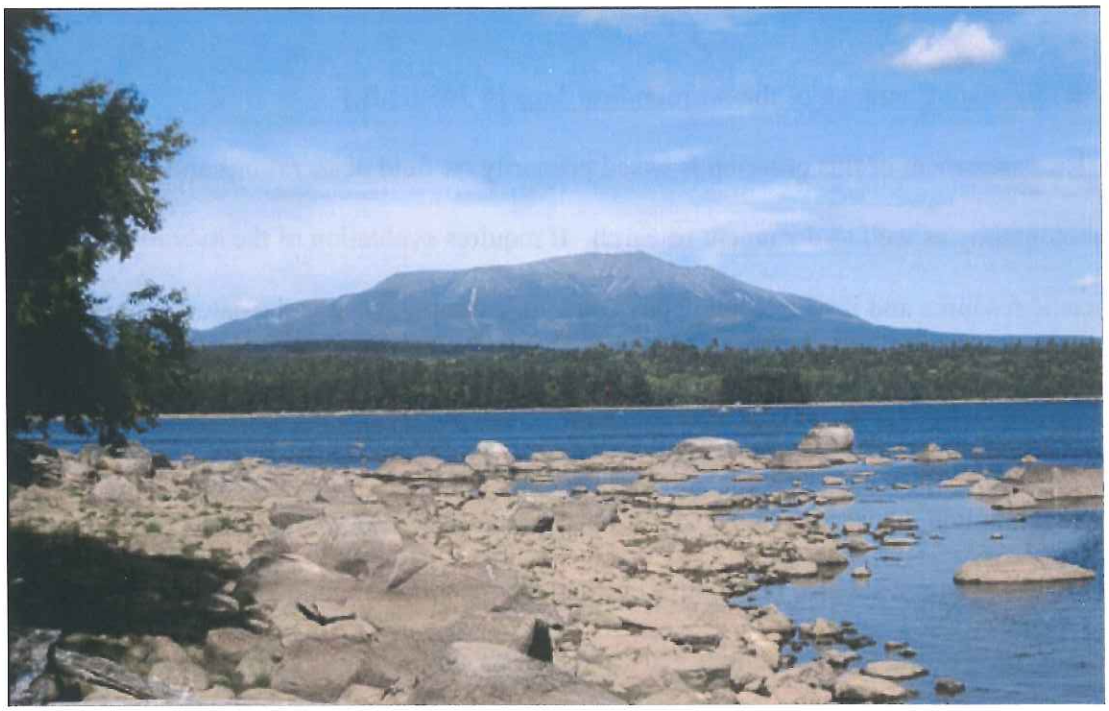


Photo 1. View of Mount Katahdin from Penadumcook Lake

Photo 2. View of Bowers Mountain from Pleasant Lake

B. Existing Character of the Surrounding Area [§ 3452.3.B.]

The assessment of this criterion is based primarily on field observations and analysis of aerial photography as well as document research. It requires evaluation of the overall landscape of the scenic resource and its surrounding environs, for example, what is the natural character of the surrounding area in terms of geology/hydrology, forest cover, topography, etc.? Are there diverse vegetation types, distinct geological formations, water bodies, etc. within the immediate area? The surrounding land uses and level of development that are experienced as one approaches the resource are also relevant. The character of the surrounding area helps to inform our understanding of the scenic qualities and expectations, and sensitivity of the landscape to change.

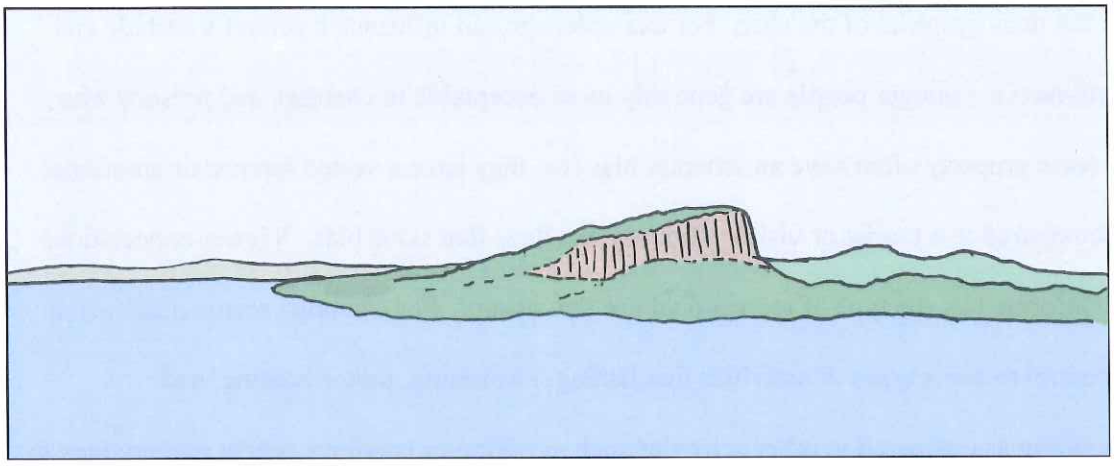


Diagram 1. Example of a distinct landscape with unique or singular scenic qualities due to the geology and geomorphology of the terrain.

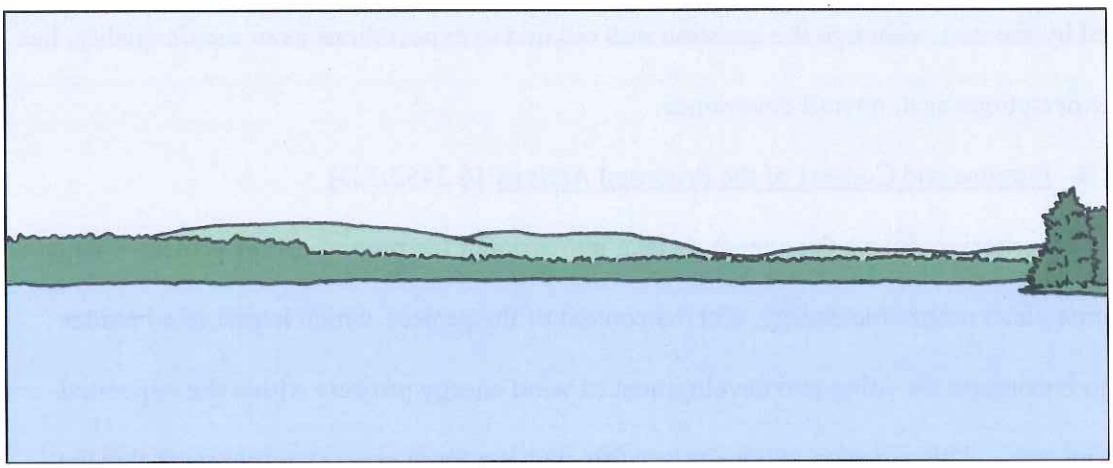


Diagram 2. Typical character of the landscape and terrain as viewed from lakes within the vicinity of the Project Site. Note the subtle, rolling terrain with low ridges and hills that lack unique scenic values or qualities and do not include distinctive geomorphological characteristics.

C. Typical Viewer Expectations [§ 3452.3.C]

The assessment of this criterion is based on a multitude of sources such as background polling, user surveys, studies, guide books, publications, online media, anecdotal and interview sources, as well as general field observations and professional expertise. Like the impact on use and enjoyment, it can be more difficult to obtain reliable data on this criterion. Ultimately, it requires the exercise of judgment informed by both quantitative *and* qualitative data. Indicators

include the demographics of the user. For example, age can influence a person's attitude and expectations (i.e. younger people are generally more acceptable to change), and persons who own or lease property often have an inherent bias (i.e. they have a vested interest or emotional tie), as compared to a tourist or visitor who may not have that same bias. Viewer expectations are also informed by the type of recreational use that occurs. For example, scenic quality may not be central to some types of activities like fishing, swimming, motor-boating, and snowmobiling as compared to other activities such as hiking or paddling, where scenery may be more important. Viewer expectations are also tied to the landscape character and surrounding land uses. The user intercept surveys provide information on the overall quality of experience expected by the user, although the question was not tied to expectations as to scenic quality, but rather expectations as to overall experience.

D. Purpose and Context of the Proposed Activity [§ 3452.3.D]

This criterion directs the agency to take into account the purpose of the project, which is to generate clean renewable energy, and the context of the project, which is part of a broader policy to encourage the siting and development of wind energy projects within the expedited permitting area. This criterion is not site-specific, but is a more general requirement that the agency consider state policy to encourage the siting of wind energy projects within the expedited permitting area when determining the reasonableness of the visual impacts. To the extent this criterion directs the agency to consider the context and setting in which the project is located, the indicators discussed under the significance of the scenic resource and the existing character of the surrounding area relevant. Because this is a more general criterion less tied to the particular scenic resource of state or national significance, it is not included in the lake-by-lake discussion.

It is an overarching consideration, however, and for consistency with evaluation practices prepared for other projects, we have included it in Table 2.

E. Extent, Nature and Duration of Public Use of the Scenic Resource [§ 3452.3.E.]

The assessment of this criterion is based on a multitude of sources such as background polling, user surveys, studies, guide books, publications, online media, anecdotal and interview sources, as well as general field observations and professional expertise. Note that this criterion does not assess impact to scenic quality, but simply asks what is the use of the resource and by whom. This criterion provides information necessary to assess viewer expectations and effect on continued use and enjoyment of the resource. Ease of access and the extent and type of public facilities help inform our assessment of this criterion, as do the user surveys, boat counts and observations, and broader information on tourism and recreation.

F. Effect on Continued Use and Enjoyment of the Scenic Resource [§ 3452.3.E.]

The assessment of this criterion is based on a multitude of sources such as background polling, user surveys, studies, guide books, publications, online media, anecdotal and interview sources, as well as general field observations and professional expertise. This criterion is perhaps the most difficult to apply because there is less objective or quantifiable data available; instead, it requires the exercise of professional judgment and synthesis and weighing of diverse sources of information. Of critical importance in applying this criterion is evaluating the extent to which the project impacts the recreational experience and/or whether the project will impact likelihood to return, two questions that have been asked in the user intercept surveys. The results of the user intercept surveys that have been conducted for this and other wind power projects in Maine, provide data responsive to this criterion. There are limitations, however, to the use of such pre-construction surveys. We also have the results of a post-construction survey at

Baskahegan Lake, which is the first post-construction study of a wind power project in Maine and provides data on the actual impact of turbine visibility on recreational use, not just the anticipated impact of such visibility on recreational use. The expert report of Kevin Boyle sheds important light on the significance and interpretation of the surveys done for the Bowers and other projects.

Finally, this criterion is tied to consideration of each of the other criterion.

G. Scope and Scale of Visibility from the Scenic Resource [§ 3452.3.F]

The assessment of this criterion is based primarily on desktop analysis of project visibility using a variety of tools (e.g. viewshed analysis, visual simulations, spatial analysis), in concert with field observations and professional expertise. This analysis helps reveal both the qualitative nature of the project and the quantitative aspect of potential project visibility. It is informed by established and well-proven methodologies that evaluate the number and extent of turbines visibility. The viewshed analyses and simulations provide information critical to this criterion.

A note of caution is necessary, however, with respect to the simulations. Visual simulations are one of several valuable tools to use in the evaluation of the potential visual impacts of a wind project. The technical precision possible with currently available technology and software can provide highly accurate photo-realistic representations of proposed projects, and we have found that our pre-construction simulations closely match the actual views of a project once constructed. The simulation, however, captures one view, and typically it is the view with the greatest project visibility. It is worse case in that it captures visibility from a location where the greatest number of turbines are visible or in some cases where the turbines are closest to the viewer. We also attempt to capture conditions that result in increased visibility

Such conditions would include clear, fair weather days or sites that will have a direct view of the project site and the full extent of turbines versus sites where the turbines would be partially screened or not completely visible due to intervening topography or vegetation. There is always a risk that in providing simulations the reviewer will assume that project visibility will always be as depicted in the simulation and at all locations on the resource. In fact, however, visibility is very much a function of the quality of light, location of the sun, presence of atmospheric moisture and cloud cover. These views are not static but constantly changing even within seconds as the sun goes behind a cloud and then emerges again. In this part of Maine, and based on weather data from the Bangor International Airport, it is likely that in summer, 41% of days will have precipitation of some form, and in winter 55%. This means that there will be a significant percentage of days in which the project may not be visible at all.

As someone who has prepared and reviewed simulations for many wind projects and then seen the projects after they have been built, I have been particularly struck by the extent to which turbines come in and out of view depending upon the time or day or weather. This phenomenon is shown in the photographs included in Section 4.2.2 of the VIA.

Additionally, visibility in the landscape (even assuming worse case conditions depicted in a simulation) does not automatically translate to an adverse or high scenic impact. Factors that affect the impact of visibility include the proximity or distance of turbines. For example, aesthetic experts agree that the visual impact of wind turbines diminishes over distance. The Wind Energy Act requires that turbines visible within three miles require consideration within the VIA, whereas turbines located between 3-8 miles do not necessarily require consideration. Turbines visible within 2 miles can seem larger to the viewer, and turbines located within 1 to 1.5 miles or closer to a vantage point have a greater potential to become a dominant visual

element or focal point when seen from a particular vantage point – even to the point of "looming" or seeming overly close to the viewer under certain geographic and atmospheric conditions. The potential for this condition, however, does not exist with this project as proposed.

In addition to distance, the angle of view is an important consideration in how visibility impacts the viewer. A turbine array that occupies a narrow angle of view typically has less visual impact than one that occupies a wide angle of view. Numerous factors can affect the angle of view from a given vantage point, including number of visible turbines, distance, and location of viewer in relation to the turbine array alignment (i.e. broad view vs. head-on view down a line of turbines). The following diagram presents the effect of distance on angle of view. When observing a project on hilly terrain, however, the angle of view from a closer vantage point can sometimes be reduced as some turbines become obscured by intervening topography and/or vegetation.

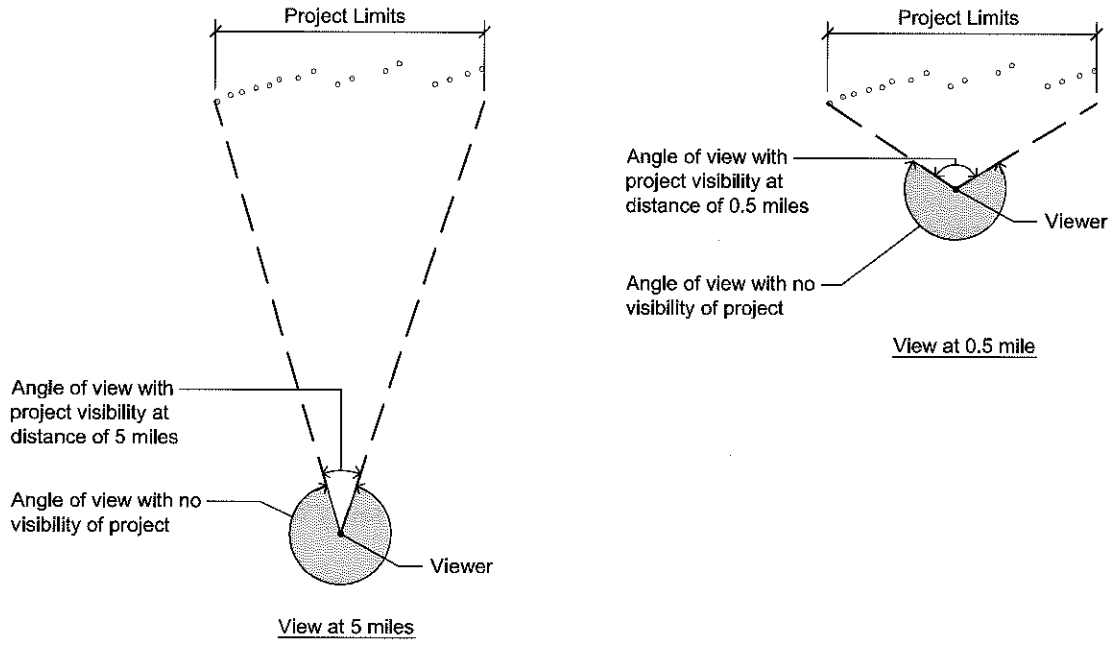


Diagram 3. Effect of Distance on View Angle

The impact of visibility is also affected by the duration of view. For example, we consider whether a user will have a fixed and involuntary view of a project (higher potential for impact) or if the user will have a more limited exposure to the view (lower potential for impact) either due to the limited extent of visibility from the resource or because the context and nature of the user's activity allows for other unaffected views. A scenic pull-off with static, unchanging views focused entirely on a project site would have a higher potential impact, even though a visitor may only stay at the site for 5 to 10 minutes. This is in contrast to a fisherman on a lake who may experience visibility over a longer period of time, but visibility would be tempered by the activity (i.e. focusing on the water and not the extended view), shifting location and altering context and viewpoint, and access to 360° views. In this situation, the potential for impact lessens, because, although views would be present, they would be ever-changing and mitigated by the activity.

Visual absorption capability (VAC) is a tool to assess a landscape's susceptibility to visual change caused by man's activities. In other words, it is a measure of a land's ability to absorb alteration, yet retain its visual integrity. The concept of visual absorption helps us understand the significance of visibility and is also helpful in understanding how the Project fits into the landscape more generally. A landscape defined by numerous rolling hills is more able to visually absorb a wind project than one that is located on a sole hill surrounded by a flat landscape. Factors that affect visual absorption include variety or diversity of landscape pattern-particularly the amount and extent provided by landform.

Photo 3. Example of landscape with LOW visual absorption capability: Big Spencer Mountain as seen from Lazy Tom Bog in Kokadjo, Maine, is a prominent feature in the landscape surrounded by relatively flat bog land and patches of woodland, with minimal topography and tree cover to limit views in the surrounding area.

Photo 4. Example of landscape with MODERATE visual absorption capability: The many hillsides and topographical diversity around Bowers Mountain combined with a predominantly wooded landscape lessens potential project visibility and focuses viewers' interest in a number of directions.

Visual dominance is a concept that considers the scale of the project in relation to the vantage point and the project surroundings. Turbines often appear most dominant if they are seen at close range (within a half-mile), in the center of an important view, and/or in close visual association with an important natural or cultural focal point. In addition, the height of the turbines in relation to the height and mass of the landforms below them affects visual dominance. Depending on factors such as distance and quality of the light, wind turbines can appear rather slender and light in comparison with the dark wooded landforms around them.

Finally, landscape coherence/visual clutter is a concept that can impact the affect of turbine visibility. For example, clusters of turbines or structures of different designs can create a potentially discordant appearance and reduce the coherence of the landscape. Turbines spaced in a linear fashion at regular intervals with some degree of symmetry can be more aesthetically pleasing than turbines that overlap each other and appear jumbled. This is a concept presented in the landmark book *Wind Power in View*, which states, "Maintaining order and visual unity among clusters of turbines is the single most important means of lessening the visual impact of large arrays" (pg. 180). The regular intervals of turbine placement and the linearity of wind energy projects on ridges in Maine and Vermont contrast, for example, with projects in California, such as the wind farm in San Gorgonio Pass outside of Palm Springs, where there are multiple arrays sited in various orientations and placements, resulting in visual clutter.

As discussed below, consideration of these criteria demonstrate that the Bowers Project will not significantly compromise views from any of the scenic resources of state or national significance such that it will have an unreasonable adverse effect on either scenic character or uses related to scenic character.

VI. ASSESSMENT AND IMPACT OF PROJECT VISIBILITY

A. Sources of information

This project is unique in the amount of information that has been developed, gathered, and evaluated to assess scenic impacts. Information was derived from a multitude of sources, including but not limited to site visits and personal observation, background polling, user surveys, studies, guidebooks, publications, online media, anecdotal and interview sources. Collectively, these different data sources provide the most comprehensive understanding of the scenic resources to be evaluated, perhaps of any wind application to date, and the potential effect the Project may have on users of those resources. This section provides an overview and summary of the information collected. Please refer to sections 2.3.4 and 4.2.4 of the VIA for more detailed information.

i. Site visits/personal observation

Using the viewshed mapping as a point of departure, LandWorks conducted field studies on June 5, July 16, and July 17 of 2010, and May 18 and June 27 of 2011, to visit all scenic resources of state or national significance that would have potential views of the Project. Additionally, the routes to each of the areas were evaluated to obtain a better understanding of the character of the area (e.g. Amazon Road). These site visits informed both the specific visibility determinations, as well as a general sense of the character and use of the area. Key takeaways from the site visits included:

- The lakes in the Project area have scenic value, but are not particularly distinct or unique in terms of topography or vegetation. Thus, while scenic, they do not present unique scenic features that distinguish them from many other lakes. Compared to areas outside the 8-mile radius such as Grand Lake Stream, the Project area offers few amenities for tourists or other outdoor recreationists.
- The lakes were not well visited at the time field studies were conducted – very few lake users (if any on some) were observed during each of these visits. This is

consistent with the results of the 2011 and 2012 boat counts at Junior Stream and the boat observations as part of the Bowers User Survey.
- Shoreline tree heights are more characteristically 65 feet and higher.
- Logging and forestry related uses were clearly evident.
- With the exception of Junior and Bottle Lake, year-round residential development is limited.
- Access to some lakes was very difficult, so much so as to be a deterrent.

ii. Literature/guide books/web sources/etc.

In order to ensure a comprehensive evaluation and to not rely too heavily on one type of source (i.e. user surveys), an exhaustive search of literature, guide services, books, online media and similar sources was conducted to provide further information on the use, popularity, and significance of the lakes within the study area.

Guide services that offer trips within and near the study area were reviewed. This included an extensive online search, of which 12 resources were found that pertain to the region. This list includes a few websites that provide access to hundreds of registered guides, lodges and related services (e.g. the Maine Professional Guides Association or the Maine Hunting Guide). The results of this search indicated that fishing and hunting are the primary activities for which guide services are procured. This research also indicates that the lakes located within the study area are not key destinations. Testimony of the Guides during review of the previous Bowers project suggested that they heavily use the Project area lakes. However, in our extended research and review of guide services online, only one referred to any of the lakes in the study area—custom guided canoe trips in the "Junior Lakes Region" by Wilderness Inquiry. Rather, the Grand Lake Stream area, which is located more than 18 miles from the nearest turbine, and at least an hour's drive from Springfield, is most commonly identified as the central location for activities.

In addition to guide services, twenty-four (24) sporting camps and lodging resources within the Downeast Lakes area were compiled and reviewed, primarily based on the Maine Sporting Camps Association website (www.mainesportingcamps.com). Several commercial sporting camps expressed concern about the Project in their testimony from the previous Bowers filing. Only three commercial camps are located within the study area. The one closest to the Project, Maine Wilderness Camps on Pleasant Lake, expressed support for the Project. Two others, Wild Fox Cabins on Junior Lake, and Spruce Lodge Campground on Sysladobsis Lake, are both located more than 6 miles from the nearest turbine. Most other camps are located 15 miles and beyond from the Project. Of the 21 camps reviewed that are located outside the 8-mile Project radius, only two specifically mention at least one of the study area lakes on their websites. A map depicting the area lakes and sporting camps within and beyond the Project area is attached as Exhibit 2B.

We evaluated six (6) popular guidebooks that provided further information about fishing and recreational opportunities in this area of Maine. This information offered additional insight into the activities that occur on these lakes, as well as the popularity and significance of the lakes within the study area. Results again confirm that fishing is the most popular activity in the area and that the most desired spots identified are primarily located outside the project study area (e.g. West Grand Lake, Big, Pocumcus, Wabassus). The AMC Quiet Water Guide does describe a paddling trip that begins roughly 15 miles away from the Project, and loops through some of the study area lakes.

In addition to the specific guidebooks, sporting camps and guide services described above, seven (7) other prominent tourism and recreational websites were reviewed that provided further information about potential activities within the study area. Although little information

was available about specific activities on specific lakes, the information on these websites was consistent with the findings from the guide services, sporting camps and guidebooks referenced above – that fishing and hunting are the primary activities for this area, and that the lakes within the study area were not usually mentioned. From a state tourism perspective, the Project area is neither highlighted nor advertised. These lakes cross two tourism regions (Maine Highlands and Downeast & Acadia, as defined by Maine's official tourism website visitmaine.com), and within those regions, the Project lakes are not mentioned. Grand Lake Stream is specifically identified as a sub region of Downeast & Acadia, but again, no mention of, and no map includes, the Project lakes. The interactive map on this website, which provides a comprehensive catalog of attractions, restaurants, and the like, only includes two locations within the Project area: Springfield Tyme Bed & Breakfast on Route 6 and Wild Fox Resorts located in a small cove at the southern tip of Junior Lake, the operational status of which is currently unknown.

Collectively, these sources all support the conclusion that fishing and hunting are the most popular activities in the general area. This research further corroborates that the spots most frequented are primarily located outside the 8-mile Project area (e.g. Grand Lake Stream). Although the Project area is valuable to those who live and visit there, the scarcity of services, the lack of broader knowledge, and the sparsity of information specific to the Project lakes from a multitude of sources substantiates the relative low use of the area when evaluated in context with other, more heavily advertised or better known destinations of Maine.

iii. Surveys

In addition to the resources discussed above and traditionally relied on in assessment of visual impacts, applicants in Maine have recently conducted intercept and other surveys to evaluate use of specific scenic resources and gauge what impact a project will have on scenic

quality, use and enjoyment of the resource, and likelihood to return if the project is constructed. For the Bowers Project the applicant retained Kleinschmidt to conduct intercept surveys of several of the Bowers Project lakes, as well as the first post-construction intercept survey in Maine of an operating wind farm. In addition to these surveys, which were undertaken for this Project, surveys have been conducted for other proposed wind projects in Maine. These surveys are discussed in the accompanying Pre-Filed Direct Testimony of Kevin Boyle and the specifics are not repeated here, although they are discussed in detail in the VIA.

Overall, the Bowers survey results suggest that the lakes in the Project area get very limited use. The low number of canoes and kayaks observed traveling through Junior Stream also indicates little use of the canoe trails and multi-day trips in this area. The Bowers Wind Project would have an adverse impact on perceptions of scenic quality, but the majority of the respondents stated that the Project would have no impact or a positive impact on their experience and the vast majority stated the Project would have no impact on their decision to return or they are likely to return. As discussed in the Boyle Report and in his Pre-Filed Direct Testimony, the perceived reduction in scenic quality is likely overstated, particularly since 46% of Pleasant Lake respondents indicated that the scenic value of the lake would continue to be high, and this is a lake rated as Outstanding for scenic quality and where Project visibility is significant.

The results of the Baskahegan surveys are important because they provide information on *actual* perception and impact of turbine visibility on recreational users rather than *anticipated* impacts. The Stetson wind farm includes 55 turbines and is visible from most of Baskahegan lake. Intercept surveys there demonstrated that project visibility had no effect or a positive effect on scenic quality and 93% of the respondents said the project had no effect or a positive effect on the quality of their experience and 93% of the respondents said the project would have no effect

on their likelihood to return. These results show that the Stetson wind farm has had minimal impact on users of that lake, many of whom also use the Project lakes.

The Bowers and Baskahegan surveys were conducted in 2012 and were not available during the prior proceeding. They provide important additional data that demonstrates the reconfigured project will not have an unreasonable adverse impact on scenic character or existing uses related to scenic character.

Finally, the results of the Bowers and Baskahegan surveys are in accord with results from a telephone survey conducted to evaluate use of the Project lakes and the potential impact of turbine visibility on recreational use, as well as other pre-construction intercept surveys in Maine. These additional surveys are also discussed in the Pre-Filed Direct Testimony of Kevin Boyle and are not repeated here. Together, these surveys indicate that while wind energy projects will certainly alter the landscape, the typical user will accommodate such change and will still visit the resource and enjoy their experience there. These results suggest that the changes from the Bowers Wind Project are not likely to be so significant or extensive to result in an unreasonable, adverse impact on scenic resources and the use and enjoyment of those resources.

iv. Boat Counts

Boat counts were also undertaken to better understand recreational use of the Project lakes. The counts were conducted along Junior Stream, which is a shallow channel that connects Junior Lake to Junior Bay of West Grand Lake. It represents one means of accessing Junior Lake, which has no public access, and is the only water access point connecting West Grand Lake to Junior Stream.

Table 2: Summary Results of 2011 and 2012 Junior Stream Boat Counts from Kleinschmidt Report, pg. 13

	2011		2012	
Observation Characteristics				
Number of Days	11		27	
Average Hours/Day	14		13	
Weekdays	9		19	
Weekend Days	2		8	
People				
Total Observed	96		206	
Average Per Boat	2		2	
Average Per Day	9		8	
Boats				
Total Observed	39		90	
Average Per Day	4		3	
Boat Type	**Number**	**Percent**	**Number**	**Percent**
Motor	32	82%	74	82%
Canoe	6	15%	5	6%
Kayak	0	0%	3	3%
Grand Laker	1	3%	7	8%
Freighter Canoe	0	0%	1	1%
Total	**39**	**100%**	**90**	**100%**

During the 2012 surveying on the lakes, which was carried out on Pleasant, Junior, Scraggly, and Shaw Lake, 123 boats were observed over the course of 12 days, or an average of 10 boats per day. Of the 31 boats intercepted, 94% were motor boats and there was only one canoe. Only one of the survey respondents reported using guide services.

These boat counts demonstrate low overall use of the Project area lakes. On average, only four boats were seen on full days of counting on Junior Stream in 2011, and only three boats on full days of counting on Junior Stream in 2012. On average only 10 boats per day were observed during the 2012 surveying efforts. The boat counts and observations also demonstrate that paddling is not a significant activity on the lakes. The vast majority of boats were motor boats (82% in both the 2011 and 2012 boat counts on Junior Stream and 94% of the boats intercepted during the 2012 surveys). Additionally, there was minimal evidence of guiding activity, with only one of the 69 respondents reporting using guide services.

Although the Junior Stream boat counts conducted in 2011 were available during the prior proceeding, they were obtained following the public hearing. The 2012 boat counts on Junior Stream and the boat observations undertaken as part of the Bowers User Surveys is new information developed since the prior proceeding.

v. Snowmobile Data

Snowmobilers are a user group that is not often considered in evaluating the impact of turbine visibility on recreational use. They are, however, an important recreational user group in the state and there is evidence that they use the Project lakes. Specifically, an intercept survey was carried out with snowmobilers who attended a ride-in at the Stetson Mountain project, in order to evaluate awareness and use of the lake resources in the Bowers Project area. Findings included the following:

- The majority of all respondents (72%) support the development of commercial-scale wind energy in Maine.
- More than half of the respondents (44 out of 69) reported that they use the Project area lakes.
- Half of the respondents (50%) who use the Project area lakes indicated that seeing wind turbines would have a positive effect of their overall enjoyment of a resource. 45% said it would have a neutral effect and only 5% indicated a negative effect.
- Similarly, 50% of the respondents who use the Project area lakes indicated that seeing a wind farm would make them more likely to return to the region, whereas only 8% would be less likely to return. 42% indicated it would have no effect.

Although the trails in Maine's Interconnected Trail System (ITS) cannot cross frozen bodies of water for safety reasons, it is common knowledge that snowmobilers enjoy the flat open character of frozen lakes including the Project area lakes. They are able to travel at high speeds and without obstacles (aside from the possibility of the ice cracking). A letter from the President of the Quad County Snowmobile Club confirms that the Project lakes are used by snowmobilers. Letters from several other snowmobile clubs reflect the fact that the presence of wind turbines is a significant recreational draw, including for clubs in and around the Project

area. Likewise, almost three hundred people signed a petition supporting the creation of the Ride the Wind Snowmobile Trail. The petition recognizes that wind farms are popular snowmobile destinations and the trail represents an important economic opportunity to attract more riders from within and outside of Maine. Furthermore, the Maine Snowmobile Association has indicated that they support the Bowers Wind Project. These results suggest that for many snowmobilers, wind turbines are seen as an asset, and not as a detriment to the scenic quality of an area, or a deterrent to their use of the resource or area.

VI. SUMMARY OF LAKE ANALYSIS

Based on the evaluation described in Section V above, LandWorks evaluated each of the nine scenic resources of state or national significance that will have visibility of the Bowers Project. A viewshed map depicting potential visibility of turbines within eight miles on these lakes is attached as Exhibit 3. A complete analysis for each lake is included in Section 4.3 of the Visual Impact Assessment and the overall scenic impact for each lake is summarized below. For each lake, Exhibit 4 also includes figures that depict (1) the existing character of the surrounding area, including residential development, land ownership, and recreational amenities; (2) the extent of view within a 360 degree panorama from the visual simulation site; (3) the existing conditions and views from the lake, both towards, and away from, the project site; (4) the visual simulation for that lake.

This discussion, and the accompanying Exhibit 4, is organized based on the distance of each lake from Bowers. Lakes within 3 miles – Duck and Pleasant – are discussed first, by alphabetical order, and lakes within 3-8 miles – Bottle, Junior, Keg, Pug (West Grand), Scraggly, Shaw, and Sysladobis – are subsequently discussed, also in alphabetical order.

A. Duck Lake

Duck Lake is a moderately developed lake that is situated about 2.7 miles from the closest shoreline to the nearest visible turbine of the project. There are no significant topographic features in the immediate environs and the lakeshore presents a uniform, wooded character with some rock outcrops. There are approximately 87 camps and homes on large lots along the shoreline, many of which are along the western shore.

The communications tower on Almanac Mountain is readily visible to the west of the lake at 2 miles to the closest shoreline. Only the top portion of Bowers Mountain is visible from Duck Lake, and it is dwarfed by the closer and taller form of Getchell Mountain. In addition, the eye is drawn to more distinct hills within view to the east, including Penobscot Bald with visible evidence of logging. Based on its relatively small size and less than desirable fishing quality, this lake is most likely used by camp owners and experiences low to moderate use.

The visibility of the Bowers Project on Duck Lake is limited. While Duck Lake is one of the closest lakes to the Project, the number and extent of the turbines visible limits potential impacts to individuals staying in camps as well as those recreating on the lake. While the overall potential visibility of the project from the lake covers over half of the lake surface, that visibility is only of 6 turbines which occupy 8°, or 2.2% of the total 360 degree panorama of the lake, when viewed from the highest visibility location of the simulation site. With little to no visibility along the northern shore or at the boat launch, there are extensive stretches of the lake where individuals and parties may fish or paddle out of sight of the project, if so desired. Additionally, as access between this lake and Junior Lake is via a narrow stream that is navigable by kayaks or canoes only, there is limited travel between Duck and Junior Lake.

Due to the limited number of visible turbines and nature of the viewer expectations, Duck Lake's scenic values and user activities, which are focused on lake-based recreation, will not be unreasonably diminished by the presence and visibility of the proposed wind project. **Based on all of these factors, the overall scenic impact to Duck Lake will be LOW.**

B. Pleasant Lake

Pleasant Lake, located approximately six miles on Amazon Road from Route 6, has scenery and surrounding topography typical of the region, with low rolling hills and mixed forest cover. The majority of the shoreline is conserved as a working forest and is undeveloped, aside from Maine Wilderness Camps, a few camps on the northern shore, and a campground on the southern shore, which offers a boat launch, tent sites and accommodates large fifth-wheel RV trailers. Pleasant Lake clearly has scenic value based on some features and characteristics of its shoreline landscape and configuration, vegetative mix, water clarity and lack of shoreline development - with the one exception being the area directly surrounding the boat launch. However, the lake does not possess any unique or individually outstanding features.

Although the Project will be visible from the main body of the lake, the nature of that visibility will not be overwhelming or inescapable, given the extent of the turbine array and its distance to the lake. The angle of view from the main body of the lake is limited to between approximately 8° or 2.2% of the 360° view from the simulation site near the northern shore, and to 30°, or 8% of the 360° view from the boat launch (see exhibit 23 of the VIA for a panorama view depicting the extent of impact to the overall view). There is limited to no visibility along portions of the northern shoreline, including from Maine Wilderness Camps. Visual isolation would also be possible within portions of Dark Cove, which is considered to be the most desirable section of the lake for paddlers and fisherman. Although the turbines are visible

throughout much of the lake, they would not be an unduly dominant visual presence. The nearest visible turbine would be at least 2.4 miles away at the northwest end of the lake, but even at this location the turbines would not appear visually dominant as a result of their distance and the height of the turbines in relation to the surrounding vegetation and topography.

Pleasant Lake gets a moderate amount of use for the area, and is mostly used by fishermen. According to the Bowers survey, the most popular activities are relaxing, observing wildlife, enjoying/viewing the scenery, and camping. Winter activities would likely also include snowmobiling. A key source of "typical user" activity, the Maine Wilderness Camps does not have direct views of the Project, and the owners have clearly stated that they do not believe that the Project will unacceptably affect their business, or the use and enjoyment of their guests. During testimony provided by Kathy Whitney and Charlotte Brooks in DP 4889, they stated that their customers do not find wind projects unreasonable with regard to their activity and enjoyment, and even seek out wind energy facilities as destinations for their recreational activities. Similarly, the Bowers Survey found that 86% of respondents stated that simulated conditions (depicting the proposed wind project) would have no effect on their decision to visit in the future or they are likely to return. The survey also found that 70% of respondents stated that simulated conditions would have no effect or positive effect on enjoyment of their visit.

Patterns of lake-based activities suggest that viewers will not typically stay focused for extensive periods of time on one view due to the tendency to orient in many directions and focus attention on a variety of views while navigating around a lake. In particular, paddlers and those fishing tend to gravitate to coves and shorelines, which in many cases have significantly reduced or no visibility of the project on Pleasant Lake. Thus the nature of this lake's use suggests that sustained views of the project are not likely in the way one would expect from a mountain

summit vantage point. This, coupled with the fact that the scenic quality of the lake does not appear to be the main reason for attracting users of the resource (as confirmed by the owner of Maine Wilderness Camps), supports the results of the Bowers Survey suggesting there would not be a significant effect on continued use and enjoyment or likelihood to return.

The perspective of long-time users of the lake, the results of the Bowers surveys, along with the results of the Baskahegan case study, all support the finding that the project will not unreasonably impact the continued use and enjoyment of Pleasant Lake. Taken together, the considerations of the lake characteristics and setting, the visual qualities of the project itself, and the findings of the user analyses, all lead to a finding that while the project will potentially result in a **MEDIUM overall scenic impact to Pleasant Lake**, that impact in no way exceeds a threshold of being unreasonable.

C. Bottle Lake

Bottle Lake is the most highly developed lake in the project area, with approximately 100 camps or homes along the shoreline. The boat access is privately-owned with limited public access and lacks a sufficient parking area and thus is not readily used or accessed by the general public. The lake does not have distinct or unique features and contains views of several intrusive elements, including power lines, extensive camp development and a communication tower, all of which affect viewer expectations.

The visibility of the Bowers Project on Bottle Lake is limited. The closest visible turbine is 5.1 miles from the lake and only 26% of the lake will have visibility of turbines. The simulation depicts a "worst case" location, where the view is the most extensive of the turbines. These turbines would take up an insignificant portion of the overall view – 7°, or less than 2%, of a 360° view. There will be no visibility from the center of the lake, or from the entire eastern,

northeastern, northern and northwestern shoreline. In addition there will be no visibility from the Bottle Lake Stream portion of the lake which connects with Junior Lake, which ensures that the use of this quiet shallow, much less developed area will not be at all affected by the proposed project.

Project visibility will not unreasonably affect the continued use and enjoyment of the lake. The view of the project from Bottle Lake will be of a project in the distance, and from the bulk of the lake the lack of visibility means that users on the lake will be minimally affected by the project. Given the distance and narrow angle of view of the turbines, the project will not appear dominant nor overly distracting to the typical user, which in the case of Bottle Lake would typically be local individuals and those staying in camps who are engaged in summertime lake-based recreation. Taking all these factors into account it can be concluded that project visibility and the nature of that visibility will not appear to be extensive, dominant or overly distracting to the typical users of the lake. **Based on all of these factors, the overall scenic impact to Bottle Lake will be LOW.**

D. Junior Lake

Junior Lake is one of the largest lakes within 8 miles of the Project. While a portion of the eastern shore is conserved as working forest, portions of the eastern and southern shorelines are owned by the Passamaquoddy. The western shore is moderately developed, with approximately 87 camps and homes on large lots along the shoreline. Junior Lake is not widely known outside the local area and provides relatively few tourist amenities, with one B&B and a sporting camp that may not operate regularly. Primitive campsites are available via boat access. There are no public boat launches, and thus, primary access is from other lakes in the area. Junior Lake has some developed sections intermingled with areas where shoreline configurations

and small rocky islands may draw the interest of the typical user – motor-boaters, fishermen, paddlers – and in winter snowmobilers and those engaged in ice fishing. Based on the results of the Bowers Survey, popular activities include fishing, motor boating, relaxing, observing wildlife, and viewing scenery. The lake does afford a complex shoreline, with a number of coves and peninsulas. The character of the area around this lake is not unique to the region with low hills and mixed forest cover, and the scenery of the surrounding landscape is generally indistinct, except that wide panorama of hills is visible to the north from the southern end of the lake, with Getchell Mountain and Penobscot Bald Mountain appearing more distinct than the Project ridges. The islands in fact represent perhaps the most striking feature of the lake, and the visual appreciation of this foreground feature would be unaffected by middleground or background views of turbines.

The extent and nature of the visibility of the project is reduced by the physical character of the lake and the limited spread of the project on the horizon line. While the turbines will be visible from much of the lake, the visibility of the project is not so extensive and dominant as to deter the typical user, and will not substantively reduce use and enjoyment. Given Junior Lake's size, and the variety of shoreline and island configurations, the landscape has a feeling of expansiveness when viewed from the water. As a result of this vastness, the variety of shoreline and island configurations, the nature of the topography and the distance from the turbines, the landscape is capable of visually absorbing the views of the proposed Project without undermining its essential visual qualities. Even from the northwest shore of the lake, where the majority of camps and homes are located, the turbines would not dominate the view due to the relationship between the number and scale of visible turbines and the topography. At the simulation site, near the northern shore, the turbines would take up a very small portion of the

360° view - 17.25° or only 4.8% of 360° view, which occupies a very small portion of the human field of view and therefore has decreased visual impact. From a second location in the southern area of the lake, turbines visible within 8 miles would still take up a small portion of the overall view - 13.26°, or 3.7% of the 360° view. There are no views closer than 3 miles, and the far end of the lake stretches almost 8 miles away from the nearest turbine.

Our understanding of the nature of the lake's use, along with the results of the Bowers Survey suggest that the Project would not result in a significant negative impact on use and enjoyment of the lake. Although there was a more significant drop in perceived scenic quality and impact on use and enjoyment of Junior Lake respondents in the Bowers Survey, the testimony of Kevin Boyle describes how those responses likely overestimate the likely impact of visibility on both scenic quality and use and enjoyment. His analysis is supported by the results of the Baskahegan Survey. Additionally, notwithstanding the perceived drop in scenic quality and impact on use and enjoyment, the Bowers Survey found that 74% of respondents stated that simulated conditions (depicting the proposed wind project) would have no effect on their decision to visit in the future or their likelihood to return. **Based on these factors, the overall scenic impact to Junior Lake is MEDIUM.**

E. Keg Lake

Keg Lake is a moderately developed lake and the scenery and topography visible from the lake is typical of the region. Similar to Bottle and Duck Lakes, Keg Lake also has an undifferentiated wooded shoreline and does not have any unique or outstanding scenic features. Keg Lake supports predominately warmwater fisheries, is not stocked with coldwater fish due to the lack of suitable habitat, and is not a well-known destination for visitors to this region. Due to

limited public access, including no public boat access or designated public parking, the lake is primarily used by private camp owners. It is located 3.7 miles from the nearest visible turbine.

Project visibility is limited and approximately half of the lake would have views of turbines. At the location of the simulation site, visibility is limited to a 15° angle of view, or 4.2% of the 360° view. Ten turbines would be visible from this location, with only the rotors or blades of 5 others barely detectable above the treeline and an intervening ridge. Depending on the viewer's position, Getchell Mountain and/or Penobscot Bald Mountain would remain visually distinct due to their height and mass. In addition, there are extensive areas of the lake where the project will not be visible, and the distance of the lake to the closest turbine (between 3.6 and 5.1 miles) reduces the perceived visual presence. The lack of diversity and unique scenic values further reduces the potential for impacts from this project. **Based on all these factors, the overall scenic impact to Keg Lake is LOW-MEDIUM**

F. Pug Lake (West Grand Lake)

Pug Lake is considered part of West Grand Lake, and less than half of Pug Lake is within 8 miles of the Project. The ratings given by the Maine Lakes Assessment are based on West Grand Lake as a whole, and based on the criteria for evaluating scenic quality, this portion of West Grand Lake would not by itself qualify as "Significant" or "Outstanding". The configuration of the lake is ordinary and the vegetation is typical of the region. There are no dramatic or unique physical features and this portion of the lake itself is not particularly scenic. The landscape surrounding the lake is generally flat or rolling and indistinct.

The distance of this lake from the turbine site and the portion of the individual turbines that will be visible greatly reduce the potential for visual impact. There is only a small portion of this lake that will have any visibility of the project, and this visibility would be at a distance of

just under 8 miles. The visibility will be limited to the hubs of 1-3 turbines and the blades of a fourth from limited vantage points only, and these elements will be difficult for users on the lake to discern given their presence within, rather than above, the surrounding treeline of predominantly white pines. At the simulation viewpoint, the turbines would take up a very small portion of the 360° view – 5.32° or only 1.5%.

There will be minimal effect on the use and enjoyment of the typical user given the limited project visibility and the nature of that visibility. **Based on all of these factors, the overall scenic impact to Pug Lake is LOW.**

G. Scraggly Lake

Scraggly Lake is located approximately 9 miles from Route 6 on Amazon Road and can be accessed by boat via Junior Lake, although this narrow passage is shallow and rocky during certain times of the year. The access road to a hand-carry boat/canoe launch at Hasty Cove is very rough and requires a high-clearance, off-road vehicle. The majority of the shoreline is conserved working forest and the remainder is tribal land. The scenery and topography visible from Scraggly Lake are typical for the region. A distinguishing feature of this lake is the actual rock strewn shoreline configuration with its many coves and beaches. This character provides opportunities for close-to-shore paddling and fishing, whereas the overall orientation of the lake provides for long fetches where the prevailing winds can build and create rough water. Scraggly Lake is a difficult lake to access due to the condition of the boat launch access, andlow water levels also limit access and use. Although the lake does have distinct scenic qualities, it is also within the context of extensive timber harvesting, a fact reinforced by the drive to the lake where logging activity is readily present, and the view of timber harvesting on the hills surrounding the lake where cuts and logged areas are clearly visible.

The visual qualities of the lake and project layout diminish the overall perceived project impact. The potential visual effects (or impacts) of the project are qualified by the distance of the nearest visible turbine at 4.1 miles. This factor coupled with the continuous foreground and midground "roll" of the landscape diminishes the prominence of the turbine array. From the majority of the lake, Penobscot Bald Mountain represents the tallest and most distinct landform when looking toward the project, thereby drawing the eye.

The variety of coves and shoreline elements, along with the general configuration of the lake and the resulting patterns of use provide many options for water travel and orientation. Although the project will be potentially visible in many sections of the lake, this visibility is also qualified by the habits of the users. For example, paddlers tend to hug shorelines, and anglers tend to focus on the fishing and float in particular locations that may or may not be in view of the project. From the simulation viewpoint, the turbines would take up a limited portion of the 360° view – 36.4° or 10.1% of the 360° view. Even at a closer location on the lake, the angle of view still occupies a limited human field of vision, 43.23° or only 12% of the 360° view.

The potential impacts to the lake user do not rise to the level of being unreasonable. First of all, the access to the lake limits the overall user numbers, and thus the potential number of recreationists who might be affected by the project. Results from the Bowers Survey results indicated that Scraggly Lake gets less than half the use observed at Pleasant Lake or Junior Lake. As stated, the lake's configuration and numerous islands and coves provide extensive areas from which the project will not be visible. Secondly, and perhaps the most important consideration, is the fact that the surveys conducted indicate that for 73% of the respondents they will be likely to return or the project will have no effect on their likelihood to return to this lake after the project is constructed. This is the true test of project impacts – that they are not unacceptable, and will

not prevent people from continuing to use the lake as they do currently. **Based on all of these factors, the overall scenic impact to Scraggly Lake is MEDIUM.**

H. Shaw Lake

Shaw Lake is located to the southeast of the Project. It is only accessible via a single gravel road, which is only passable during limited times of the year, and typically only by 4x4 vehicles. To the north of Shaw Lake is the 66-lot Vinegar Hill Subdivision, with approximately 40 houses or seasonal camps existing to date. Although the shoreline is undeveloped, the scenery is generally undifferentiated and indistinct. This lake has not been designated as remote under LUPC management classifications, and therefore is not considered to be a wilderness setting. Lack of access translates to very low recreational use of Shaw Lake, as documented during the course of the Bowers study in which no individuals were observed using this lake.

The nearest visible turbine will be 3.5 miles from the lake. Only about half the lake will have views of 9 to 14 turbines and intervening topography will block portions of both Bowers Mountain and Dill Hill. The project will not appear overly dominant. Despite the proximity of the lake to the Project, the topographic forms of the low ridges nearer to the lake will continue to be the primary visual element when looking towards the Project. As depicted in the visual simulation, the visual forms of these hills would remain dominant compared to the turbines visible around them. The angle of view would be 44.7°, or approximately 12.4% of a 360° view.

The project will not unreasonably affect users. The low number of users for this lake coupled with the overall survey results of both the Baskahegan and Bowers project area lakes reinforce the fact that having wind turbines in view does not necessarily diminish the likelihood of users to return to this resource. **Based on all of these factors, the overall scenic impact will be LOW-MEDIUM.**

I. Sysladobsis Lake

Only a small portion (12 %) of the northerly extent of the lake is within 8 miles of the Project, and of this portion, 58% will have potential views of the project, primarily of fewer than 7 turbines. The closest visible turbine is 6.3 miles. Within 8 miles, the lake has extensive camp development, including 52 private camps and homes along the lakeshore, most of which are oriented away from the Project. There are no dramatic or unique physical features associated with this portion of the lake. The lake as a whole is considered to have good fishing and is readily accessible via a number of launches for motorboats, including one within 8 miles of the Project.

Many areas of the lake would be without visibility, notably along the northern and eastern shore. The cove that connects to Upper Sysladobsis Lake would have no visibility, and the large islands on the lake would buffer or block views as well. The boat launch and two tent sites at the northern end of the lake will also have no visibility. Getchell Mountain is a prominent landform in view, and it would serve to provide visual balance to the turbines, contributing to the landscape's ability to visually absorb the Project. In addition, the surrounding landforms such as Chamberlain Mountain and Almanac Mountain to the west would also provide visual interest and draw the eye.

The distance of the project from the lake and the extent of project visibility significantly reduces the potential for visual impact. As seen in the simulation, the array is clustered in a manner that greatly reduces its visual presence on the lake. At this distance the turbines appear to be quite small, and the angle of view at the simulation site, 10.25°, represents only 2.8% of the 360° view.

The project will not result in an unreasonable effect on scenic character or existing uses related to that scenic character. The project will not be a dominant presence on the lake, as demonstrated by the analysis, and therefore should not overly distract or deter users from enjoying this portion of the lake, or returning to it in the future. **Based on all of these factors, the overall scenic impact is LOW.**

J. Summary Matrix of the Lake-by-Lake Analysis

The matrix presented in Table 3 summarizes the statutory criteria's impact on scenic quality for each lake, and yields an overall ranking of scenic impact on a resource-by-resource basis. This table and the individual and overall rankings inform the findings and conclusions of the Visual Impact Assessment.

Table 3. Summary of Statutory Criteria's Effect on Scenic Impact

NA = the Project is not visible from the resource or there are no turbines within 8 miles that are visible, therefore the criteria is not evaluated for its effect on scenic impact
Low = the criteria's effect on scenic impact is low
Med = the criteria's effect on scenic impact is medium
High = the criteria's effect on scenic impact is high

SCENIC RESOURCE OF STATE OR NATIONAL SIGNIFICANCE	[2]STATUTORY EVALUATION CRITERIA							OVERALL SCENIC IMPACT
	A.	B.	C.	D.	E.1[1]	E.2	F.	
Bottle Lake	Low	Low	Low	Low	High[3]	Low	Low	**Low**
Duck Lake	Low	Low	Low	Low	Low	Low	Low	**Low**
Horseshoe Lake	NA	NA	NA	NA	NA	NA	NA	**NA**
Junior Lake	Med	Med	Med	Low	Med	Low	Med	**Med**
Keg Lake	Low	Low-Med	Low-Med	Low	Low	Low	Med	**Low-Med**
Lombard Lake	NA	NA	NA	NA	NA	NA	NA	**NA**
Norway Lake	NA	NA	NA	NA	NA	NA	NA	**NA**
Pleasant Lake	Med	Med	Med-High	Low	Med	Low	Med	**Med**
Pug Lake (West Grand Lake)	Low	Low	Low	Low	Low	Low	Low	**Low**
Scraggly Lake	Med	Med	Med-High	Low	Low	Low	Med	**Med**
Shaw Lake	Med	Med	Low-Med	Low	Low	Low	Med	**Low-Med**
Sysladobsis Lake	Low-Med	Low	Low	Low	Low	Low	Low	**Low**
Upper Sysladobsis Lake	NA	NA	NA	NA	NA	NA	NA	**NA**
West Musquash Lake	NA	NA	NA	NA	NA	NA	NA	**NA**
Springfield Congregational Church	NA	NA	NA	NA	NA	NA	NA	**NA**

[1]Note that this criterion does not assess impact to scenic quality. A resource that receives low use (and subsequently a low rating for E1) but has high scenic quality, such as a remote pond, could still receive a high overall scenic impact rating based on contributions from other criteria. Likewise, a resource that has a high use (and subsequently a high rating for E1) but has low scenic quality due to shoreline development or other considerations could still receive a low overall scenic impact rating based on contributions from other criteria.

[2]**Statutory Criteria**
A. Significance of the Scenic Resource
B. Existing Character of the Surrounding Area
C. Typical Viewer Expectations
D. Purpose and Context of the Proposed Activity
E.1 Extent, Nature and Duration of Public Use of the Scenic Resource
E.2 The Project's Effect on Continued Use and Enjoyment of the Scenic Resource
F. Scope and Scale of Visibility from the Scenic Resource

[3]It is high in the sense of density of use, but it does not attract users from outside the area so is not something we would necessarily consider to be a highly used lake.

VII. ASSOCIATED FACILITIES

The Project's associated facilities include access and crane-path roads, the express collector line, the substation, the operations and maintenance building ("O&M building"), and the permanent met tower. Although not specifically included in the definition, to be conservative we have assumed that the cleared areas around individual turbine foundations, including those cleared during construction and subsequently allowed to revegetate, are also associated facilities.[1]

LandWorks undertook a complete evaluation of the associated facilities of the Bowers Wind Project and evaluated the visual impacts of these facilities pursuant to the visual standard set forth in Maine's Wind Energy Act. See Section 5.4 of the VIA. As previously noted, this region of Maine represents a working landscape that is accustomed to modern land use and landscapes, evidenced in the network of logging roads, transmission corridors, transportation infrastructure, and other general development. There is active logging in the study area with new roads being created to support this activity on a routine basis. Throughout most of the study area, topography, forest cover, and roadside vegetation constrain or block views of the Project's associated facilities, limiting any visual impact.

The visual simulations done for the Project and included in Exhibit 4 reflect the access roads and associated clearing, crane paths, and the clearing around the turbines. As reflected in the simulations and summarized in Table 3 of the VIA, there will be limited visibility of the roads or clearing from any scenic resource of state or national significance. There is no visibility

[1] "Associated facilities" are defined in the Wind Energy Act as "elements of a wind energy development other than its generating facilities that are necessary to the proper operation and maintenance of the wind energy development, including but not limited to buildings, access roads, generator lead lines and substations. 35-A M.R.S.A. § 3451(1). "Generating facilities" are defined to include "wind turbines and towers and transmission lines, not including generator lead lines, that are immediately associated with the wind turbines." 35-A M.R.S.A. § 3451(5).

of the substation, O&M building or express collector, and insignificant visibility of the met tower from any resources of state or national significance.

VIII. NIGHT LIGHTING

The applicant has committed to installing a radar-assisted lighting system to mitigate any impacts once the FAA has approved it for wind applications in the United States, and this Project. Until such time, red-flashing lights per FAA standards will need to be used. As such, an analysis of these temporary conditions has been conducted as part of the VIA. Section 4.4 of the VIA identifies which turbines will be lit and analyzes the extent of nighttime visibility on each of the scenic resources of state or national significance located within 8 miles. That analysis demonstrates that the visual impact from the required night lighting of the Project is not unreasonable for several reasons:

- The visibility will be reduced due to the limited vertical beam spread. Warning lights must be visible horizontally from the light and higher and do not direct light of any significant intensity below minus 10 degrees of the horizontal plane created by the direct cast of the light itself. Because of the limited vertical beam spread, visibility is reduced since viewers typically do not see these lights directly, and they do not create glare or untoward light impacts to the naked eye situated below the tower base.

- There is no impact to the quality of the night sky (except on the horizon lines beyond or in the vicinity of the lights, but stargazing or the night experience is not typically focused on the horizon).

- FAA studies have suggested that the use of red light emitting diode or rapid discharge style fixtures limits exposure time, thus creating less of a nuisance (as compared to a constant red light).

- The visibility of these lights will be mitigated by the distance of the lights from potential viewing locations, an average of 4 miles and beyond.

- Exposure to lake users is limited. Very few people paddle or fish at night, primarily for reasons of safety, orientation, navigation and overall enjoyment. Fisherman and others may see the lights at dawn and at dusk when they are arriving or departing from the lakes, but this would only be for limited duration and users are typically focused on preparing and launching their boats and gathering their equipment.

- There are no publicly owned or maintained campgrounds or campsites within the study area. There are however several privately maintained campsites available for public use. Most campsites are in wooded locations or are situated away from the Project and therefore will not have visibility, or will only have limited visibility. In instances where visibility is possible, impacts are diminished because views are filtered through the trees and campers are usually focused visually on a campfire or other campsite activities (i.e. cleaning dishes, socializing, etc.).

- Primary impact would be to camp owners although a) many camps are oriented away from project or are out of view; b) lights from these camps often create direct glare on the lakes, are brighter or more noticeable, and have greater impacts in some regards than the night lighting of turbines. Overall impact would be one of annoyance to camp owners, but only for a limited period of time due to low nighttime use of the resources.

IX. CUMULATIVE IMPACTS

There are three other existing or proposed wind projects in the region that should be considered when evaluating the potential for cumulative impacts. (To be conservative, we have considered proposed as well as existing projects.) First, the existing Stetson project is located to the north of the Project, with the closest turbine approximately 5.7 miles from Project turbines and 8.2 miles from the nearest scenic resource of state or national significance within the 8-mile Project viewshed (Pleasant Lake). Second, the existing Rollins project is located to the west of the Project. The closest turbine is approximately 16 miles from the Project turbines and 10.7 miles from the nearest scenic resource of state or national significance within the 8-mile Project viewshed (Lombard Lake). Third, the proposed Passadumkeag project is located to the south and west of the Project. The closest Passadumkeag turbine is located approximately 21.1 miles from the Project turbines and 13.2 miles from the nearest scenic resource of state or national significant within the 8-mile Project viewshed (Upper Sysladobsis Lake). Although a viewshed analysis was not conducted for each wind project in the region, field verification and 3D analysis demonstrates that no turbine from any project will be visible from any of the scenic resources of state or national significance within the Project 8-mile viewshed. Because none of the existing

or proposed turbines associated with other wind projects in the region will be visible from scenic resources of state or national significance within the 8-mile Project viewshed, there will be no cumulative impacts.

X. CONCLUSIONS

These lakes are indeed part of the landscape character of the region but are not unique resources that stand out as one-of-a-kind scenic environments.

The lakes and the experience they provide will not be substantially altered or undermined by a wind energy development visible at a distance of 2.4 to 8 miles, most often as part of the background view. The shorelines will remain intact, the waters will still be quiet, the fishery will not be affected, and it will still draw the avid and recreational fishing enthusiast. This is not to discount the fact that there will be visual impacts, and that in some instances there will be significant visibility that changes the view. However, there is a growing body of evidence that for many people who recreate in Maine, the presence of wind turbines in view has no impact on their use and enjoyment of the resource and, in some instances, positively impacts their experience. Thus, the assumption that visibility of turbines negatively impacts recreational users is not always true. While some people would prefer not to look at turbines, many people are indifferent and others find them beautiful. This concept is reflected in the Wind Energy Act, which specifically states that visibility alone is not a basis for determining there is an unreasonable adverse impact; rather, the department must evaluate the extent to which visibility results in an unreasonable adverse impact on scenic character or existing uses related to scenic character. That is a much more nuanced inquiry, and for the reasons set forth in the VIA and here, we do not believe that visibility of the Project will sufficiently impact the scenic character or use and enjoyment of the resource to warrant a conclusion of unreasonable adverse impact. This is due in part to the following considerations:

- The lake resources and surrounding landscapes do not present unique or highly sensitive qualities that preclude the addition of an array of wind turbines within the viewshed. For example, the landscape does not have prominent distinctions between landforms, such as open water in combination with a steeply rising mountain, or have unique focal points and distinct, memorable profiles that are characteristic of iconic landscapes that are more sensitive to changes in the viewshed. Additionally, the Project ridges are not visual focal points from the area lakes. Instead, they are part of a broader landscape that is able to "visually absorb" the project, lessening its presence and thereby its visual impact.

- While scenic and valued for its recreational qualities, the Project site and lakes within 8 miles present a landscape and opportunities that are similar to those present and offered at other nearby areas and lake-region landscapes. Bowers Mountain and Dill Hill are not identified as significant recreational, scenic or cultural landmarks in the region. Likewise, the Project lakes are not major recreational destinations. None are listed on the official Maine State tourism website, and are rarely mentioned, if at all, in guidebooks and other local media outlets, indicating their limited significance to the region, as well as the State.

- The Project area is not an intact landscape, which aesthetic experts often cite as a measure of scenic quality. This area has long been a working landscape, as evidenced in the patchwork of logging roads and skid trails, as well as the damming of rivers and varying lake levels. The perception of an untouched, unalterable environment is not present here.

- Many of the Project lakes are difficult to access and overall use is low, as confirmed by boat counts and intercept surveys, as well as personal observation and research. This demonstrates that they are not destination areas and receive predominantly local use.

- Typical users are primarily fishermen and boaters. Evidence suggests that scenic quality is not principal to the user experience, as opposed to hiking and paddling.

- The survey results for the Project lakes are consistent with results at other projects and demonstrate that although there will be a perceived drop in scenic quality on some lakes, Project visibility will not have an unreasonable adverse impact on either use and enjoyment or, importantly likelihood to return. Moreover, these results likely overestimate the actual impact the Project will have on these values.

- The impact of visibility on lake users is minimized due to the Project size, which is small in comparison to other nearby projects (e.g. Stetson with 55 turbines), and

the fact that as a result the turbines generally occupy a relatively narrow portion of the 360-degree view. Additionally, shoreline vegetation, intervening topography and distance reduce overall visibility.

- This is an appropriate site for a wind turbine project. Not only is it located in the expedited permitting area, but it allows connectivity to existing transmission facilities and comports with sound zoning principles and minimizes sprawl.

Taken together, these considerations support our conclusion that the Bowers Wind Project (and its associated facilities), in accordance with the evaluation standards of the Maine Wind Energy Act (35-A MRSA Section 3452) will not result in "an unreasonable adverse effect to the scenic character or existing uses related to the scenic character of the scenic resource of state or national significance."

Date: 3.14.13

David Raphael

STATE OF VERMONT
County of Addison

Date: 3.14.2013

Personally appeared before me the above named David Raphael, who, being duly sworn, did testify that the foregoing testimony was true and correct to the best of his knowledge and belief.

Before me,

Christine Lothrop
Notary Public
My commission expires: 2/10/2015

David Raphael Pre-Filed Direct Testimony Exhibits

Exhibit 1	Raphael Resume
Exhibit 2	Map Depicting Scenic Lakes of State or National Significance with 8 Miles
Exhibit 2A	Regional Commercial Sporting Camps
Exhibit 3	Viewshed Map
Exhibit 4	Lake by Lake Material

David Raphael, B.A., M.L.A. | Principal/Landscape Architect & Planner

EDUCATION

M.L.A., Harvard University Graduate School of Design, 1977 *Cambridge, Massachusetts*

B.A. in English, Tufts University, Cum Laude, Minor in Ecology, 1972 *Medford, Massachusetts*

School of the Museum of Fine Arts, 1971, *Boston, Massachusetts*

Diploma, Dartmouth College Outward Bound Program, 1970, *Hanover, New Hampshire*

EMPLOYMENT HISTORY, PROFESSIONAL SKILLS, AND DUTIES

1986-present: *LandWorks,* Middlebury, Vermont; Founded the firm and has been Principal Landscape Architect & Planner for most of the company's projects.

1984 - 1985: *Alexander, Truex, deGroot, Architects,* Burlington, Vermont; Consultant and staff Landscape Architect/Planner

1980 - 1982: *Kiley-Walker,* Charlotte, Vermont; Associate Landscape Architect

1976 - 1979: *Massachusetts Department of Environmental Management,* Planner/Landscape Architect

TEACHING/ACADEMIC APPOINTMENTS

1982-present: Lecturer, Rubenstein School of Environment & Natural Resources, University of Vermont

1992-1994: Visiting Instructor, Middlebury College, Middlebury, VT

1991-1993: Adjunct Faculty Member, Vermont Technical College

1988- 1989: Director; "Design Vermont" project of the Vermont Council on the Arts and the Governor's Institute on the Arts, funded by the National Endowment of the Arts & held at Castleton State College, July 1989

1983: Visiting Assistant Professor, School of Architecture, University of Arkansas

1982-1984: Adjunct Associate Professor, Graduate Program in Urban and Environmental Policy, Tufts University

PROFESSIONAL REGISTRATIONS

- Registered Landscape Architect - State of Rhode Island
- Passed Uniform National Examination: eligible for registration in other states
- Registered with the Professional Ski Instructors of America

MEMBERSHIPS

- Member, American Society of Landscape Architects
- Member, American Planning Association
- Member, Society of Environmental Graphic Designers
- Member, Board of Trustees, Lake Champlain Land Trust
- Member, Board of Directors, Vermont State Craft Center at Frog Hollow
- Chairman, Town of Panton Planning Commission and Development Review Board 1985 - present
- Delegate, Addison County Regional Planning Commission
- Member, Agency of Natural Resources, Design Issues Study Committee
- Member, Town of Middlebury, Design Advisory Committee
- Member, Vermont Natural Resources Council

PARTIAL LISTING OF RESEARCH and PUBLICATIONS

"Aesthetics & Utilities, The Aesthetic Assessment and Mitigation Process", Presented to the IEEE Power Engineering Society, Montreal, CA, 2006

"Wayfinding Principles & Practice," American Society of Landscape Architects, Landscape Architecture Technical Information Series, 2006

"BGOC (Big Graphics on Campus) Signs and environmental graphics that impact collegiate environments" Signs of the Times, Oct. 2003

"A New Vision for Vermont," Landscape Architecture Magazine, December 1999

Special Correspondent, Burlington Free Press, Burlington, Vermont, 1994 to 1998

"Brave New Vermont," Vermont Magazine, June 1995, Contributor.

Sign Management: Aesthetics, Economics, Environment - The Vermont Experience, 1992 ("Best of the Conference" award at national conference on sign management, 1992)

"Prospect," Landscape Architecture Magazine, September/October 1985.

"Grounds for Playful Renaissance," Landscape Architecture Magazine, July 1975.

Richard P. White Award, Horticultural Research Institute, Washington, D.C., 1983-1984 Windbreaks and Shelterbelts for the Northeast

Rivers Downtown: Riverfront Revitalization in Vermont, for the Winooski Valley Park District, October 1981; funded with a Housing and Urban Development and Research Grant

"Evolutionary Trends and Essential Themes of Wilderness Preservation" in Public Space, Peter Trowbridge, Ed. and with an Introduction by J.B. Jackson; Harvard University, Cambridge 1975.

AWARDS

2010 **Vergennes Municipal Development Plan** | *Plan of the Year*
Vermont Planner's Association

2007 **Lake George Upland Protection Program** | *Award of Excellence*
Vermont Chapter American Society of Landscape Architects

2007 **Guiding Growth in Burke** | *Certificate of Merit for Outstanding Planning Project*
Vermont Chapter American Society of Landscape Architects

2005 **View From the Road** | *Public Space Award*
Vermont Chapter American Society of Landscape Architects

2005 **Island Line Sign & Amenities Plan** | *Award of Excellence*
Vermont Chapter American Society of Landscape Architects

2005 **Lake Morey Resource Conservation Project** | *Merit Award*
Vermont Chapter American Society of Landscape Architects Public Space

2005 **Danville Transportation Enhancement Project** | *Public Space Award Honorable Mention*
Vermont Chapter American Society of Landscape Architects

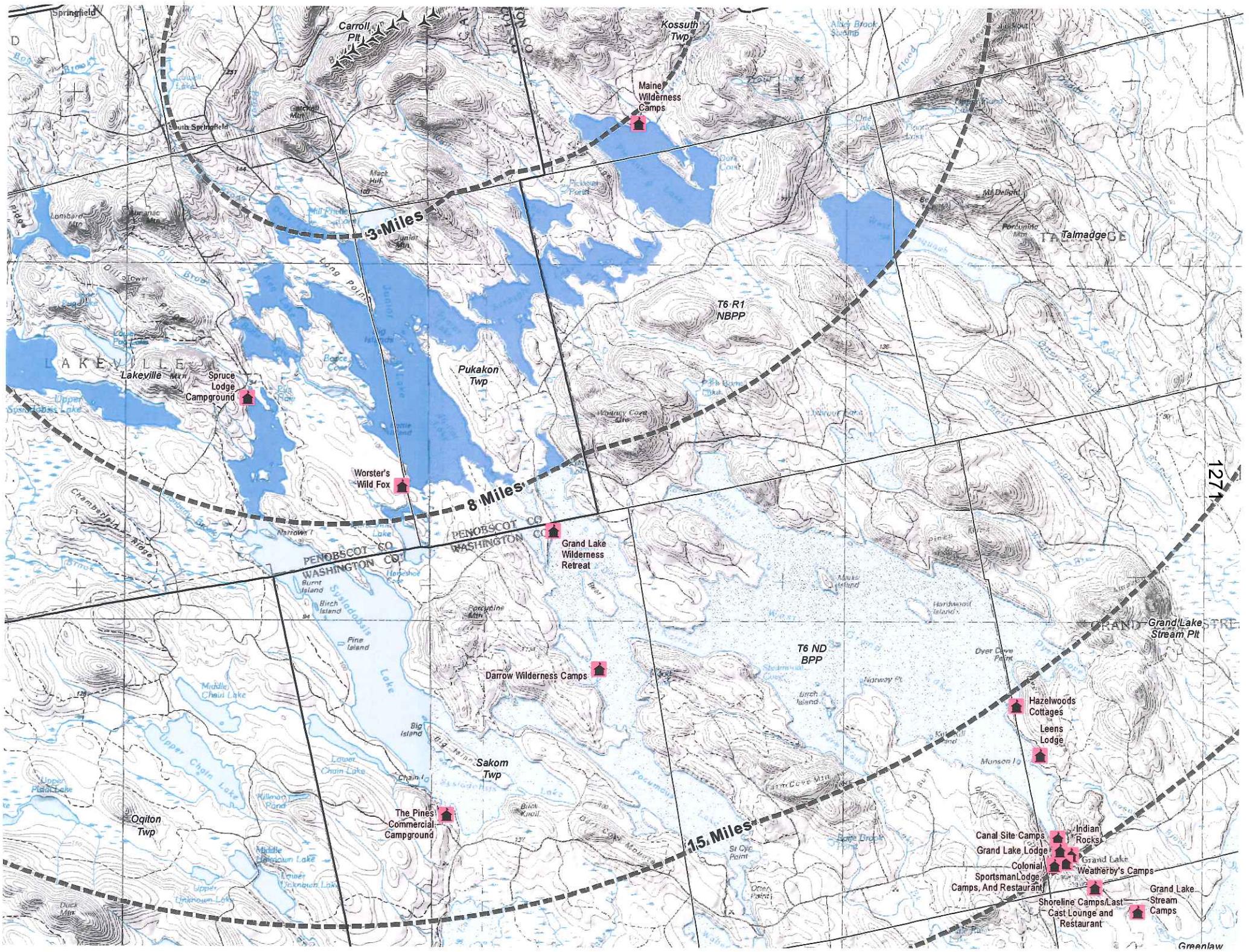
2004 **Manchester Design Guidelines** | *Honor Award*
Vermont Chapter American Society of Landscape Architects

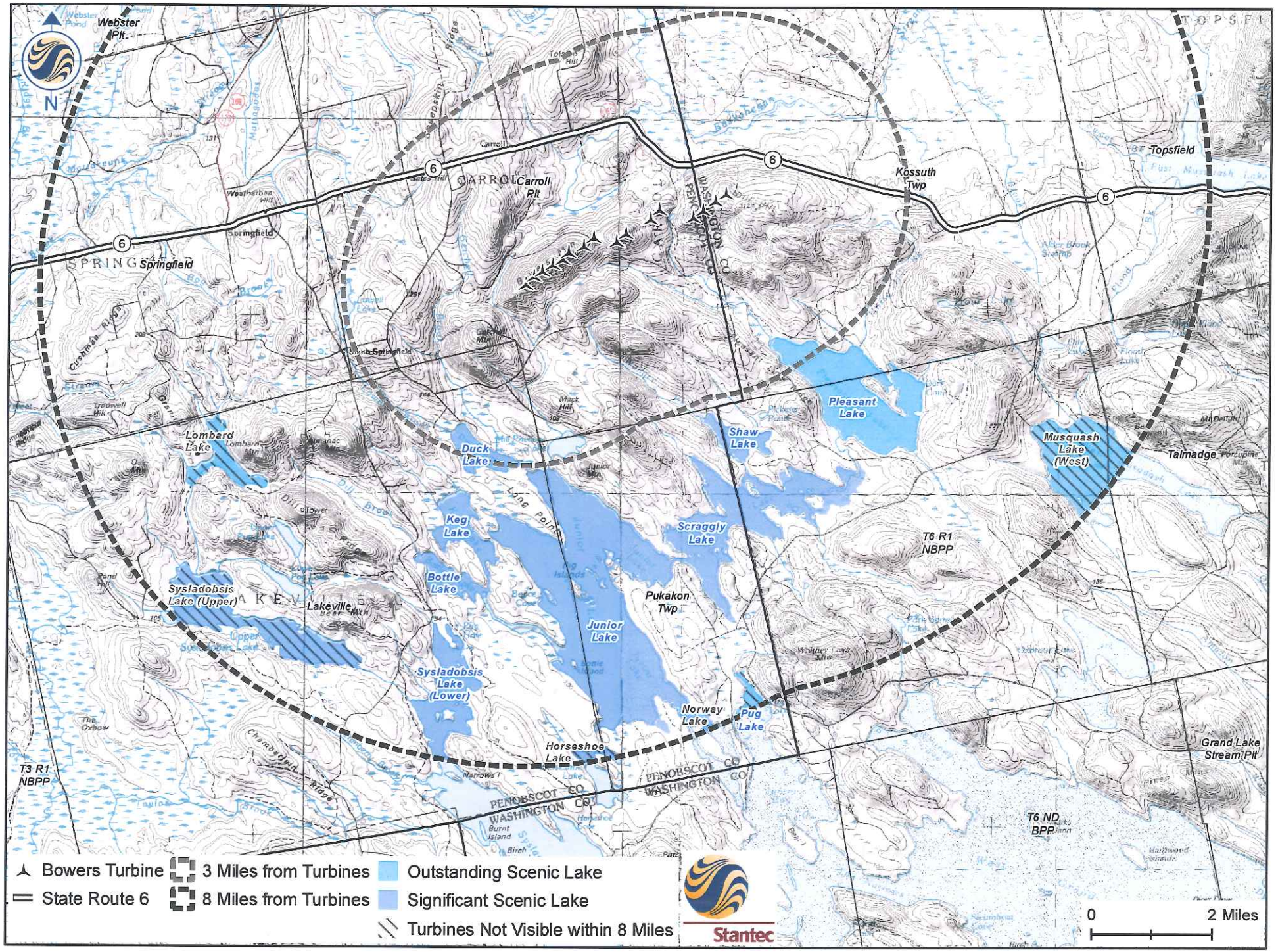
2003 **The Pownal Municipal Plan & Land Use Regulations** | *Certificate of Merit for Outstanding Planning Project*
Vermont Planners Association

2002 **Danville Route 2, Danville, Vermont** | *Certificate of Merit for Engineering Excellence*
American Council of Engineering Companies

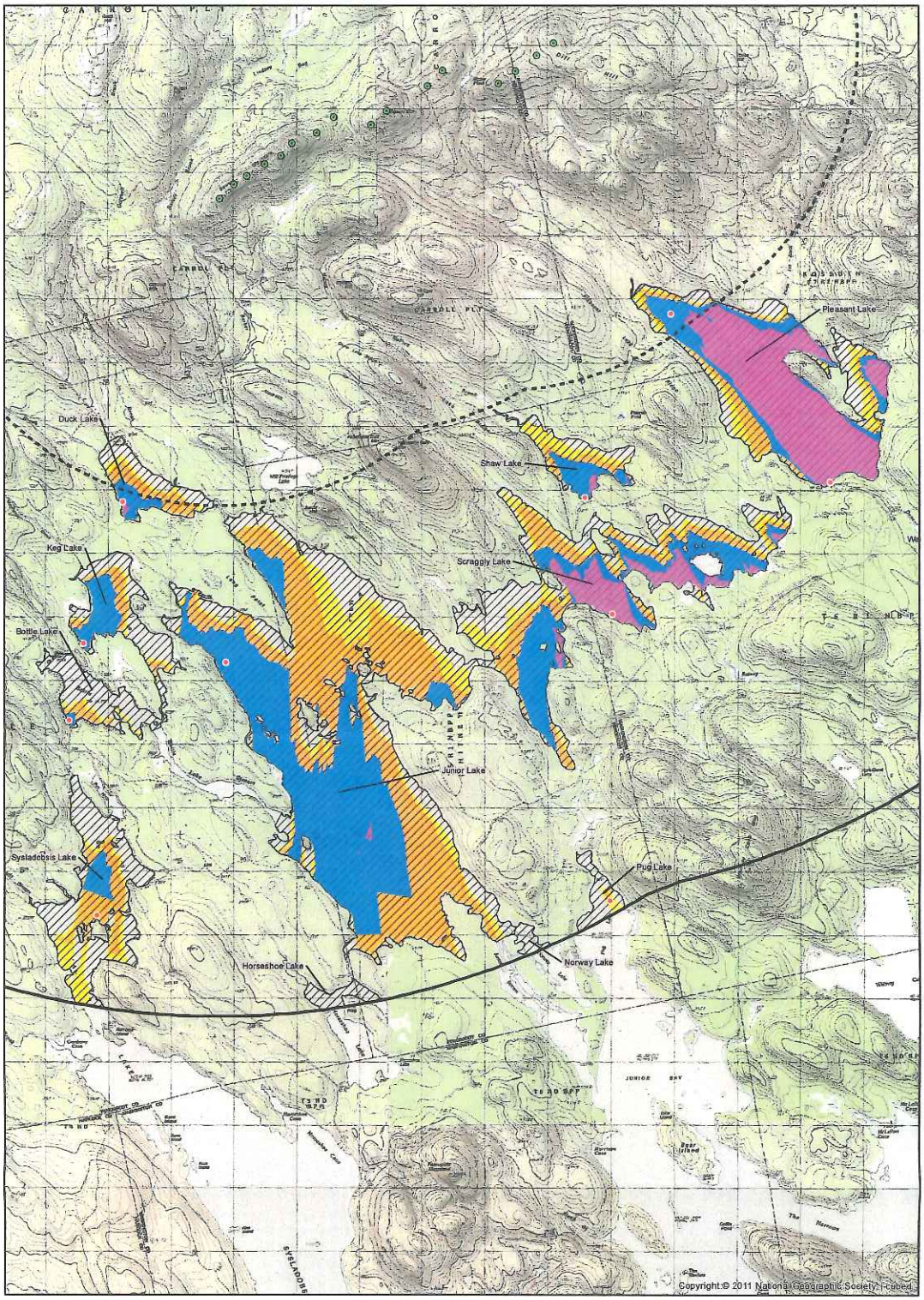
2001 **Stowe Ridgeline Ordinance: Ridgeline & Hillside Overlay District** | *Merit Award*
Vermont Chapter American Society of Landscape Architects

2001 **The University of Vermont Wayfinding System & Design Standards** | *Certificate of Merit for Outstanding Planning Project*
Vermont Planners Association


Springfield
Carroll Plt
Kossuth Twp
Maine Wilderness Camps
South Springfield
3 Miles
Talmadge
T6 R1 NBPP
Pukakon Twp
LAKEVILLE
Lakeville
Spruce Lodge Campground
Worster's Wild Fox
8 Miles
PENOBSCOT CO
WASHINGTON CO
Grand Lake Wilderness Retreat
1271
Grand Lake Stream Plt
T6 ND BPP
Darrow Wilderness Camps
Hazelwoods Cottages
Leens Lodge
Sakom Twp
Oqiton Twp
The Pines Commercial Campground
15 Miles
Canal Site Camps
Indian Rocks
Grand Lake Lodge
Colonial SportsmanLodge, Camps, And Restaurant
Weatherby's Camps
Shoreline Camps/Last Cast Lounge and Restaurant
Grand Lake Stream Camps
Greenlaw


Webster Plt
Carroll Plt
Springfield
Kossuth Twp
Topsfield
Talmadge
Lombard Lake
Duck Lake
Shaw Lake
Pleasant Lake
Musquash Lake (West)
Keg Lake
Scraggly Lake
Bottle Lake
Pukakon Twp
Junior Lake
Sysladobsis Lake (Upper)
Lakeville
Sysladobsis Lake (Lower)
Norway Lake
Pug Lake
Horseshoe Lake
T6 R1 NBPP
T3 R1 NBPP
T6 ND BPP
Grand Lake Stream Plt
PENOBSCOT CO
WASHINGTON CO
Bowers Turbine
State Route 6
3 Miles from Turbines
8 Miles from Turbines
Outstanding Scenic Lake
Significant Scenic Lake
Turbines Not Visible within 8 Miles
Stantec
0
2 Miles

1272



NOTE: This map depicts areas with POTENTIAL views of one or more turbines WITHIN 8 MILES. Visibility is generated from the turbine hub at 84m. Not all turbines (or all parts of turbines) will be seen from each location.The map only accounts for topography and vegetation with an assumed tree height of 40 feet. The map does not account for other factors such as buildings and structures, site specific vegetation, variations in eyesight, and atmospheric and weather conditions and may overstate where turbines will be seen from. Potential viewshed is based on GIS data available at the time from USGS and First Wind, LLC. Data is only as accurate as the original source and is not guaranteed by LandWorks.

0 0.5 1 Miles

Date: Mar 2013
Drawn by: NS

N

Legend

Proposed Turbines	# of Turbines Visible
Visual Simulation Location	1-4
National Historic Site	5-8
Scenic Lakes	9-12
3 Mile Radius	13-16
8 Mile Radius	

8-MILE VIEWSHED MAP
(topography and vegetation/from the hub)
Bowers Wind Project

firstwind

LandWorks

EXHIBIT 4: LAKE BY LAKE MATERIAL

The following figures are provided for each lake:

1. Existing Character
2. Extent of View
3. Existing Conditions Pictures
4. Visual Simulation

Scenic Lakes within 3 Miles of the Project

A. Duck Lake

B. Pleasant Lake

Scenic Lakes within 3-8 Miles of the Project

C. Bottle Lake

D. Junior Lake

E. Keg Lake

F. Pug Lake, West Grand Lake

G. Scraggly Lake

H. Shaw Lake

I. Sysladobsis Lake

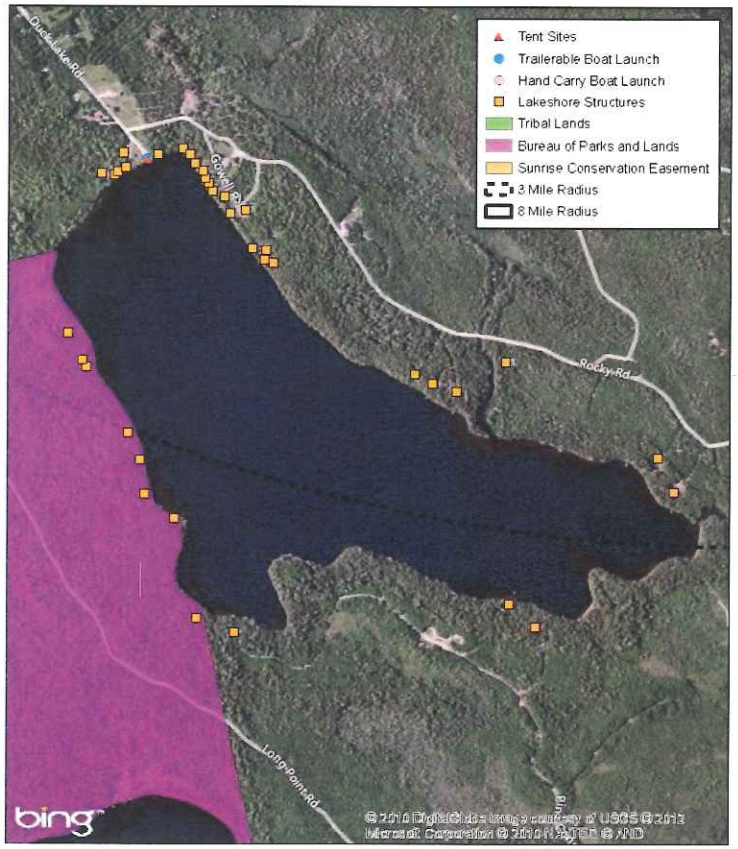


Figure A-1 – Duck Lake Existing Conditions

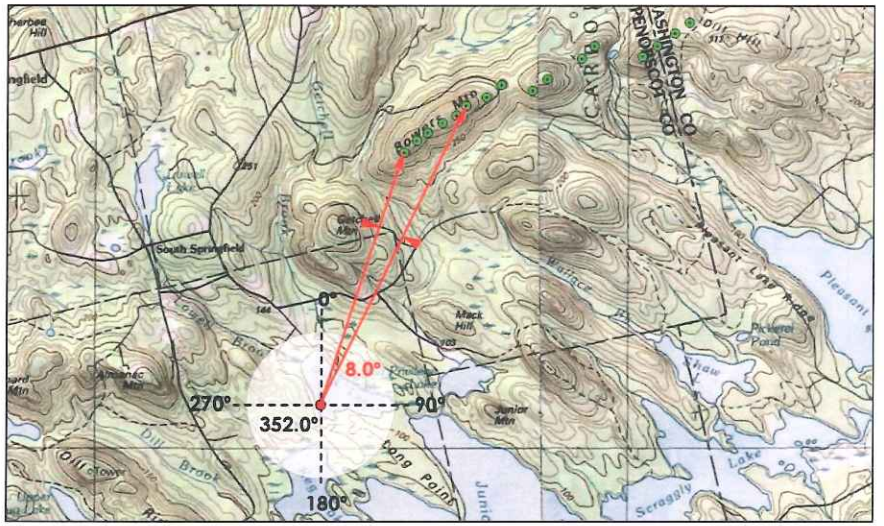
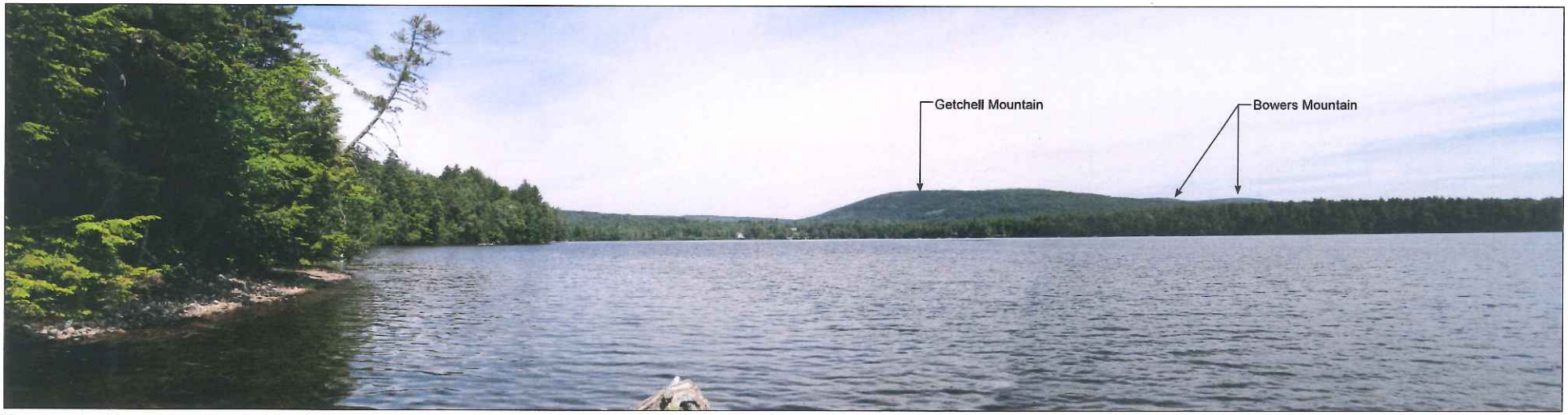
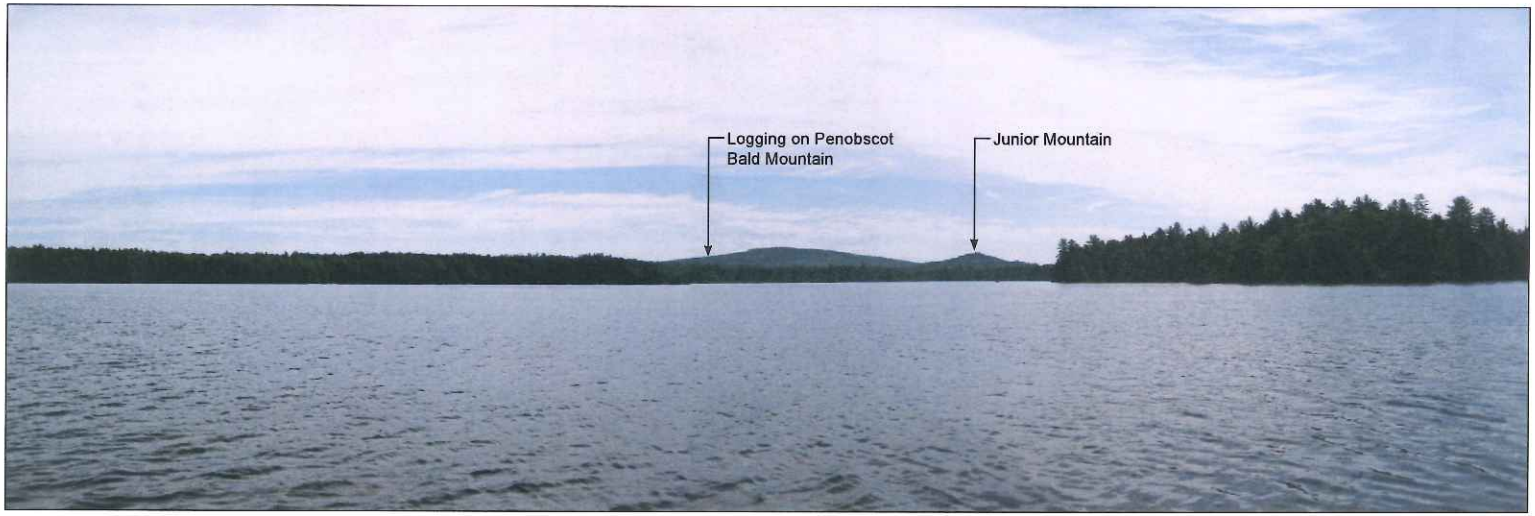


Figure A-2 – Duck Lake Extent of View



Panorama view from southern shore looking north.



Continuation of panorama view from southern shore looking northeast.

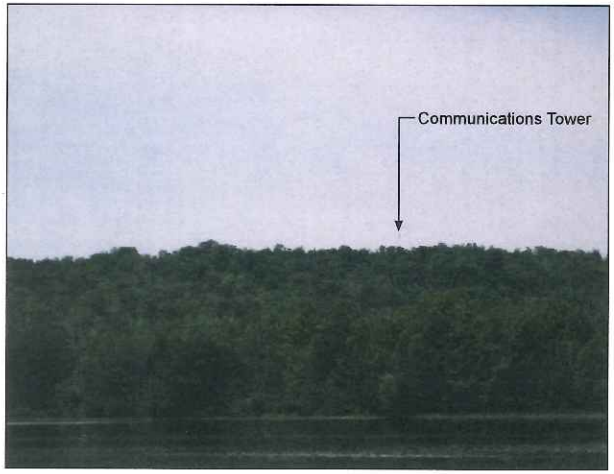
Continuation of panorama view from southern shore looking east.

View looking north / northeast from center of lake. Note that the distant ridgelines are not visible due to intervening topography and trees.

Camp development along southern shore.

Camp development along southern shore.

Camp development along southern shore.



View west with Almanac Mountain communications tower popping up above ridge (zoom photo).

Camp / house development along northern shore.

Public boat launch.

1278

Exhibit 12: Visual Simulation from Duck Lake, Lakeville (Sheet 1 of 2)

Bowers Wind Project

October 2012 LandWorks

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map

Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 6/16/10; 10:20 am
	Location: Duck Lake (just off southwestern shore), Lakeville; 45.339° N, -68.052° W
	Camera elevation above sea level: 302.5' (92.2 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 3.1 miles (5.0 km) Furthest: 4.6 miles (7.5 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

firstwind

Figure B-1 – Pleasant Lake Existing Conditions

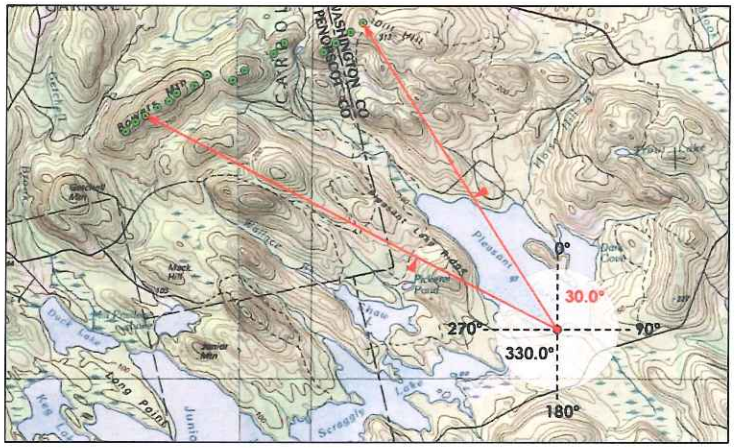


Figure B-2a – Pleasant Lake Extent of View from Boat Launch

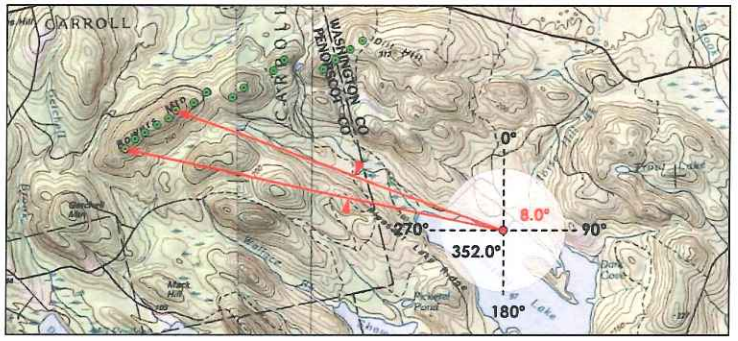
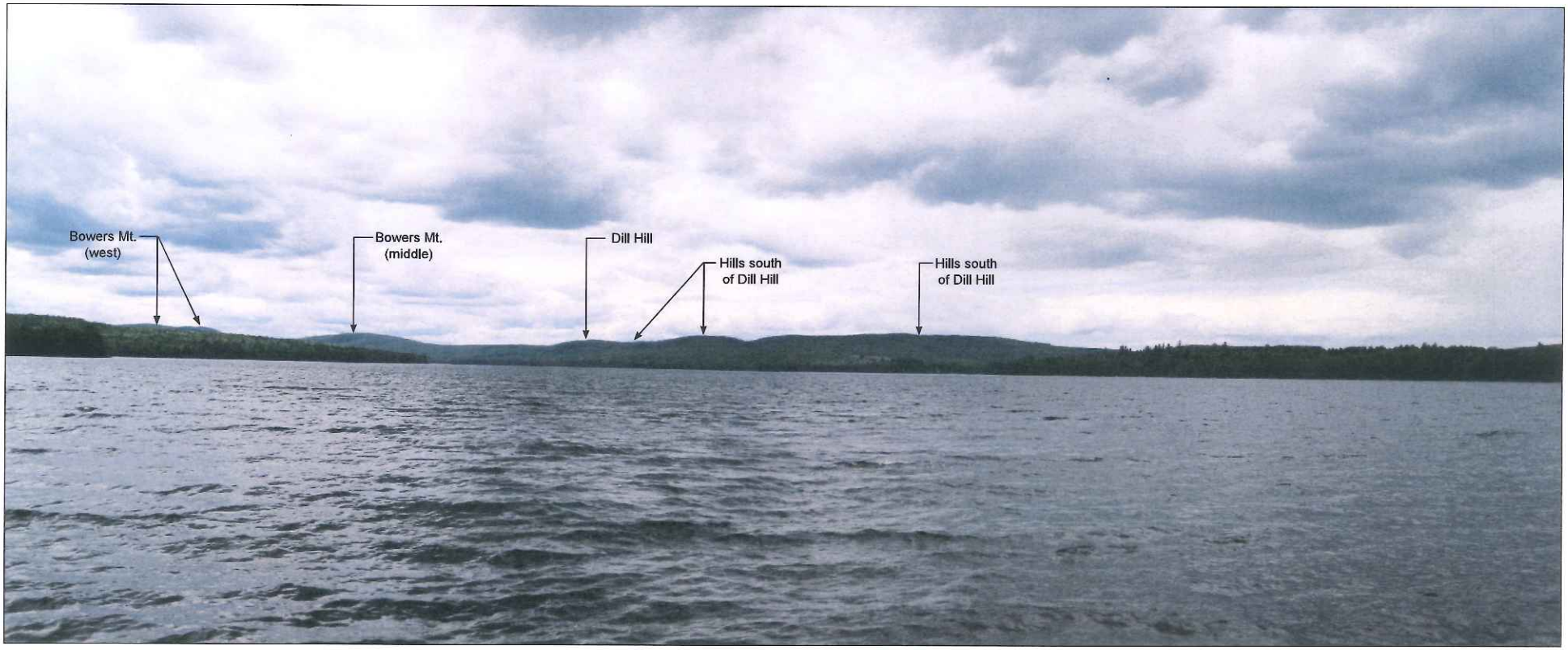


Figure B-2b – Pleasant Lake Extent of View from near Maine Wildness Camps



Panorama view looking northwest towards project site from the public boat launch.

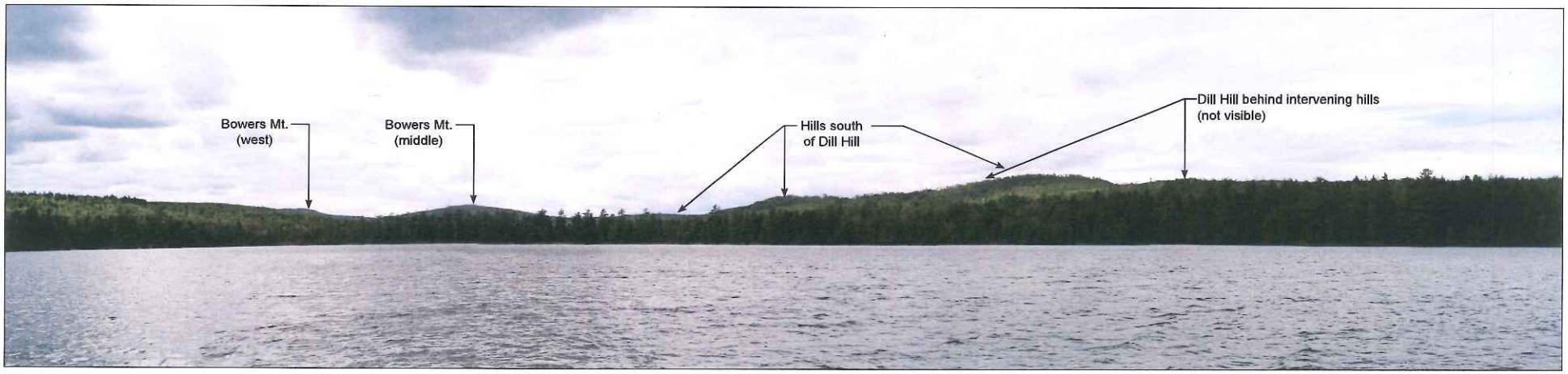
Exhibit 5: Photo Inventory (Pleasant Lake)

Bowers Wind Project

September 2012

Prepared for First Wind

LandWorks



Panorama view looking northwest toward project site from the northwest portion of the lake.

Panorama view looking north towards "Maine Wilderness Camp" with private boat launch.

1283

Pleasant Lake boat launch and camping area at south end of the lake.

Campground at public boat launch.

Public boat launch.

Campground at public boat launch.

View of public boat launch area from lake.

View of logging activity along Bowers Mt. ridge line at northwestern end of lake.

1284

View of "Maine Wilderness Camps," a private camp ground with cabins, camping sites, and boat launch.

Pleasant Lake Road / Amazon Road to Pleasant and Scraggly Lakes. This is a maintained gravel, logging road.

Pleasant Lake Road / Amazon Road.

Exhibit 15: Visual Simulation from Pleasant Lake Boat Launch, T6 R1 NBPP (Sheet 1 of 2)

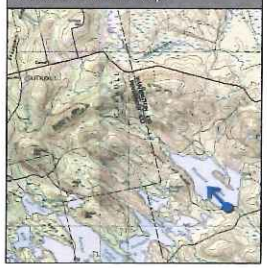
Bowers Wind Project

October 2012

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map



Simulation Information

Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 5/5/10; 3:20 pm
	Location: Pleasant Lake Boat Launch, T6 R1 NBPP; 45.340° N, -67.908° W
	Camera elevation above sea level: 324.5' (98.9 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 5.08 miles (8.2 km) Furthest: 6.6 miles (10.7 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

Exhibit 16: Visual Simulation from Pleasant Lake West, T6 R1 NBPP (Sheet 1 of 2)

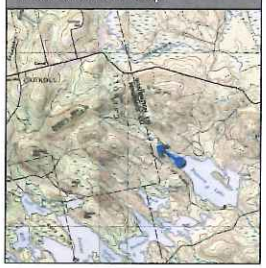
Bowers Wind Project

October 2012

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map



Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 5/5/10; 3:39 pm
	Location: Pleasant Lake West, T6 R1 NBPP; 45.3644° N, -67.9403° W
	Camera elevation above sea level: 324.5' (98.9 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 2.82 miles (4.54 km) Furthest: 4.27 miles (6.87 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

3. Portions of two turbines are potentially visible off-frame to the right. Panorama width is limited by the 11x17 size format and consistent viewing distance.

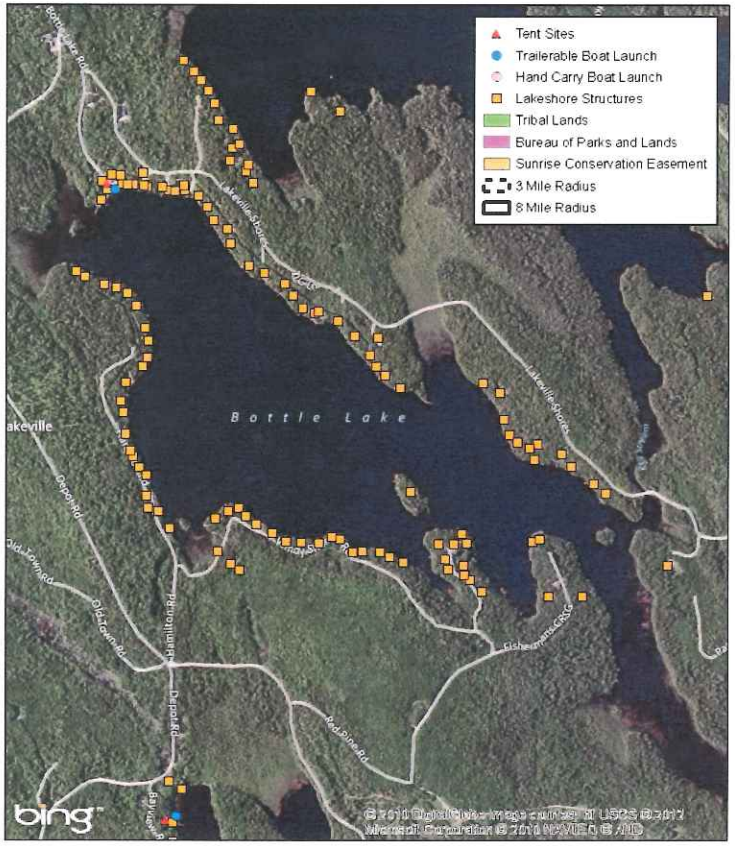


Figure C-1 – Bottle Lake Existing Conditions

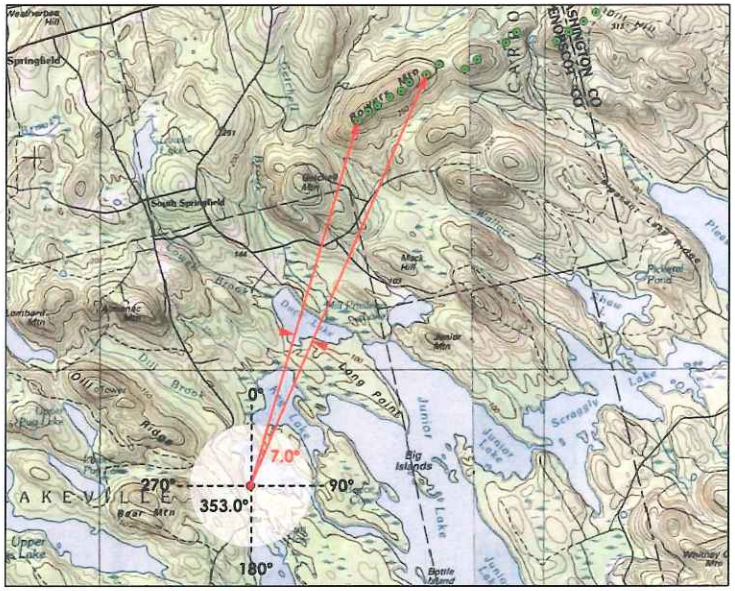
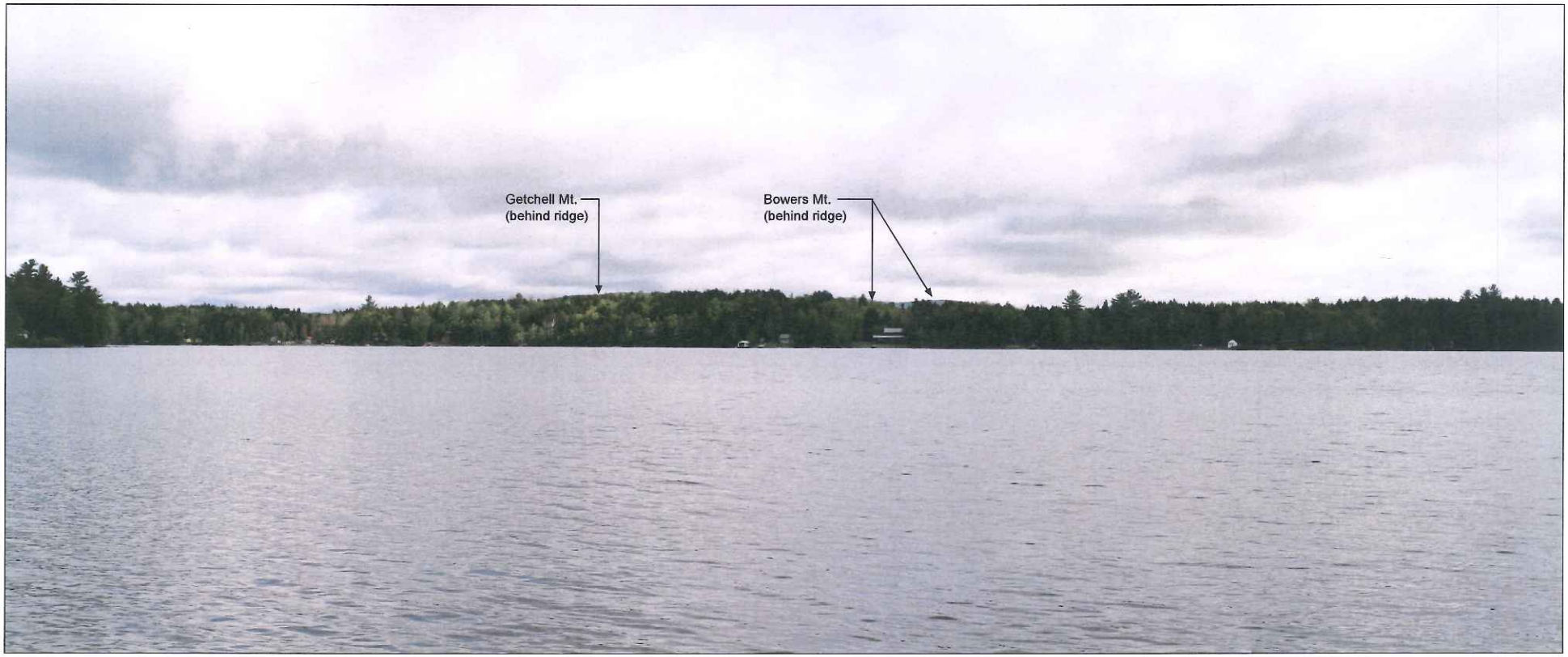
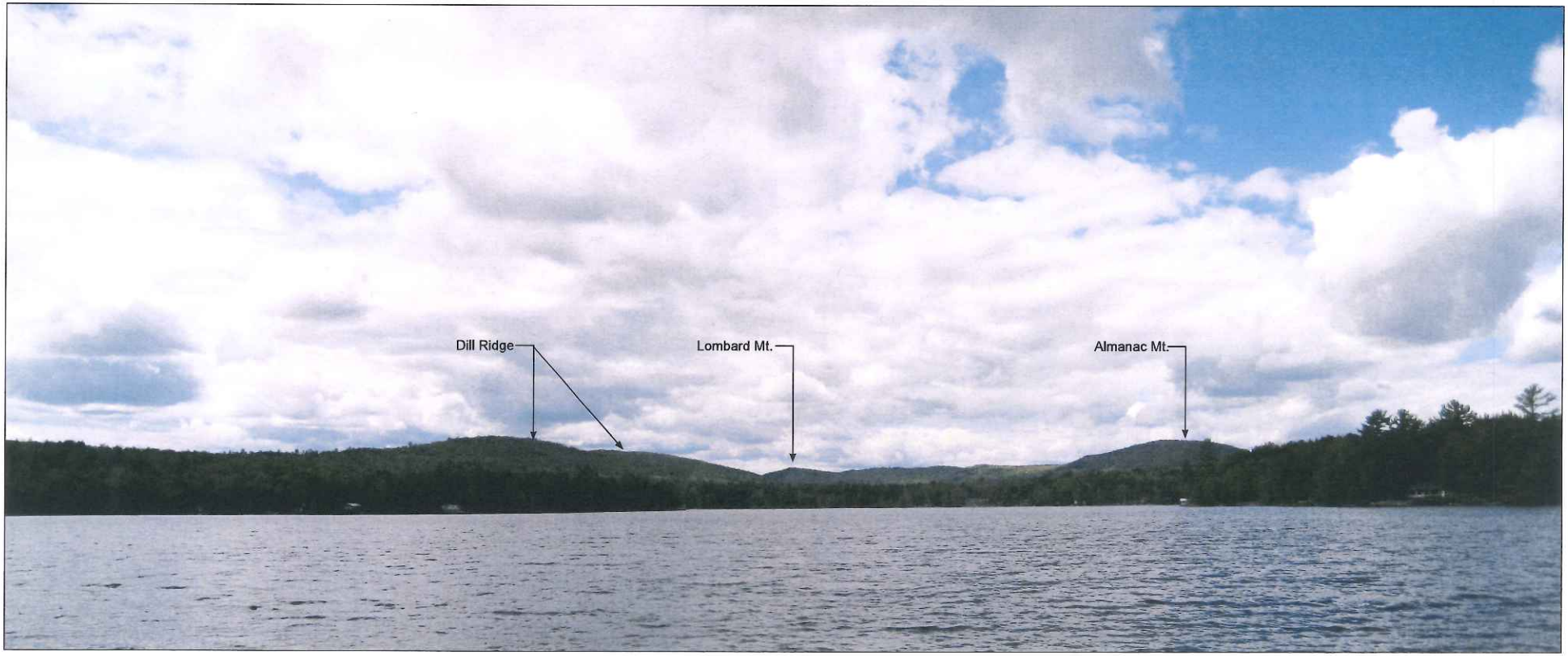


Figure C-2 – Bottle Lake Extent of View



Panorama view looking north toward project site from the southwest portion of Bottle Lake.



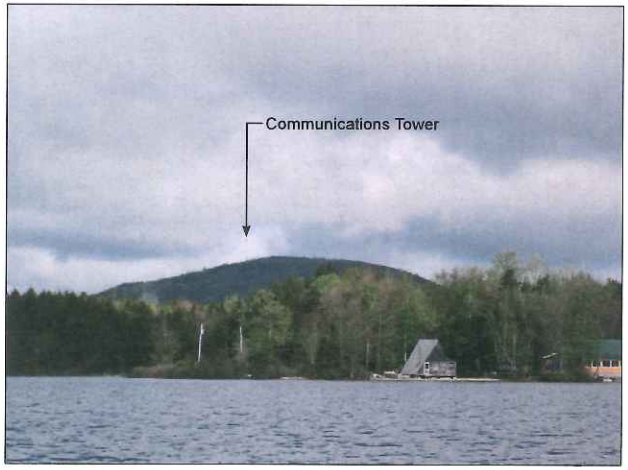
Panorama view looking to the northwest towards Almanac Mt., illustrating additional ridges surrounding the lake.

Panorama view looking south from public boat launch.

Bottle Lake boat launch.

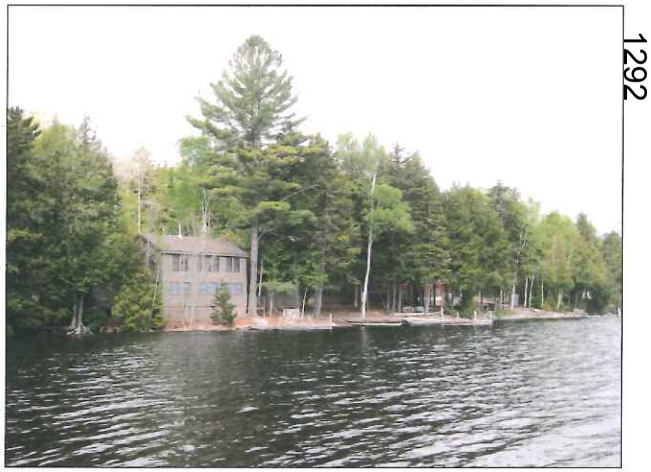
House adjacent to Bottle Lake boat launch area.

View of Bottle Lake boat launch.



Looking northwest towards Almanac Mt.

View of house near top of Dill Ridge (zoomed photo).



Lake house at the southern end of the lake.

Powerlines over an inlet / wetland at the northeast end of the lake.

Representative lake house / cottage development along the northern shore.

Representative lake house / cottage development along the northern shore.

Representative lake house / cottage development along the northern shore.

Representative lake house / cottage development along the northern shore.

Lake house development along the western shore. Note that powerlines cross the lake.

Exhibit 11: Visual Simulation from Bottle Lake, Lakeville (Sheet 1 of 2)

Bowers Wind Project

October 2012

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map

Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 5/5/10; 9:30 am
	Location: Bottle Lake (island in southwest cove of lake), Lakeville; 45.308° N, -68.063° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 5.3 miles (8.5 km) Furthest: 6.7 miles (10.8 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

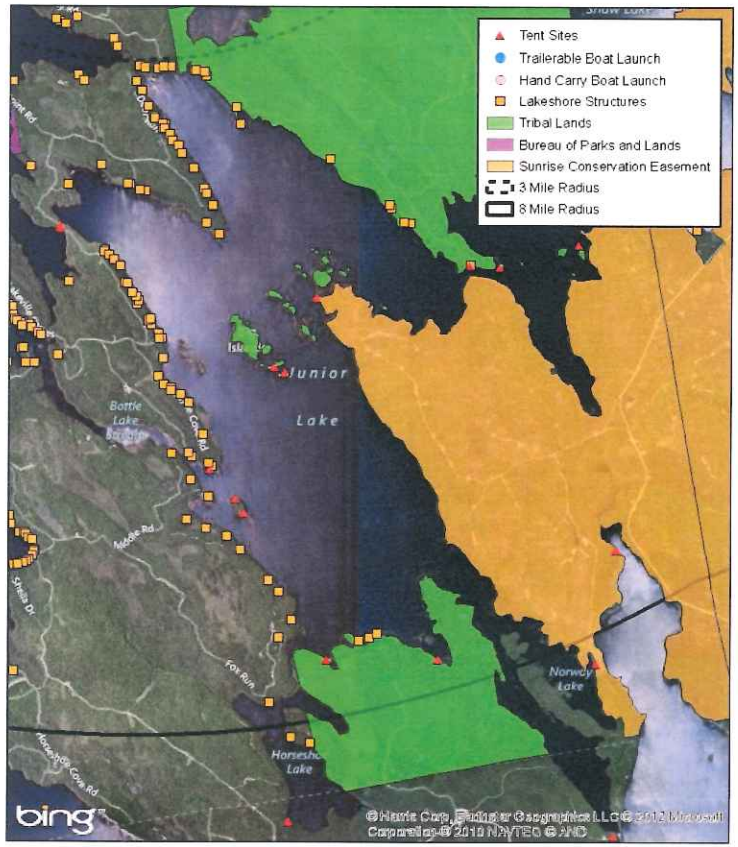


Figure D-1 – Junior Lake Existing Conditions

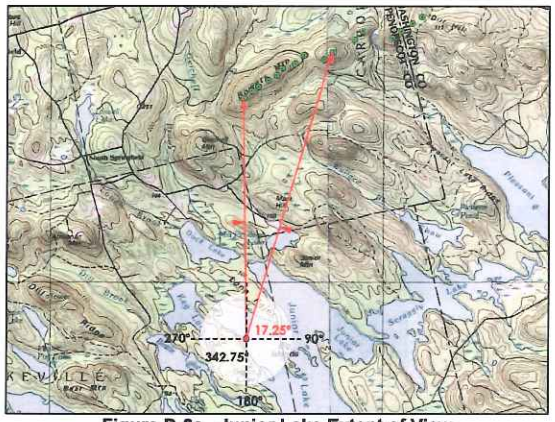


Figure D-2a– Junior Lake Extent of View

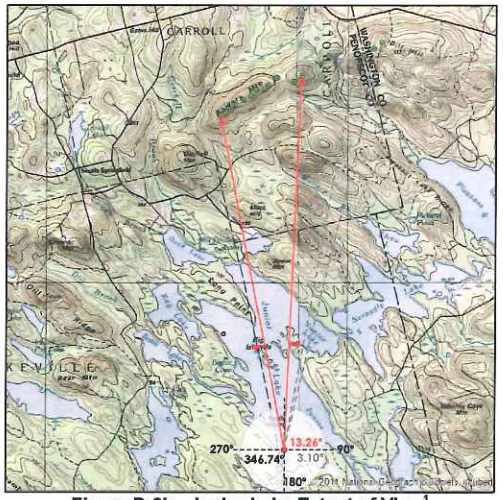
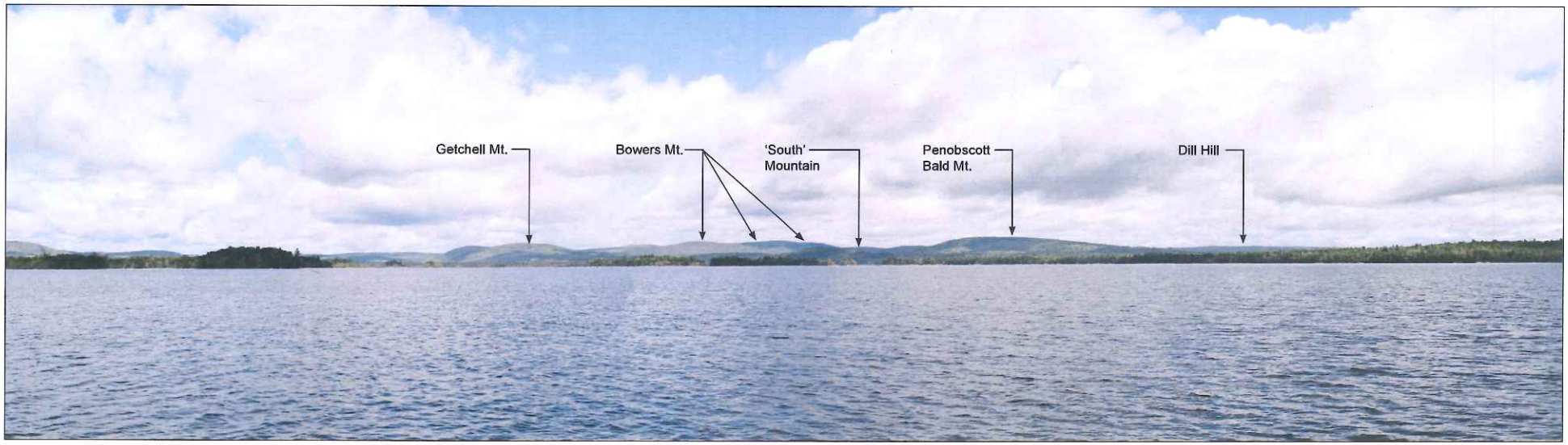


Figure D-2b– Junior Lake Extent of View[1]

[1] Extent of view is for turbines within 8 miles, outlined in grey is the angle of view for turbines beyond 8 miles.



Panorama view looking north toward the project site from the southern end of Junior Lake.

1297

Panorama view looking toward Almanac Mt. from a public camp site, centrally located on the lake east of the "Big Islands."

View of Bottle Lake Stream from Junior Lake.

Representative lake house / cottage development along the western shore of Junior Lake near Bottle Lake Stream.

View from the mouth of Bottle Lake Stream looking east towards logging on a distant ridge.

View of lake house / cottage at the south end of the lake.

View looking northwest towards the "Big Islands."

Public campsite located east of the "Big Islands" on a peninsula, centrally located on the lake.

Public campsite sign.

Representative lake house and dock development along the western shoreline.

Representative lake house and shoreline development along the western shoreline. Note the private sandy beach with dock and slide.

Exhibit 13: Visual Simulation from Junior Lake, Lakeville (Sheet 1 of 2)

Bowers Wind Project

October 2012 LandWorks

Prepared by LandWorks, Middlebury, VT

1300

Existing Conditions Photograph

View Location Map

Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 5/5/10; 12:22 pm
	Location: Junior Lake (northwest portion, approx. 550' off western shore), Lakeville; 45.316° N, -68.031° W
	Camera elevation above sea level: 306' (93.3 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 4.4 miles (7.1 km) Furthest: 5.6 miles (9.1 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

firstwind BOWERS

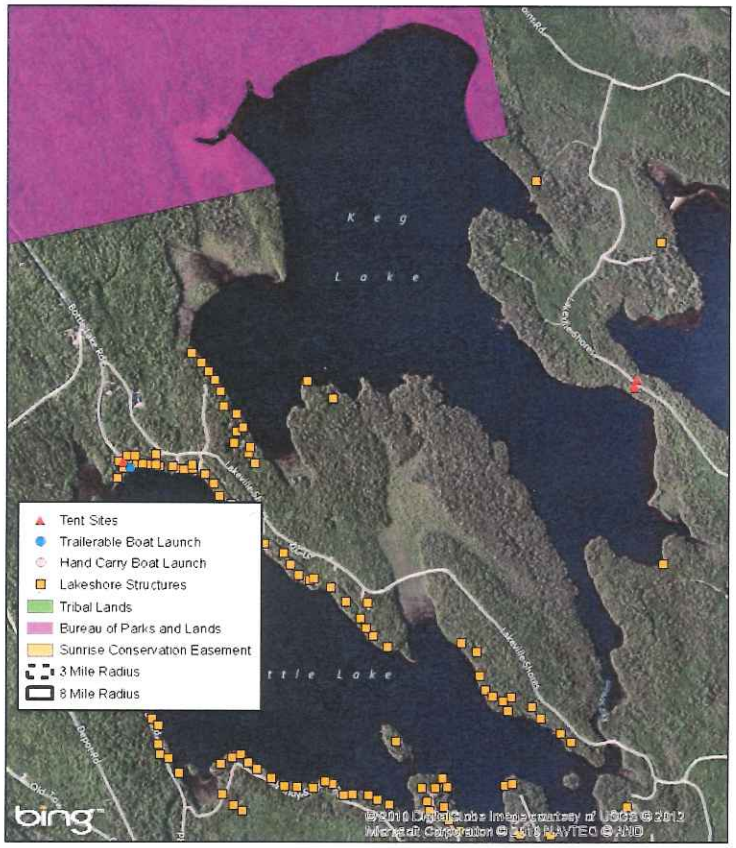


Figure E-1 – Keg Lake Existing Conditions

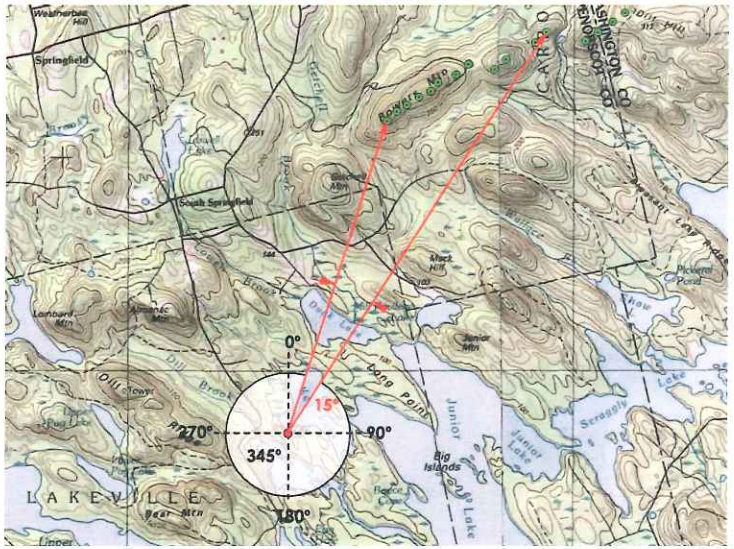
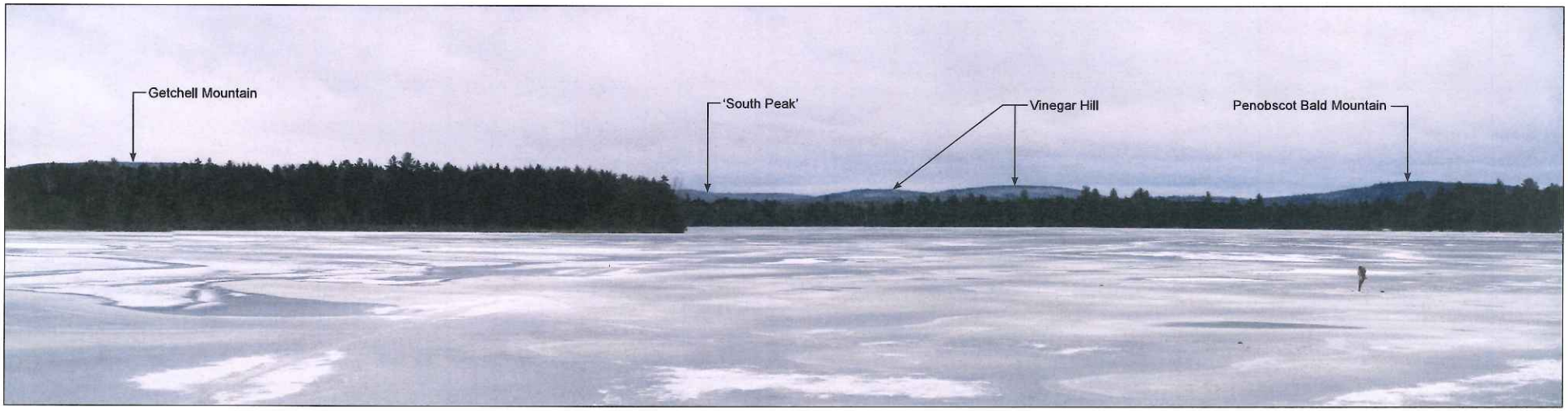
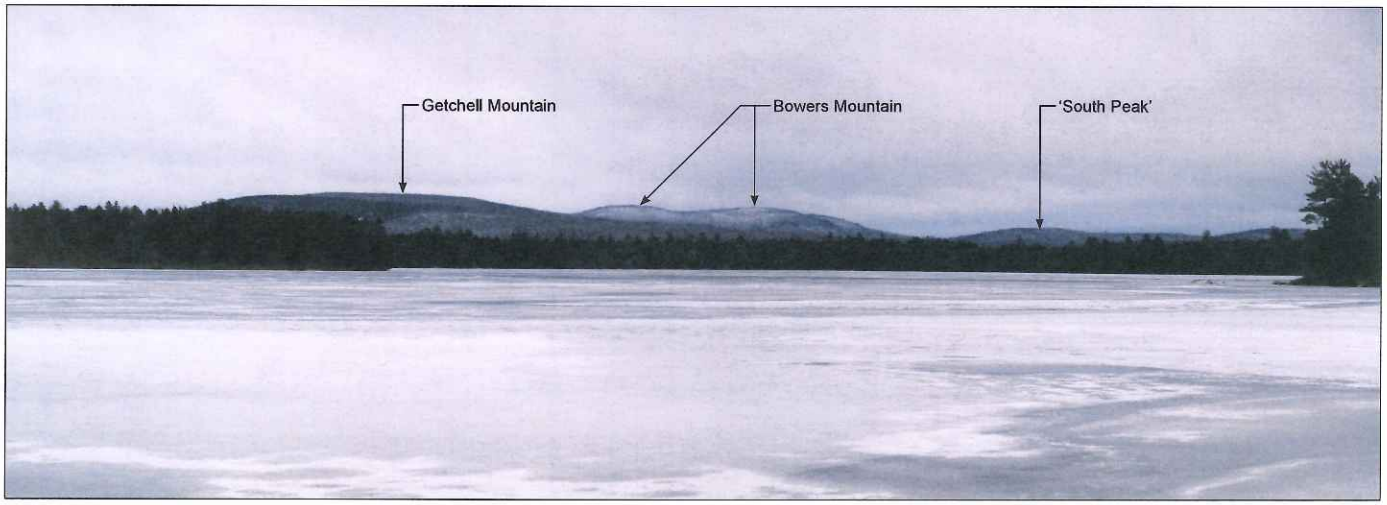


Figure E-2 – Keg Lake Extent of View



Panorama view from western shore of western cove looking northeast.



Panorama view from southern shore of western cove looking northeast.

Exhibit 14: Visual Simulation from Keg Lake, Lakeville

(Sheet 1 of 2)

October 2012

LandWorks

Bowers Wind Project

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map

Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 12/22/10; 10:30 am
	Location: Keg Lake (western cove), Lakeville; 45.318° N, -68.060° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): Unknown
	Simulation viewing distance: Approximately 19" (48.3 cm)
	Distance to nearest visible turbine: 4.6 miles (7.4 km) Furthest: 7.5 miles (12.1 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. The photographs and field data used for this simulation were taken by Stantec, and a compact digital camera was utilized. As such, the scale and visibility of the turbines depicted is potentially less accurate and should be considered 'approximate'.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

3. Turbines were artificially darkened in this simulation in order to ensure that they are discernible against the light sky background.

firstwind BOWERS

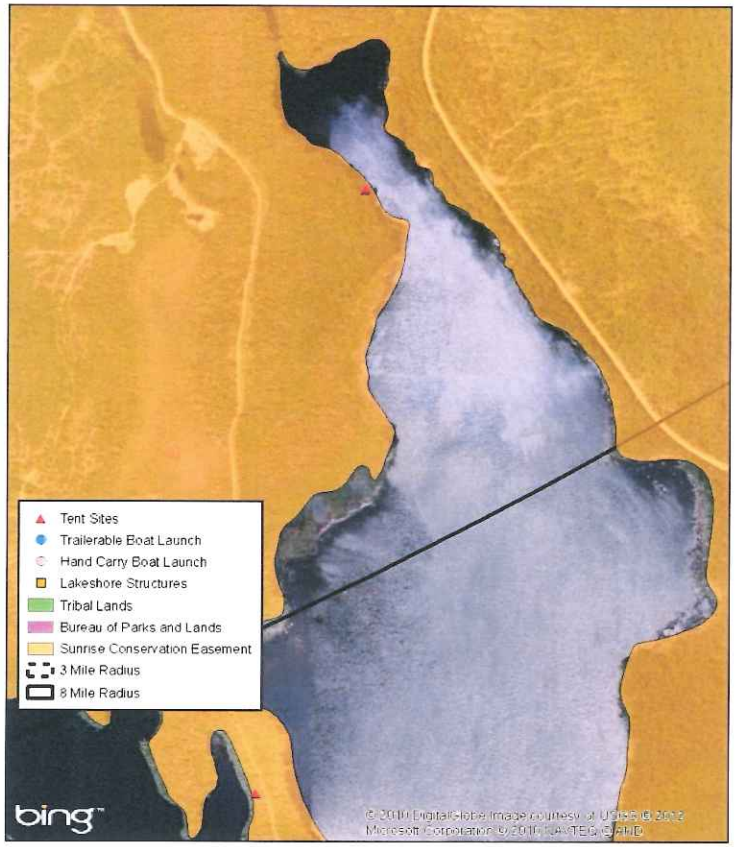


Figure F-1 – Pug Lake (West Grand Lake) Existing Conditions

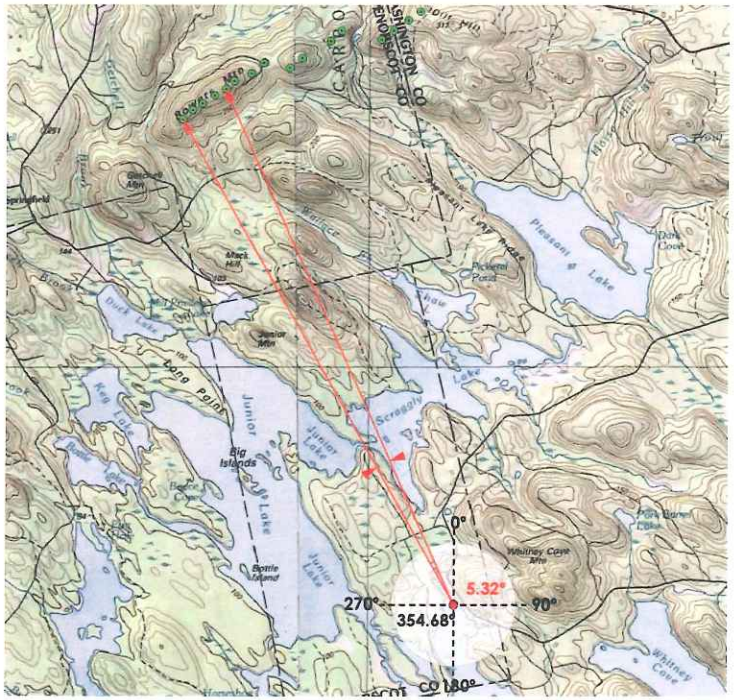


Figure F-2 – Pug Lake Extent of View

Panorama view from western shore looking north.

View of unmarked trail to canoe launch area off Amazon Road.

View of lake edge from the trail.

View of canoe launch area, which is rocky, uncleared, and challenging to walk over.

View from sim. site on western shore looking southeast.

Exhibit 17: Visual Simulation from Pug Lake, Pukakon Twp (Sheet 1 of 2)

Bowers Wind Project

October 2012 LandWorks

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map

Simulation Information

Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 8/15/12; 3:04 pm
	Location: Pug Lake (just off northeast shore), Pukakon Twp; 45.281° N, -67.954° W
	Camera elevation above sea level: 301' (91.7 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 7.87 miles (12.67 km) Furthest: 7.97 miles (12.84 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

#. Turbines were artificially darkened in this simulation in order to ensure that they are discernible against the light sky background.

firstwind BOWERS

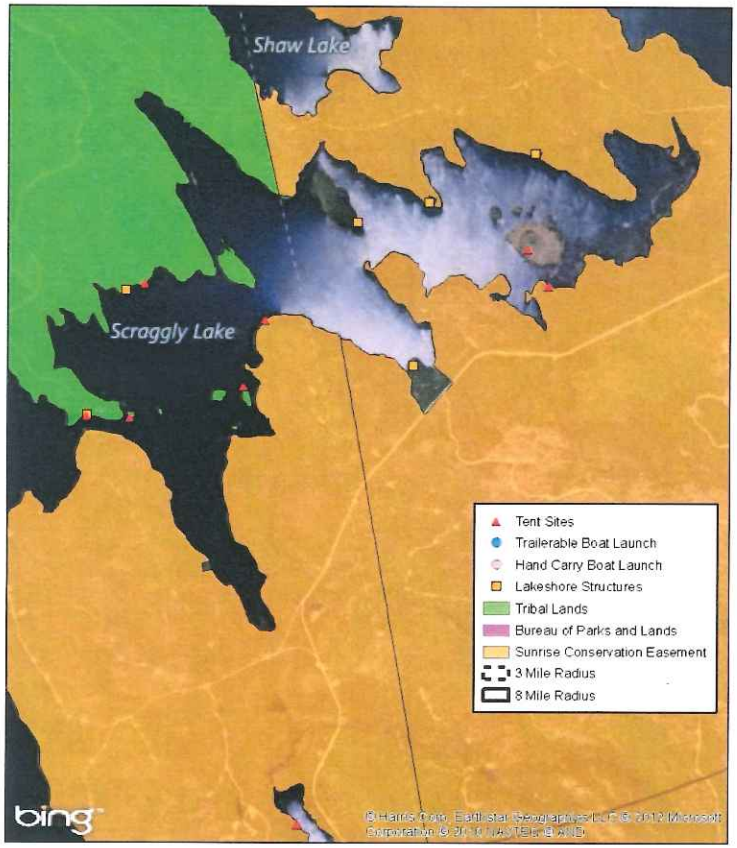


Figure G-1 – Scraggly Lake Existing Conditions

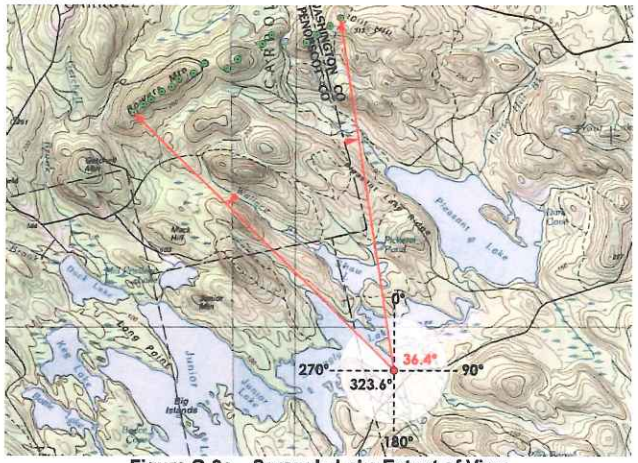


Figure G-2a – Scraggly Lake Extent of View

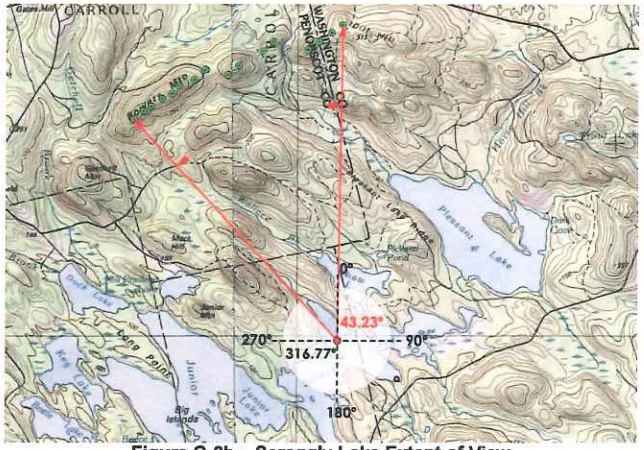


Figure G-2b – Scraggly Lake Extent of View

Panorama view looking northwest toward project site from canoe / small boat launch.

Panorama view looking northwest toward project site from photo simulation site in Hasty Cove.

Active logging roads off of Amazon Rd.

Active logging roads off of Amazon Rd.

Sign for "Hasty Cove" on Amazon Rd. to Scraggly Lake canoe / small boat access.

View from visual simulation site toward boat launch at Hasty Cove.

View to southwest from cove close to Shaw Lake.

Exhibit 18: Visual Simulation from Scraggly Lake, Pukakon Twp (Sheet 1 of 2)

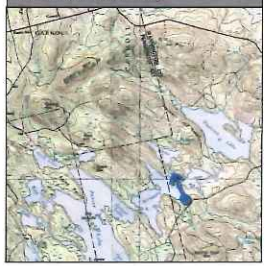
Bowers Wind Project

October 2012

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map



Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 6/17/10; 4:26 pm
	Location: Scraggly Lake (southwestern shore of Hasty Cove), T6 R1 NBPP; 45.322° N, -67.953° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 5.3 miles (8.6 km) Furthest: 5.6 miles (9.0 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

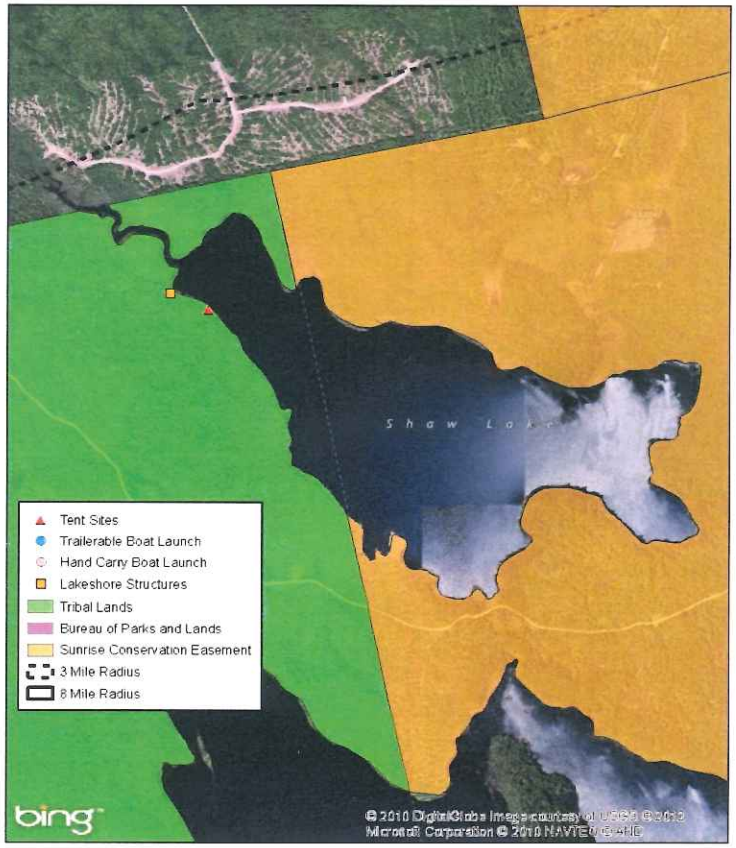


Figure H-1 – Shaw Lake Existing Conditions

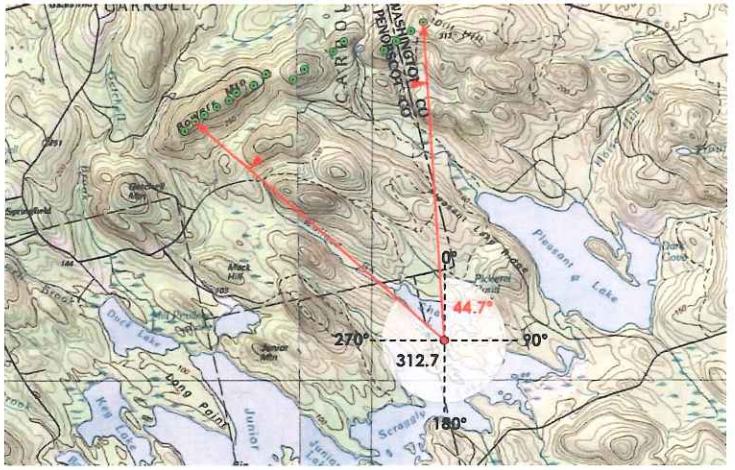
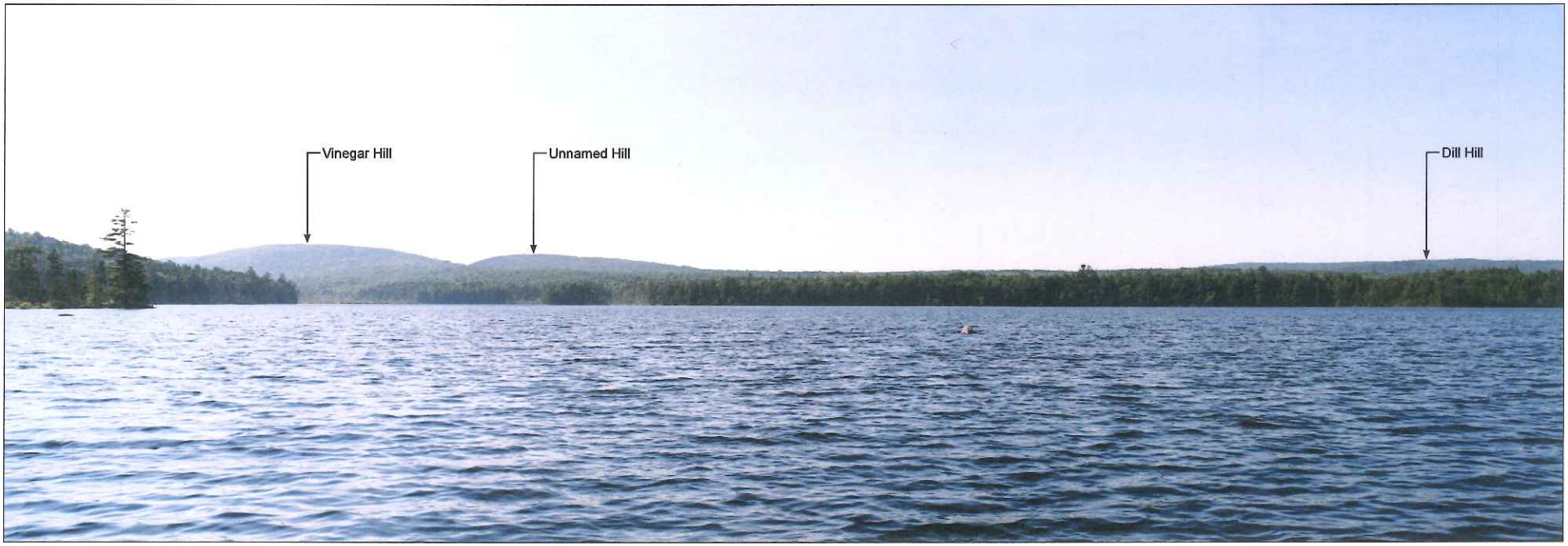


Figure H-2 – Shaw Lake Extent of View



Panorama view of Shaw Lake from southern shore.

View of Shaw Lake from logging road along southern shore.

View of stream crossing logging road along southern shore (road impassable to most vehicles due to obstacles / wet areas)

View looking up stream that connects Shaw Lake and Scraggly Lake (requires boat portage)

Exhibit 19: Visual Simulation from Shaw Lake, T6 R1 NBPP (Sheet 1 of 2)

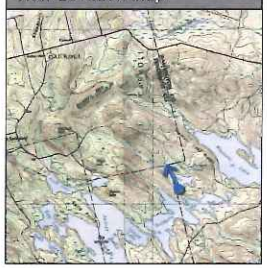
Bowers Wind Project

October 2012

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map



Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 6/17/10; 5:27 pm
	Location: Shaw Lake (southern shore), T6 R1 NBPP; 45.339° N, -67.958° W
	Camera elevation above sea level: 307' (93.6 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 4.1 miles (6.6 km) Furthest: 4.6 miles (7.4 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

3. A portion of one turbine is potentially visible off-frame to the left. Panorama width is limited by the 11x17 size format and consistent viewing distance.

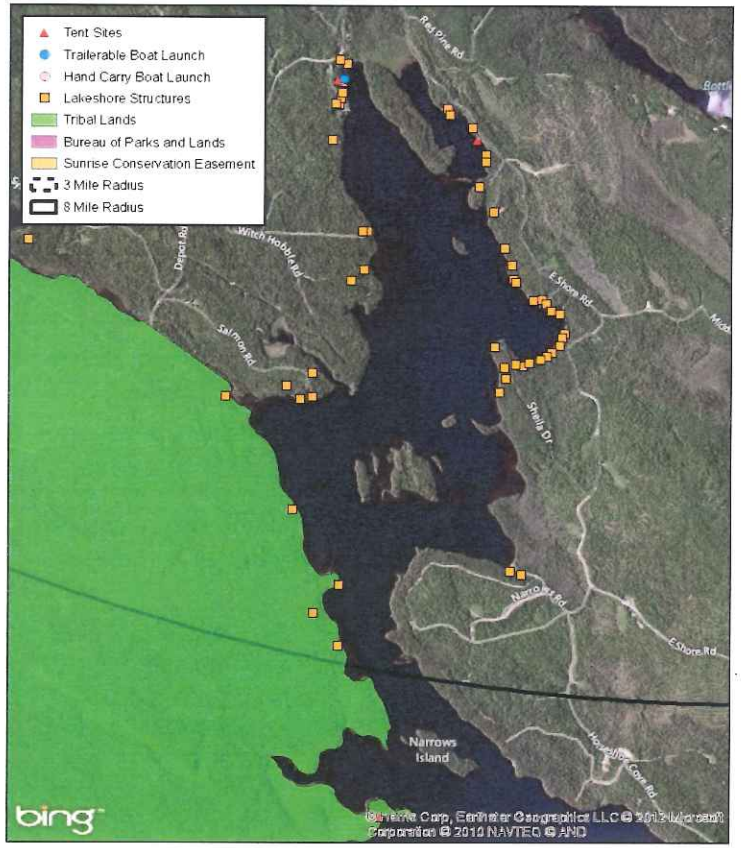


Figure I-1 – Sysladobsis Lake Existing Conditions

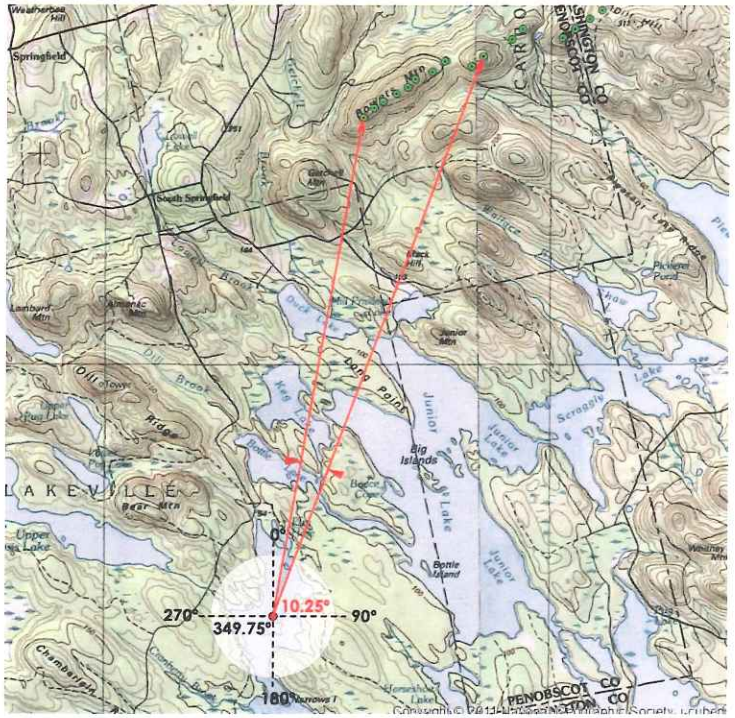
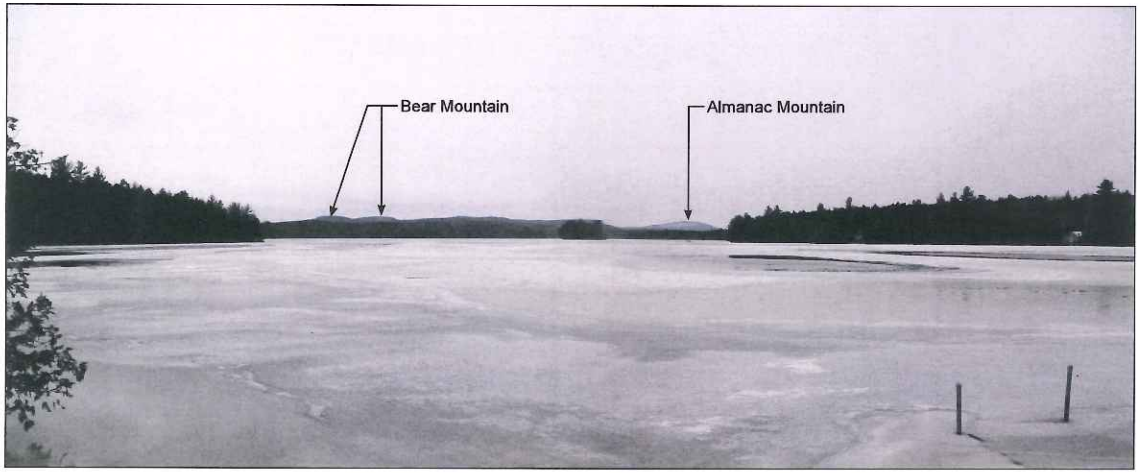


Figure I-2 – Sysladobsis Lake Extent of View



Panorama view from northeast cove (off Forest Harbor drive) looking northwest.

Typical shoreline development.

View from northwest shore looking northeast.

Road to public boat launch at northern end of lake.

View of private boat house from public boat launch.

Exhibit 20: Visual Simulation from Sysladobsis Lake, Lakeville (Sheet 1 of 2)

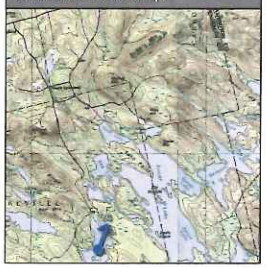
Bowers Wind Project

October 2012 LandWorks

Prepared by LandWorks, Middlebury, VT

Existing Conditions Photograph

View Location Map



Simulation Information	
Turbine Information	Model: Vestas V112 - 3.0 MW
	Hub height: 275'-7" (84 m)
	Rotor diameter: 367'-6" (112 m)
Photograph Information	Date and time: 6/22/11; 7:05 pm
	Location: Sysladobsis Lake, Lakeville; 45.280° N, -68.058° W
	Camera elevation above sea level: 309' (94 m)
	Focal length (35mm equivalent): Unknown
	Simulation viewing distance: 19" (48.3 cm)
	Distance to nearest visible turbine: 7.1 miles (11.4 km) Furthest: 8.4 miles (13.5 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 8; Adobe Photoshop CS5
	Contour data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. The photographs and field data used for this simulation were taken by Stantec.

3. This simulation depicts turbines, as well as visibility of access roads, collector lines, and associated clearing.

firstwind BOWERS

Pre-Filed Rebuttal Testimony of David Raphael on behalf of Champlain Wind, LLC

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CHAMPLAIN WIND, LLC	)	Pre-Filed Rebuttal Testimony of
CARROLL PLT./KOSSUTH TWP.	)	David Raphael on behalf of
PENOBSCOT/WASHINGTON COUNTY	)	Champlain Wind, LLC
#L-25800-24-A-N/#L- 25800-TE-B-N	)	

On behalf of the applicant Champlain Wind, LLC ("Champlain Wind"), David Raphael is submitting this response to the pre-filed direct testimony of PPDLW.

A. RESPONSE TO LAWRENCE TESTIMONY

Exhibit N to PPDLW's pre-filed direct testimony is a March, 2013 Critique of the Bowers Wind Project VIA prepared by Michael Lawrence ("Lawrence Report"). The following responds to some of the key issues and shortcomings of that report.

1. The Lawrence Report is Not Based on Objective, Professional Standards for Conducting a Visual Impact Analysis

The most important overall fact (and concern) with regard to Michael Lawrence's testimony is that his report is based solely on his personal opinion and is not (and does not purport to be) an objective expert analysis of the LandWorks VIA. His testimony and commentary, while poetic and lavishly illustrated, is characterized by hyperbole, has no technical analyses consistent with the Wind Energy Act criteria, and is not supported by any systematic or detailed analysis that is integral to developing an objective and professional visual impact assessment. There is little evidence or citations of research or documentation to support what amount to personal opinions. Thus his testimony should be treated accordingly and it should not be considered an expert evaluation or visual impact assessment.

For example, there is no evidence that Mr. Lawrence has utilized accepted methods and protocols for developing an expert visual impact assessment. Most, if not all, of the material in

his testimony represents his own personal, subjective opinion, which is colored by his apparent opposition to this Project.

In contrast, LandWorks neither supports nor opposes the construction of this Project - that is not our job or role. Our VIA is based on a well-established methodology practiced by experts in the field of visual assessment. It includes a systematic and objective analysis of the potential visual impacts to the Project area and relies on a number of tools to assess and gauge that impact. LandWorks relies on the synthesis of many types of analyses coupled with professional judgment in the integration of all the data available in order to determine whether the Project will result in a adverse unreasonable effect on designated (statutory) scenic resources.

2. Mr. Lawrence's Assumptions About Objectivity Are Not Well Founded

Mr. Lawrence's comments about having a vested or financial interest in the Project and the role of objectivity miss the mark. On the one hand, he appears to recognize that having a vested or financial interest in a project may color one's perceptions. E.g., Lawrence Report at 25 ("wind developers may have a vested or financial interest in promoting development and change"). Here, the Applicant recognizes the potential bias that can result from having a vested interest in the outcome and has hired independent consultants to evaluate Project visibility. Ironically, Mr. Lawrence also suggests that persons with emotional attachment to the area lakes are the best positioned to evaluate impacts objectively. To the contrary, what is needed is an objective analysis of the potential impact of Project visibility, not an assessment colored by emotional attachment and bias.

The Applicant recognizes the need for objectivity and that is exactly the reason they hired independent consultants to assess the potential impacts. Not only did the Applicant hire LandWorks to prepare the VIA and assess visual impacts, but it retained additional consultants

with a variety of expertise related to assessing visual impacts. Champlain Wind asked the consultants to consider the potential impacts from a number of different perspectives knowing full well that a single perspective does not tell the full story. Considering multiple perspectives provides breadth and balance to the evaluation of potential impacts.

For example, in considering the impact of recreation of the Project Champlain the Applicant hired two different consulting firms to conduct three separate surveys, and a university researcher with specific expertise in this area to ensure the credibility of the consultants' work. Specifically, Champlain Wind hired Kleinschmidt Associates, a national environmental engineering firm with headquarters in Maine, to conduct two surveys of recreational users of lakes near the proposed Project. Portland Research Group, which is the premier survey research firm in Maine, was hired to conduct a telephone survey of people who might potentially use the Project lakes. Not satisfied to simply hire consultants to conduct independent studies, the Applicant hired Dr. Kevin Boyle from Virginia Tech, who is a survey research expert with expertise in evaluating natural resources, including scenic resources, and has extensive research experience in Maine.

Simply put, these are not the actions of a "… wind developer [] (with) have a vested or financial interest in promoting development…" Lawrence Report at 25. Rather, this is an example of a wind developer that wants to ensure that careful independent studies are conducted to provide the best possible information to support objective decision making.

Curiously, at the same time he suggests those with a financial interest are potentially biased, Mr. Lawrence claims that persons who lack emotional attachment to the area are not able to assess impacts objectively. Lawrence Report at 25. Quite the contrary. As an expert we must not be emotionally invested in a project review, as this can affect our conclusions. Mr. Lawrence

appears not to exercise such objectivity in his review here. It is our objectivity allows us to place these lakes in their proper perspective as scenic resources.

3. This Is Not A Wilderness Area

Throughout Mr. Lawrence's narrative he characterizes the area as wilderness, which it is decidedly is not.

- "Fact 5- People come here for wilderness sanctuary" (p. 5)
- lakes have high value for "their wilderness qualities" (p. 20)
- "the sense of wilderness" of the SRSNS lakes (p. 29)
- "entering ever more deeply into the wilderness" (p. 44)

There is no substantiation of these claims - not a single citation or objective standard on which to define this area as wilderness - just Mr. Lawrence's personal feeling that it is so.

Importantly, Mr. Lawrence appears to use a purposely distorted use of the term wilderness to advance his position. The Federal Wilderness Act states that:

> A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.

This definition is relied upon by the National Park Service, Bureau of Land Management, U.S. Forest Services, US Fish and Wildlife Service, and other federal agencies as their basis for identifying wilderness areas throughout the United States.

There are only two wildernesses areas in Maine, the Caribou-Speckled Mountain Wilderness on the Maine/New Hampshire border and the Moosehorn Wilderness in Downeast Maine. The Caribou-Speckled Mountain Wilderness Area was established in 1990 in a portion of the White Mountain National Forest along and easterly of the Maine-New Hampshire Border. See Public Law 101-401: Maine Wilderness Act of 1990 (104 Stat. 863; Date: 9/3/1964). While

heavily logged up until the 1960s, the 14,000-acre area is being allowed to return to a natural forested condition and, as in all Wilderness Areas, timber harvesting is prohibited. See 36 CFR 261.6; See also www.wilderness.net/NWPS/wildview?WID=99. The Moosehorn Wilderness consists of two units totaling just over 7,500 acres, and is included within the 23,000-acre Moosehorn National Wildlife Refuge. See Public Law 91-504 (84 Stat. 1104; Date: 10/23/1970). Like the Caribou-Speckled Mountain Wilderness, timber harvesting, mechanized travel, roads, and other man-made intrusions are prohibited, and failure to adhere to these restrictions is a federal crime. See 36 CFR 261; See also www.wilderness.net/NWPS/wildview=368.

While there are certainly other areas of the state that are remote and undeveloped, the presence of roads, snowmobiles, and timber harvesting activities (which PPDLW refers to as "ubiquitous") in the majority of Maine's backcountry quickly detracts from the undisturbed feeling associated with true wilderness. PPDLW is correct in stating that "Forestry and the tourism sector have coexisted harmoniously for over a century." PPDLW Direct Testimony at 21. We agree. But that does not make all commercially-harvested areas of the state a wilderness. Quite the opposite – the presence of large, industrial machinery felling trees, dragging them out of the forest, stacking them roadside or at landing yards, and hauling them to delivery points on logging trucks is entirely inconsistent with the sense of wilderness existing in areas "untrammeled by man."

In addition to Maine's two federally-designated Wilderness Areas, there are locations on private and state-owned lands that contain characteristics of true wilderness – but they are not common. For example, Baxter State Park is a relatively roadless area of more than 200,000 acres, with significant use restrictions that are similar to those of federally designated Wilderness Areas. Group size on hiking trails is limited to 12 people, with a requirement that affiliated

groups be separated by at least one mile. Restrictions limit the lakes and waterways on which motors are allowed, bicycles are prohibited off maintained roads, landing of aircraft is limited, and snowmobiles are allowed in only a few designated areas. Baxter State Park Rules and Regulations, Revisions – 2013. Unlike in federally-designated wilderness areas, timber harvesting is conducted in some portions of Baxter State Park.

The Debsconeag Wilderness Area also contains attributes of true wilderness. Described by the Nature Conservancy as "the highest concentration of pristine, remote ponds in New England," this 46,271-acre area is managed as an ecological reserve, and timber harvesting is not conducted presently in the area. There are ample opportunities for remote paddling, including multi-day loop trips, several overnight opportunities, and numerous remote areas very distant from roads and development.[1] The Debsconeag Wilderness Area is adjacent to the state-owned Nahmakanta Preserve. The Nahmakanta Preserve is a 43,000-acre public reserve unit that contains 24 great ponds and more than 50 miles of undeveloped shoreline, although the presence of timber harvesting and roads that allow ATVs as well as automobiles degrades the sense of wilderness. Of this 43,000 acres, 9,200-acres is designated as a "roadless area", which is more akin to a true wilderness and more closely resembles the other remote areas described above.[2]

The Project lakes do not fit these established definitions of wilderness. These lakes have camps along the shores with opportunities for more camps to be built, motor boating on the lakes and other motorized recreation on land, and timber harvesting throughout the area. Any individual whether a first time visitor or regular user of these lakes approach them on any

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[1] See http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/maine/placesweprotect/debsconeag-lakes-wilderness-area.xml

[2] See http://www.maine.gov/cgi-bin/online/doc/parksearch/search_name.pl?state_park=&historic_site=&public_reserved_land=60&shared_use_trails=&option=search

number of road networks. These access roads are often characterized by numerous side roads, log landings, cut areas, and cleared sections to accommodate the timber industry activities. These are all characteristics Maine's highly valued working forest that encourages multiple uses, but they are most decidedly not consistent with established notions of wilderness.

The intercept surveys confirm that users do not consider this a wilderness area. Specifically, none of the respondents to the Bowers Project Survey indicated that they expected a wilderness experience when they visited Junior, Pleasant and Scraggly Lakes. Additionally, the Department's expert discusses remoteness and associated qualities and evaluates whether the Project lakes exhibit such attributes. March 8, 2013 Review of the Bowers Wind Project Visual Impact Assessment Part 2: Independent Analysis ("Palmer Part 2 Analysis") at 20-24. He concludes that the Project lakes are not primitive or remote. Id. He determined that most of these lakes fall under a Recreational Opportunity Spectrum (ROS) designation of either Semi-Developed Natural (SDM) or Semi-Primitive Motorized (SPM), but not wilderness. In fact, he specifically notes that these areas are *not* pristine - another quality associated with wilderness: "The landscape within the study area is natural appearing (as an intensely managed forest it is not pristine)." Id. at 19.

Like Mr. Lawrence, PPDLW advances the premise that the Project lakes are a "wilderness area." For example, PPDLW describes several of the SRSNS lakes as having a "wilderness feel," and twice compares the Downeast Lakes region to the Boundary Waters Canoe Area Wilderness in Minnesota ("Boundary Waters"). PPDLW Direct Testimony at 15, 47. The Boundary Waters is a true wilderness area, characterized by a massive expanse of roadless forest in which evidence of man is virtually non-existent. It contains more than one million acres of protected forests – the largest area of uncut forest in the eastern United States.

Roughly 20% (190,000 acres) of the surface of the area is water, including 1,175 lakes. See www.fs.usda.gov/detail/superior/special places/?cid=stelprdb5202169. Public use of these lakes is almost exclusively by canoe and kayak, and motors are prohibited on all but a small handful of waterways. Portage wheels are restricted to just five designated portgage locations. In all other areas, use of portgage wheels, wagons, and carts is prohibited. There are more than 2,200 backcountry campsites on over 1,500 miles of canoe trails (the shoreline within the Boundary Waters is many times that distance). See www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprb5353284.pdf; See also www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5127832.pdf. Airplanes are not permitted to land anywhere other than in emergencies, and an airspace boundary reservation was implemented in 1951 prohibiting all air traffic extending to an around 4,000 feet around the area. See Exec. Order No. 10,092 (3 CFR 287, 12/17/1949).

In order to further preserve the wilderness character of the Boundary Waters, access to the area is allowed only through designated entry points, and a permit is required for most entry. Exit and re-entry is not permitted, and strict quotas are established for each entry point, limiting the number of users who can access the Boundary Waters on a daily and weekly basis. Failure to adhere to any of these regulations on use of the Boundary Waters, including group size, use of portage wheels, and guiding without a permit, is a federal crime punishable by up to $5,000 and 6 months in jail for each infraction. See www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprb5353284.pdf; See also www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5127832.pdf. Finally, the Boundary Waters is surrounded by the Superior National Forest, further buffering it from uninhibited man-made intrusions and development.

Even the material relied on by PPDLW in its opposition to the Project makes clear that this is not a wilderness area, nor is it viewed as such by its users. For example, one of the canoe trip reports referenced by PPDLW repeatedly notes the presence of "cabins" as detracting from the remote feeling. The author, a visitor from New York, writes about his trip: "this is not wilderness…So while not quite wilderness, the lakes - Bottle, Junior, Scraggly, Pocumcus and West Grand - certainly had the feel of being off the beaten path....Bottle Lake surrounded by 'camps' and lots of people. Not Wilderness." http://www.downeastlakes.org/wp-content/uploads/2013/02/Downeast-Lakes-Canoe-Trip-Journal-2012.pdf. This is consistent with the AMC Quiet Water Guide, which states that Bottle Lake, in particular, is the "kind of place [the AMC Guide's authors] prefer to paddle through as quickly as possible." AMC Guide (included as Exhibit E to PPDLW Pre-Filed Direct Testimony) 145. Ironically, while Lawrence describes traveling north from Grand Lake Stream and reaching the Project area lakes as the "journey's end, where travelers delight in the sense that they're most remote and deep in the wilderness" Lawrence Report at 45, in fact, such travelers have reached the more developed portion of their journey - with lakes such as Bottle Lake and Keg Lake exhibiting extensive shoreline development and located outside of the Downeast Lakes Region. See Exhibit 1: Bowers Project Location within Tourism Regions.

In summary, while the Downeast Lakes region as a whole unquestionably is high in scenic values, the region also is home to a vast commercial working forest, with a network of logging roads, two state highways, numerous year-round and seasonal homes, sporting camps, a bustling village with tennis courts, basketball courts, a museum, various stores and restaurants, and other vibrant signs of civilization. Motorized boating is allowed on all waterways within the region, and ice shacks and snowmobiles are common occurrences during the winter.

According to PPDLW's own user survey, the two highest expenditures by visitors are on "gas" and "eating meals out." PPDLW Direct Testimony at 13. PPDLW also notes that "sporting camps, lodges and cabin rentals span the length of the watershed from Duck Lake, Pleasant Lake, Bottle Lake and Sysladobsis in the north, all the way to Grand Lake Stream in the south." PPDLW Direct Testimony at 12, 13, 15. Thus, while Mr. Lawrence and PPDLW may want to characterize this area as wilderness because it advances their emotional and poetic narrative, the objective evidence clearly contradicts this characterization of the Project lakes.

4. Mr. Lawrence's Characterization of the Purpose of Conserved Lands as Protecting Wilderness Character is not Accurate

In his comments, Mr. Lawrence repeatedly refers to the existence of conserved lands and states, again without support to any evidence, that these lands were conserved "to protect their scenic wilderness character." (p. 44).

- "Fact 3 – The Lake Chain is Surrounded by Trust Lands" (p. 5)
- "Large tracts of land surrounding the lakes have been conserved and put into trust because of their intrinsic quality" (p. 5)
- "Great tracts of land have been placed in conservation trust in order to protect that scenic character wilderness" (p. 44)
- "Much of the area has been placed in public reserve and conservation easements to protect that wilderness character" (p. 50)

The purpose of the conserved lands is not to protect wilderness character, as is reflected in the Pre-Filed Direct and Rebuttal Testimony of Jeffrey Selser.

5. The Significance of the Ridgelines and Characterization of the Landforms is Overstated in Mr. Lawrence's Testimony

Mr. Lawrence concedes that an important attribute of scenic quality is the existence of prominent distinctions in landform and the existence of unique focal points. Lawrence Report at 6-7. He then concludes, without citation to support in the literature or reference to any specific

data, that these lakes and the background ridges constitute the contrast in landform and prominent distinctions characteristic of landscapes of high scenic quality. Id. Statements such as "The lake environment fulfills the definition of a very scenic, outstanding and sensitive to visual change landscape" lack any substantive basis or analysis. Much of Maine, and in fact Northern New England is scenic. But it is important to establish how scenic and how sensitive to change these landscapes are. Clearly the lakes can accommodate ongoing landscape change with the long history of logging and camp development. Compared to other lakes in Maine, these lakes do not rise to the level of many of the most celebrated lakes, as shown in the sampling of photographs that accompany this testimony. See Exhibit 2: Scenic Lakes Comparison. These lakes exhibit a more distinctive and mountainous character where ridgelines are dramatic and enhance scenic qualities.

Mr. Lawrence also assumes, erroneously, that the Project lakes merited scenic ratings on the basis of physical features, such as prominent distinctions in landform visible from the lakes. Lawrence Report at 8. Analysis of the basis for these lakes' scenic rating and reference to well-established principles of scenic assessment demonstrate that these ridgelines and lakes do not exhibit the type of prominent landforms or contrast in landforms characteristic of more highly scenic areas. The Department's independent expert reinforces this conclusion: "Within 8 miles of the Bowers Wind Project the hills are up to 1,200 feet high, and cannot be said to be a highly distinctive feature within the context of Maine." Palmer Part 2 Analysis at 19. In fact, these ridges are so indistinct it is often hard to identify them from vantage points in the field and on the lakes.

The Scenic Lakes Character Evaluation (the "Scenic Evaluation"), which is the basis for determining whether a lake is a SRSNS, offers ratings of the Project area lakes' scenic character

relative to other lakes in the state of Maine. The Scenic Evaluation rates over 300 different Maine lakes based on six different qualities: relief, physical features, shoreline configuration, vegetation diversity, special features, and inharmonious development. Each quality received a point score, which translates to a none/low/medium/high rating, and the points combined to a total maximum score of 100, representing the highest scenic quality. According to the Evaluation, "Change in relief was assigned the most points (30) because studies have shown that people view relief as one of the single most important criteria when evaluating scenery." Scenic Evaluation at 14. In contrast to Mr. Lawrence's assertion that "The ridgeline rim surrounding the lakes displays a series of unique focal points and a distinct memorable profile," all but one of the nine Project area lakes received a score of 10 points for relief, which translates to a *low* rating. See Scenic Evaluation, Appendices VI (ratings for outstanding scenic lakes) and VII (ratings for significant scenic lakes). Only Upper Sysladobsis received a relief score of 20, or a *medium* rating, which indicates relief of 'dramatic' or 'high complexity' for less than 25% of the view around the lake. If the ridgelines surrounding the lakes were indeed "steeply rising mountains," as Mr. Lawrence asserts, Lawrence Report at 6, they would likely merit *high* relief scores. For comparison, Moosehead Lake which did receive high relief scores, clearly exhibits dramatic or highly complex relief. See Exhibit 2: Scenic Lakes Comparison.

The Scenic Evaluation's ratings of the Project area lakes demonstrate not only that Mr. Lawrence exaggerates the significance and scenic character of the ridgelines in his testimony, but that his conclusions are at odds with the very basis on which the State has assessed scenic character for lakes in Maine.

6. The Significance of the Area as a Tourist Destination is also Overstated in Mr. Lawrence's Testimony

Mr. Lawrence misconstrues the relevance of LandWorks' evaluation of data sources such

as tourist publications and websites, guidebooks, and sporting camp websites. Lawrence Report at 10-11. We reviewed this material not because it directly identifies what impact the Project would have on the SRSNS, but because it provides information on and helps inform analysis of how these resources are used. The WEA expressly requires consideration of the nature and extent of the use of the SRSNS and the data reviewed by LandWorks informs that assessment. Once the nature and extent of use is understood, there is a more objective basis for evaluating what potential impact Project visibility will have on those uses.

Likewise, Mr. Lawrence argues that the omission of the Project area lakes on various websites "takes away nothing from the qualities that people who live and recreate on the lakes cherish." Lawrence Report at 12. Again, he misses the point. The relevance of the data goes to consideration of the nature and extent of use of the resources.

Finally, Mr. Lawrence's discussion of what constitutes a tourist destination and his claim that the Project area lakes are a tourist destination is unsupported by objective analysis or evidence. By his definition a tourist destination is anyplace that people travel to in order to take advantage of a particular service or benefit. Lawrence Report at 15. By that measure, every single lake in Maine (not to mention Freeport, as well as a movie theatre) is a tourist destination. LandWorks undertook a more informative analysis to assess whether the Project area lakes are recognized as a tourist destination. They are not. This is also confirmed in Mr. Palmer's analysis when he notes that there is no mention of the lakes in the Project Area on any of the sections or subsections of the Main Office of Tourism Website nor does the Maine Highlands region identify any of the lakes in the project region. Palmer Part 2 Analysis at 19-20. We did not find any tourism website that highlighted the lakes within the Project area as being highly scenic or as being tourist destinations.

7. LandWorks Disagrees with Mr. Lawrence's Characterization of the Level of Development Around the SRSNS

Mr. Lawrence apparently takes issue with the characterization of shorefront development. His personal opinion is that the lakefront development is "modest, charming, summer-use residences sited comfortably and blending well among mature trees." Lawrence Report at 17. The relevant point is not whether someone personally likes the lakefront development, as Mr. Lawrence apparently does, but simply that there is existing development to varying degrees around the SRSNS. The dots used in the diagrams were never intended to show scale, but they do identify the existing development. See Exhibit 3: Character of the Area for examples of the lakefront development on Bottle, Junior, and Duck Lakes.

Moreover, while Mr. Lawrence apparently finds the shorefront development "charming," as noted above, actual users of the resource disagree. Shorefront development also implies lights at night, motorboats in the water and other uses and activities commonly experienced on lakes with shoreline development. Finally, no matter how charming and whether one likes or dislikes the existing shorefront development, its mere existence is relevant to analysis under the WEA and it should be noted, as we did.

8. Use of the Project Area Lakes

Mr. Lawrence makes many assumptions about how the Project area lakes are used, but provides no data to support his assumptions. His assertions, which have not been backed up with any fact-based support, are his opinions and lack supporting evidence.

- "Fact 5 –People Come Here for Wilderness Sanctuary" (p. 5)
- Lakes have high value for their "serenity and wilderness qualities" (p. 20)
- Today's users "live and travel to the nine scenic lakes to satisfy a need for quiet, sense of wilderness and a place with minimal presence of urbanization" (p. 29)
- "Users come here looking for wilderness and a lack of urbanization" (p. 56)
- Suggests that users include those on a "spiritual quest" (p. 56)
- "People come here seeking wilderness sanctuary" (p. 58)

In the Bowers Survey, respondents did indicate visiting the Project area lakes for "relaxing," "enjoying scenery," "observing wildlife," and "viewing scenery." See Bowers Survey (Exhibit 2 to Boyle Pre-Filed Direct Testimony) at 25-26. These activities do not necessarily equate to a "spiritual quest" or a need for "sanctuary." Mr. Lawrence's characterization of wind turbines as "urbanization" is also unfounded and incorrect, as wind farms are typically *not* located within urbanized areas of high population density. Views of turbines on surrounding ridgelines would not suggest that the Project area lakes are being urbanized.

9. Errors In Evaluation of the Intercept Surveys

Mr. Lawrence presents selective statistics from the results of Kleinschmidt's (2012 b) intercept survey of Bowers Project lake users. Lawrence Report at 46-47. While Mr. Lawrence seems to have made some minor mistakes in reporting these statistics and their interpretations, he has made a huge oversight that fundamentally undermines his conclusion regarding these data. He fails to take into account balancing information. First, he ignores the information from the two Baskahegan surveys that demonstrates that the Stetson wind farm, which is more than twice the size of the proposed Bowers project, is having no appreciable effect on visitation. Second, he ignores the results that indicate the Stetson wind farm also does not appear to adversely impact scenic quality and the quality of the users' experiences. Third, while Kleinschmidt followed standard practice in conducting the Bowers project survey, Mr. Lawrence overlooks potential limitations in the data. He overlooks issues such as respondents using precautionary and hyperdefensive strategies in answering survey questions that can results in negative impacts being overstated and which likely occurred here. These issues are discussed in detail in the Boyle Pre-Filed Direct Testimony.

Not only does Mr. Lawrence overlook important balancing information, he relies on the surveys to conclude that the Project will have an unreasonable adverse impact on scenic character or existing uses related to scenic character without providing the logic and basis for such a conclusion. Lawrence Report at 48. This is in stark contrast to the process used by LandWorks in the VIA and by the Department's expert in his review of the Project.

10. Accuracy of Visual Simulations and Viewshed Maps

Mr. Lawrence claims that the VIA is flawed because the viewshed map does not include the fully extended blade and that there would be a "dramatic increase" in Project visibility on the lakes if the full turbine height – to the tip of the blade were accounted for. Lawrence Report at 9, 18-19. In fact, the VIA includes a viewshed map to the tip of the fully extended blade. See VIA, Exhibits 1 and 3. Moreover, contrary to Mr. Lawrence's conclusion, there is not a dramatic increase in visibility when the blades are accounted for. When one compares VIA Exhibit 3 (from the top) to VIA Exhibit 4 (from the hub), the differences are subtle and are generally seen as an increase in number of turbines (or tips) in small portions of the lake. Increased visibility is also perceptible at the very fringes of visibility, but it is in no way "dramatic." This comment also reveals Mr. Lawrence's lack of experience in doing viewshed analyses for wind energy projects. Most regulatory review processes recognize that the difference between hub height and blade height is negligible when using the viewsheds as a point of departure for depicting visibility - which ultimately has to be field-tested.

Turbine rotors are also relatively narrow in profile and becoming increasingly harder to detect at distances over 6 miles, depending on weather and light conditions. The movement of the turbine blades themselves at the distances they will be seen at in this project will not be

overly disturbing or distracting, based on observing real turbines in action from similar lakes in Maine and in Vermont.

Finally, Mr. Lawrence also errs when he claims that visual simulations do not reflect the full height of the turbines. Lawrence Report at 37. The simulations do reflect the full turbine height, including blades, and that should be obvious from the simulations. The simulations are accurate and follow accepted methodology for the preparation of visual simulations. We have compared before (simulations) and after (as-built) conditions for wind energy projects and find our simulations to be highly accurate. To be sure, they are simulations and as such they depict, with the best technology available, what the project might look like, which necessarily is not the same as being present in the landscape. Indeed, it is precisely because reviewing simulations is not the same as experiencing actual project visibility that the results of the Baskahegan survey are so important.

Mr. Lawrence also claims that the visual simulations do not reflect worst-case assumptions. Lawrence Report at 57. Visual simulations were taken from representative locations throughout the Project area and depict the project in worst-case and typical case type situations. Visual simulations themselves skew our sense of project visibility. We have always contended that for every visual simulation that shows the project, we should show a photo of a location where you can't see the project. There are also many simulation locations where it would be very hard to pick out the project as the blades often blend in with the treeline. Visual simulations are just one tool among many that help us understand the overall potential visual impact that might result from a project and here, they are worst-case. Additionally, Mr. Lawrence's citation of National Forest techniques for assessment is misplaced - this project has

to address the specifics of the Wind Energy Act. USFS guidelines are useful for understanding visual qualities, but do not apply to the actual regulatory review standards set forth in the Act.

11. Use of Ratios and the National Forest Service Handbook

Mr. Lawrence misuses the ratios to present a misleading picture of how the turbines will actually look in the landscape. Lawrence Report at 31-32. Mr. Lawrence's depiction of the ratios of turbine height to topography height appears accurate in terms of describing the worst-case scenario, but it does not reflect the fact that from many vantage points, turbines are partially or totally obscured by intervening ridges/vegetation to reduce their apparent height. Also it should be noted that a turbines do not possess the same visual weight as a landform. When viewed from the distances experienced at these lakes, turbines are perceived as relatively slim vertical elements rather than massive forms, and blades become more difficult to discern at greater distances (thereby reducing their apparent height). In addition, turbines are light colored and often blend in with the sky during common weather and lighting conditions. Based on our analysis, the turbines would not dominate the landscape as Mr. Lawrence suggests.

Regarding Mr. Lawrence's discussion of the Forest Service Handbook and distance zones, we agree that there are no references to wind projects in that document. We believe the concept of distance zones is still relevant to the overall analysis, however, and we have adjusted the thresholds based on the qualities associated with wind projects.

Impact of Project Visibility on the User Experience

Finally, Mr. Lawrence makes repeated and wholly unsupported assumptions about the impact of Project visibility on users of these lake resources. Lawrence Report at 26-27, 29.

Also, Mr. Lawrence states that our use of photos is "unfair" ("...these photos contrasting Mt. Katahdin and Bowers Mountain are unfairly matched") due to the difference in photo qualities. Id. at 22. He totally ignores the purpose of the photos, which is to show the dramatic difference in scenic characteristics and qualities between the two settings. The framing and hue don't matter - it's about the profile. As clearly stated in the text of our VIA, the type of relief and drama readily observed in the photo of Katahdin are in stark contrast to the lack of relief and drama of low lying indistinct ridgelines present in the Bower's project area. VIA at 30. His comment is also highly ironic as Mr. Lawrence has relied heavily on carefully selected photos, rich in tone and contrast and framed to accentuate certain features as a basis for presenting the scenic qualities of the Bowers Project Area - photos that are often irrelevant or lacking in purpose. For example, the photo of nesting loons is attractive, Lawrence Report at 53, but what value does it have in understanding the specific scenic qualities of the project area - and the project (which will not affect nesting loons)? None. It does not inform our understanding of the Project and its potential impacts. Yes, there are loons on Scraggly Lake, and yes, there will still be loons after the Project is constructed. A visual analysis is not just a collection of artistic photos, sweeping generalities and poetic language.

B. RESPONSE TO PPDLW TESTIMONY

1. Regional Context for this Project

We consider this project to include two regions as defined by the Maine Office of Tourism - the Maine Highlands and The Downeast Acadia Region. See Bowers Project Location Within Tourism Regions Map attached as Exhibit 1. These two areas are relevant because: 1) the Bowers project is proposed for this location due to the distinct physiography of this portion of the Highlands region, which includes higher ground and low indistinct ridges capable of

supporting wind energy (stretching from the hills around Lincoln (Rollins Mtn.) and Enfield to the Stetson Ridge as well as Farrow and Tomah Mountains to Pirate Hill and Vance Mountain in Vanceboro; and 2) the Project Area encompassed by an 8 mile radius includes a small portion of the Downeast Lakes/Acadia Region as well. Within this overall region are hundreds of lakes and ponds - many more than the 2 dozen lakes and 53,000 acres of clear water being referred to on page 9 of the PPDLW/Campbell testimony. It is important to note that this project will have absolutely no effect or impact on any of the "clear water(s)" referred to. They will continue to be clear.

There is no specific delineation of the Downeast Lakes Region referred to in the PPDLW testimony, nor could any maps or specific narratives substantiate what he identifies loosely as "the region". While Mr. Lawrence provides maps showing the "Downeast Lakes Watershed," the concept of watersheds provide a useful context for planning related to water quality and land use, but is not as relevant for evaluating recreational patterns. PPDLW, Mr. Lawrence and Mr. Campbell have all indicated that a cluster of sporting camps and guides are located in Grand Lake Stream and use the Project lakes. See PPDLW Direct Testimony at 12; Lawrence Report at 44. Building on their concept that Grand Lake Stream is a "hub" for recreational activity, the "spokes" for various types of recreational activity extend in multiple directions. In one direction, guides, residents, and visitors may travel to the Project lakes. In another direction, other recreational opportunities exist on other waterbodies, such as Big Lake, the St. Croix, and the Machias River, which, as Mr. Campbell describes, provides an opportunity to paddle a water trail through several connected lakes, all of which are beyond 8 miles from Bowers. Other recreational opportunities include snowmobiling on the ITS trail, hiking on various trails in the area, or hunting. Water-based recreational opportunities exist throughout the region.

PPDLW suggests that the entire downeast lakes region was excluded from expedited permitting. That is not the case, as a simple comparison of the map attached as Exhibit C to the Pre-Filed Testimony of Stacie Fitts and Phillip Bartlett to Exhibit ____ (showing the Downeast Lakes tourism region) reveals. Grand Lake Stream and the surrounding conservation area may have excluded, but the Project is within the Expedited area and will beyond the heart of the Downeast lakes recreational areas.

PPDLW's mischaracterization of the Downeast Lakes region is particularly evident in their reliance on the Lonely Planet Guide as evidence of the area's unique offerings. Specifically, PPDLW cites a Lonely Planet article identifying Maine's "woodsy interior" as being a top ten travel destination for 2013 as evidence of the Downeast Lakes special water attributes. See PPDLW Direct Testimony at 9. What PPDLW fails to mention is that the article references the top half of the "Maine 'thumb' reaching north to the Canadian border" (thus, beginning north of Millinockett), and specifically identifies Katahdin, Baxter State Park, Moosehead Lake, and Kennebec River rafting. The only Maine canoeing mentioned in the article is in Aroostook County, and the portion of Maine identified as the "top ten" destination is well north of the Downeast Lakes region. http://www.lonelyplanet.com/usa/travel-tips-and-articles/77583. In fact, nowhere in the article is the Downeast Lakes Region mentioned at all, and the specific quote in PPDLW's testimony regarding "thousand of lakes and ponds fill[ing] the vast wilderness" is from a separate article about Maine. It also should be noted that the quoted webpage does not mention any destinations in the Downeast Lakes Region. Similarly, in the list of places to visit in Maine, Lonely Planet does not include any location in the Downeast Lakes Region.

Ultimately, and most importantly, our charge under the Wind Energy Act is to focus only

the effects of the Project on scenic resources and their use and enjoyment within the 8-mile radius. In that regard, the table on page 9 correctly identifies the fact that there are 14 officially designated scenic lakes within the project area. However, as described in the Pre-Filed Rebuttal Testimony of Joy Prescott, the Legislature designated 346 scenic lakes in Maine, not 280, which is the number designated in the unorganized territory. Nine of the 14 lakes will have a range of views of the Project depending upon the vantage point, as opposed to "direct" views as stated in the table, comprising only 2.6% of the total designated scenic lakes in the state. And this does not account for the fact that there will be no impacts from the Project to other types of scenic resources such as historic sites, scenic pull-offs, trails, etc. which are omitted from PPDLW's chart. PPDLW Direct Testimony at 14. This chart also has several errors in it and fails to account for other SRSNS that have visibility of these projects. See Exhibit 5 included in the Pre-Filed Rebuttal Testimony of Joy Prescott. It is also important to note that potential visibility of wind energy projects does not account for the extent and nature of that visibility. As our VIA concluded, and with all the criteria factored in, that visibility does not translate into an adverse, unreasonable effect on the scenic resources.

2. The Impact of the Project to Water Trails has Been Overstated

PPDLW has identified two water trails, which are being highlighted by the opponents as an experience that will be undermined by the presence of turbines in the paddler's view. That assumes that all paddlers will object to seeing the turbines and is not substantiated by any quantitative analysis that really identifies the nature of the view and how it will truly be seen. First, the lakes are experienced individually over the course of days and the turbines will be in and out of view during the paddle experience depending on many variables including location on

the lake, viewer orientation, as well as wind and weather conditions. On any loop trip through these lakes it is likely that at least half of a trip through the lakes will be paddling away from the project site with views primarily in the opposite direction. The map in the VIA (LandWorks VIA at 16) demonstrates that long section of the paddle routes won't have any views of the project at all. When one paddles from a boat launch in the direction of the project site, it is safe to say that they will have to return paddling in the opposite direction. This is just common sense. It is also very difficult for the eye in a canoe or kayak to stay focused for a long period of time on one fixed view or set of objects such as a turbine array. Boats are moving up and down, paddlers have to focus on immediate water conditions, and are taking in the shoreline and near views as much as the long views. Any paddler will confirm this, and this is based on years of observation and experience.

Second, while PPDLW references the water trails, they do not provide any data supporting the level of use of these trails. Just because they are listed or written about does not convert into significant use. Indeed the intercept surveys and boat count surveys provided no evidence of paddle trail use. Long distance paddling requires participants to be in excellent condition and be strong paddlers, and this fact alone limits those who would undertake multi-day trips. Camps and youth groups or organizations have historically organized such trips in Maine and elsewhere; years of discussions with and informal surveys of students have yielded the conclusion that younger people tend to have less concern with or are not offended by seeing wind energy projects. This is an important point - PPDLW's contentions assume that everyone who recreates on these lakes will object to seeing the wind turbines in view; the surveys demonstrated that any objection did not change people's willingness to return to use these lakes. Over two-thirds (68%) of the respondents in the Kleinschmidt Survey indicated that they were

either more likely to return or would be unaffected by seeing a wind farm. In fact, and as cited in our VIA (p. 118), *AMC Quiet Water Maine Canoe & Kayak Guide* co-author Alec Wilson stated "if I were paddling Scraggly, -a wonderful place where I have seen moose, bald eagles and otters - and there were wind turbines on a ridge 2-3 miles away, that would not bother me at all. In fact, I would appreciate the fact that those wind turbines were responsible for keeping the crisp, clear air around me cleaner ... for me, ridgetop windfarms are not incompatible with a wilderness experience."

To refer to the water trails as a wilderness experience is based on illusion, not fact. Indeed, the *AMC Quiet Water Maine Canoe & Kayak Guide* states: "Bottle Lake's heavy development represents the kind of place we prefer to paddle through as quickly as possible." See Exhibit E to PPDLW Direct Testimony at 145.

4. PPDLW's Citations to Websites Are Misleading

PPDLW lists a number of websites that purportedly demonstrate the prominence of water trails in the Project area. PPDLW Direct Testimony at 17-18. Upon closer examination, it is clear that the list of "websites for paddling enthusiasts" provided in the PPDLW Testimony exaggerates the importance of the area in several ways.

First, the list includes several websites that have simply copied content from other sources. Both of the REI links display content pulled from the Trails.com listings, which was copied from the paddling trip descriptions in the *Quiet Water Maine* guidebook. The REI links listed by PPDLW represent only two trips out of 98 different flatwater paddling and canoeing trips in Maine listed on the REI website. On Trails.com, the trips are two of the 22 different flatwater paddling and canoeing trips listed in the Downeast region, and neither of the two has

received any member reviews.

While PPDLW characterizes the list as "websites for paddling enthusiasts," some of the listings are quite obscure and difficult to find, and would be unlikely to be used as a guide for someone seeking out paddling trip advice. The MIT Outing Club website is a trip journal and photo gallery of a student trip to the lakes in 2006, which is listed amongst over 6,000 other trip photo galleries from the MIT Outing Club from 2003 to 2013. The Downeast Lakes Water Trail Trip Journals are similarly limited as a reference for paddling enthusiasts. In the one trip journal (of two total) that describes the Bowers Project area lakes, someone would need to read through 11 pages of superfluous details (e.g. "Had lunch, 3ish, pbj on pita with Gatorade and also Boursin cheese on pita.") in order to find relevant trip guidance. See Exhibit 4: Downeast Lakes Canoe Trip Journal. The Paddling.net website is also unhelpful as a trip discovery tool, as it simply includes three boat launches in the Bowers Project area lakes amongst many others on a map of North America, with minimal supplemental description of the lakes. While the Wild Turkey Paddlers website is indeed for paddling enthusiasts (based in Massachusetts), the Bowers Project area lakes are only included by one member in the trip reports listing in the website's forum. The member's description includes few mentions of scenic beauty, and describes the difficulty of navigating on Junior Lake due to the lack of landmarks and "just rolling hills off in the distance."

Finally, one of the links listed by PPDLW does not actually reference the lakes within the Bowers Project Area. The Downeast Lakes Water Trail is closer to Grand Lake Stream, and does not include any of the Bowers Project area lakes. The final two links, Wilderness Inquiry and Mahoosuc Guide Service, offer specific guided trips in the area for a fee.

In summary, of the twelve links listed by PPDLW, four contain content copied from *Quiet Water Maine*, four are personal trip journals, one simply shows boat launch locations, one is outside the 8-mile Bowers Project radius, and two provide specific guided trips in the area.

5. The listing of the "Applicant's Misconceptions" is actually a listing of PPDLW's misconceptions

PPDLW asserts that the Applicant cites values and judgments held by "many of the people who appreciate the "Downeast Lakes Region" that are not shared by the developer (PPDLW Testimony at 18). PPDLW states that "when a judgment or value statement is presented as fact, please ask yourself "whose judgment?" and "whose values?" PPDLW Direct Testimony at 18. Ironically, and as discussed in Section A above, PPDLW's own "expert" provides only judgments and personal opinions in his testimony.

In response to several of PPDLW's assertions regarding value judgments, we offer the following:

- A public boat launch or ramp is just that - available and open to the public for use - that is not a value judgment - rather a fact.
- Portages are not viewed as obstacles to travel - they are neither good nor bad - just a fact that some lake to lake travel requires portages which are longer or shorter and users respond to this condition in different ways. Having conducted many portages myself while they may be "an opportunity to stretch one's legs" - and no-one is necessarily denying that - they can be challenging to navigate when carrying a canoe loaded with camping gear.
- There are designated campsites in the area and these are sites that are available for use by the public.
- We do not suggest gravel logging roads are a "hardship" rather they are an example of the timber industry infrastructure that is extensively prevalent in the area and indicate that the area is not solely used for recreational purposes.

- A naturally boulder strewn cove or channel is just that - how people travel through it is up to the individual.
- Neither LandWorks nor the Applicant suggests that people only ice fish in a shack.
- Experienced paddlers actually do mind traveling when there is a strong wind on a lake - some paddlers are not strong enough to paddle a canoe in a broad lake when there is a 10-20 knot breeze and 1 to 2 foot waves. Likewise kayakers who are better equipped to paddle in windy conditions are also very leery of exposure if they should capsize particularly when water temperatures are 65 degrees or less - and then they do paddle along lee shores which, with northwesterly winds in particular will put them out of view of the project.
- The Applicant is not trying to minimize the value of lakes because they are lightly used; the developer is weighing a wide range of analyses, survey results, field observations, physical characteristics and research to conclude the project will not unreasonably impact scenic resources and their use and enjoyment.

6. PPDLW Ignores Views That Are Unaffected By The Project

PPDLW dismisses information on the entirety of views around the lakes because "no human can 360°." PPDLW Direct Testimony at 19. This is contrary to how people actually experience these lakes. Viewers of scenery do not look at scenery or experience a lake with only a single fixed view representing the 45 degree cone of vision. Humans naturally move their head and eyes to take in the broad scope of a view. No one sitting on an overlook (or in a boat, for that matter) can fix their eyes on an object indefinitely; people move their head, and their eyes to take in all the view. PPDLW also implies that viewers will be fixated on one view - the view of the Project, which is also not the case. For a more accurate representation of the angle of view occupied by the Project, see Exhibit 5: Junior Lake 360° Panorama and Exhibit 6: Pleasant Lake 360° Panorama.

The use of the cone of vision example implies that that is all a viewer sees when looking at an object - it overlooks peripheral vision and the movement of the eyes and head. In fact,

Exhibit 7: Pleasant Lake Conceptual Simulation shows how, even with a fixed vertical cone of vision the view of the turbines from a typical, close in vantage point on Pleasant Lake is only 1° of the total fixed cone of vision - when viewed from a distance of 4 miles the turbines appear to be less than an inch high. This is not a "slant favoring the developer" - much of how we describe the viewer's experience is not only common sense, but readily observable in locations where people are taking in the view.

7. PPDLW Ignores the Relationship of Forestry Activity to the Perceived Character of the Area

PPDLW admits that the aerial photograph of the project area displays so much evidence of logging that "the harvested hills around the lakes appear like the veins of a leaf. Fortunately this is not what visitors see". PPDLW Direct Testimony at 21. But visitors do see evidence forestry from the lakes and as they approach any of the boat launches or lake access points they will have driven past logged areas, landings, numerous logging roads and clearings - all of which indicate that indeed this is a working forest area, and a working landscape built around a local, available resource that has long been a resource use in the region. Mainers have harvested the woods for building materials, paper manufacture and energy sources (cordwood, pellets,etc.), much in the same way they have "harvested" water power with dams on all the major rivers and on lakes - such as at Grand Lake Stream. Harvesting another locally available and renewable/sustainable natural resource - the wind- is consistent with this tradition, but it does represent a change, and that is, at the outset, difficult for individuals to accept and accommodate. Landscapes are not static, and our use of that landscape for its various resources continues to evolve. This Project is part of that evolution, and when seen in the context just described, represents a logical new industry that is already taking its place aside the traditional industrial

uses of the forests and the waters of the region.

8. Reliance on Websites and Information on Guide Services

PPDLW is critical of LandWork's citation to guide services and related websites. PPDLW Direct Testimony at 22. The Research and Publications lists in the LandWorks VIA present an objective listing of what websites there are and what information is contained in those websites. We did not attempt, as PPDLW/Campbell state to "skew the results here". PPDLW Direct Testimony at 23. Various websites provide lists and or contact information for the guides in the region. Almanac Mountain Outfitters can be found on at least two sites www.go-maine.com and www.gofishn.com. There is no claim that LandWorks contacted or conversed with the specific guide services listed or individual guides connected with the listing. Thus, with all due respect, to quote Mr. Kerr, owner of Almanac Mountain Outfitters saying "I don't have a website, I don't have a brochure and I have never been contacted by anyone so that would be an outright lie" is disingenuous. PPDLW Direct Testimony at 23. Nowhere does the VIA or LandWorks state we contacted or interviewed Mr. Kerr.

It is important to note though, that there is almost no mention of the specific lakes in the area in most of the sources and websites searched. It is simply confirming what PPDLW is basically saying, that these websites are general in nature and lack specificity with regard to individual lakes. This is just a fact - that the Project lakes are not so unique or so publicized or known as to be readily identified or listed- in contrast with many other destination lakes in Maine.

9. PPDLW's Discussion of the Statutory Criteria

PPDLW undertakes its own assessment and evaluation of the WEA review criteria. PPDLW Direct Testimony at 42-87. All of this testimony in this section is colored by the simple fact that the respondent is anti-wind, anti-Bowers and emotionally attached to the area - which is fine and his right but it must be put into perspective. For example, Lake Champlain in Vermont has extensive development - 2 cities - marinas lined with camps, blinking red strobe lights and turbines visible from many, many locations and campsites but is still considered highly scenic and attracts extensive recreational activity and tourism. Scenic values and scenic ratings are all geographically relative terms. Many would say Lake Tahoe in California is much more scenic than Lake Champlain - the mountains are higher and the water much more clear. But in relation to its geography, Lake Champlain is considered one of the most scenic lakes in New England. We do not agree with the alteration and revision of the Evaluation Criteria that PPDLW sets forth at the outset of this section, as well as with many of the other arguments in this section. Some initial comments include the observations that there are subtle differences between some lakes called scenic and others that are not. It is a relative determination because we would posit that those who have camps or properties on these so-called "non-scenic" lakes feel that their lakes are scenic as well. The fact that the lakes being evaluated in the "Scenic Lakes Character Evaluation in Maine's Unorganized Towns" are in the top 20% of all lakes being evaluated has no bearing on this specific analysis of the Bowers Wind Project.

Also, it is not the charge of the Act or of the VIA process to go back and re-evaluate or change the findings or ratings in "Scenic Lakes Character Evaluation in Maine's Unorganized Towns" or in the "Maine Wildlands Lake Assessment". Our response to PPDLW's approach is as follows:

Criterion A

PPDLW errs in asserting that LandWorks used the Scenic Evaluation to "score" scenic quality. To the contrary, the Scenic Evaluation forms the basis for ratings used to determine whether a lake is a Scenic Resource of State or National Significance in accordance with 35-A MRSA § 3451.9. LandWorks uses the designations as a point of departure and then factors in observations in the field and professional expertise to determine the significance of scenic quality. The information provided in the VIA with regard to each lakes score is simply provided for context and background. LandWorks did not use the Scenic Evaluation's criteria to "rescore" the lake. The numbers presented in the tables are the same numbers from the Scenic Evaluation and PPDLW's statement that LandWorks assigned lower ratings to the scores is wrong. PPDLW Direct Testimony at 45.

Moreover, it is PPDLW who has conducted its own assessment of scenic features and "rescored" the lakes. PPDLW Direct Testimony at 43-46, 57, 64, 71, 78, 84. Under PPDLW's rescoring, Junior and Pleasant Lakes receive scores of 80 points. Id. at 57, 71. This is the highest rating of any lake in the State. See Scenic Evaluation at Appendix V (listing scenic lakes in order of total points). Lakes that received scores of 80 include Attean Pond, Horseshoe Pond, and Onawa Lake. Id. As reflected in the photos included in Exhibit 2: Scenic Lakes Comparison, those ponds exhibit the dramatic relief and other indicia of high scenic quality that are simply not present to the same degree at either Junior or Pleasant Lakes. In each instance that PPDLW undertakes its own "scoring," it increases the scores assigned by the Scenic Evaluation by at least 50% and in at least one instance, by 100% (Keg Lake). PPDLW Direct Testimony at 57, 64, 71, 78, 84.

The Scenic Evaluation while not perfect was a systematic assessment conducted by objective and trained experts. It identifies a clear methodology that was uniformly applied and is supported by citations. Importantly, it does not suffer from the emotional attachment and lack of objectivity exhibited by PPDLW in its review. The adjustments for purported errors and oversights identified by PPDLW are based solely on their opinion and conjecture, which is designed to over-rate scoring so as to strengthen their stated opposition to the Project. Moreover, their scoring is not only at odds with that reflected in the Scenic Evaluation, but also with the review undertaken by the Department's expert. In his review, the Department's expert gave the lakes either the same rating or a lower rating than LandWorks for every SRSNS except for Pug Lake (West Grand Lake), which LandWorks rated as low and Dr. Palmer rated as Medium. Compare Palmer Part II Analysis at 17 with LandWorks VIA at 105.

Criterion B

LandWorks never stated nor implied that logging "destroys" forests. Rather, LandWorks presents evidence of a working landscape to demonstrate that the region is not "intact," a measure aesthetic experts commonly use to determine scenic quality. This area has a long history of logging and the perception of an untouched, unalterable environment is not present here, contrary to what PPDLW purports. The presence of man-made elements and by-products of human culture present in the landscape are relevant considerations. The natural appearance of the landscape is still dominant on many of the Project lakes, but there are minor disturbances and changes that, while not always readily noticeable by the average person, contribute to the reduction of scenic quality, e.g., boat launches, campsites, cell towers, clear cuts, camps, docks, etc. Higher ratings would be given to resources that are completely untouched and remains in their natural state.

PPDLW also claims that these are remote lakes and ponds, but provides no theory or methodology for making this determination. In professional scenic evaluations, remoteness can be measured in several ways. Typically, a remote area is unmodified and pristine. Interaction between users is extremely rare, and evidence of other users is negligible. There are no facilities like boat launches, campsites, or picnic areas, and motorized or mechanized use is not permitted or not possible. A resource's distance from accessible roads or civilization can also define remoteness. In the report prepared by the DEP's visual expert, he has mapped predicted remoteness based on similar criteria and none of the Project lakes qualify as remote. Palmer Part II Analysis at 22.

PPDLW also uses anecdotal information from a few websites to demonstrate the character of the Project lakes. In its research LandWorks found and cited some of the same sources, and does not refute this information. Although informative, it must be weighed in combination with more objective measures such as intactness and remoteness, which PPDLW has not done. These websites are from for-profit businesses that are not impartial and cannot be solely relied upon to make an objective assessment. Moreover, the author of *AMC Quiet Water Maine Guide*, which PPDLW relies on as a source, is quoted as saying "If I were paddling on Scraggly – a wonderful place where I've seen moose, bald eagles and otters – and there were wind turbines on a ridge 2 or 3 miles away, that would not bother me at all. In fact, I would appreciate the fact that those wind turbines were responsible for keeping the crisp, clear air around me cleaner…for me ridgetop windfarms are not incompatible with a wilderness experience." LandWorks VIA at 118.

Criterion C

PPDLW mispresents the survey information and distorts LandWorks' description and application of typical viewers. LandWorks' methodology is based on the reality that expectations of the typical viewer can also be surmised by the activity in which they are engaged. For example, for activities where visual quality and scenery of the landscape are irrelevant to the experience, expectations of scenic quality would be lower. This might include activities like visiting historic architecture. For activities where visual quality and scenery of the landscape are important, but *secondary,* to the experience, expectations of scenic quality would be higher. This would include activities like fishing, motorboating, or camping. For activities in which visual quality and scenery of the landscape are *primary* and *essential* to the experience, expectations of scenic quality would be highest. This might include visiting a scenic overlook, where the only purpose or goal of the visit is to observe the scenery. The Kleinschmidt surveys confirm that while 90% of respondents report viewing scenery as one of the activities in which they are participating, viewing scenery is the primary activity for only 3% of respondents. Therefore, the evidence does not support PPDLW's assumptions regarding viewer expectations.

Criterion D

For the following reasons, a rating of high for this criterion is not rational:

- Visibility alone is not a factor for determining that a Project is unreasonably adverse.
- The intent for excluding the region is not clear. Moreover, exclusion means that turbines may not be *sited* here, not that they cannot be *visible* from here.
- Conserved land does not mean that the land is scenic, nor does it exclude development on adjacent lands. Unless it is a scenic resource as identified by the Act, then conserved land is not evaluated for its scenic impact.
- Incremental increases to capacity, however small, contribute to the state's wind energy goals.

Criterion E.1

Contrary to PPDLW's rationale, professional scenic evaluations typically consider the greater the use of a resource, the more people affected, the greater the potential for scenic impact. This approach is not one developed just by LandWorks, but used by many other experts. In fact, the USFS Scenery Management System considers the number of viewers a critical component in evaluating and ranking scenic values. It suggests that the visual impacts of project activities become more important as the actual or potential number of viewers increase (see *Landscape Aesthetics: A Handbook for Scenery Management*, p. 4-2 to 4-4). Nonetheless, the low use levels in this case do not mean that the resources are remote, as none of them have that designation.

Criterion E.2

The Kleinschmidt surveys provide one source of information for determining effect on continued use and enjoyment. As noted in the testimony of Kevin Boyle, surveys can play an important role in public decisionmaking, but they have limitations and must be evaluated in the context of all available information. Boyle Direct Testimony at 6-10. It is important to examine results of all data to inform how users may be impacted by a wind power project, which LandWorks did. PPDLW fails to address these other intercept surveys and opinion polls, which demonstrate that there is a growing body of evidence that wind power projects in view are not detrimental to users use and enjoyment, and that the impact of observing the Bowers Project is not that different from what has been observed in a number of other surveys conducted near wind farm sites in Maine.

Criterion F

The impact of visibility cannot be determined by numbers and percentages alone, which can often misrepresent or exaggerate actual visibility. It is important to consider other factors that affect visibility, including context, scale, and extent, as the LandWorks VIA has done. PPDLW makes no attempt to consider distance, angle of view, visual dominance, visual clutter, and other critical measures of visibility. Moreover, PPDLW errs in considering two red lights on the nacelle. There will only be one, and LandWorks provides an analysis of night lighting in the VIA. PPDLW also suggests that there are users who will continually see the Project as they travel from lake-to-lake and puts great weight on what they consider "cumulative" impact. However, Kleinschmidt boat counts demonstrate very low overall use of the Project area lakes and that paddling is not a significant activity. The majority of users are in fact motorboaters, representing 82% of those observed in both the 2011 and 2012 survey years. PPDLW therefore overstates the use of these lakes for extended day trips. LandWorks provides an objective analysis of extended day trips in the VIA (pg. 114). Finally, there is no standard promulgated by the Act that says "continual" impact must be evaluated.

Given the foregoing analysis, the subsequent lake-by-lake analysis is invalid, and not worth dissecting or rebutting because we do not believe it follows accepted methodology for assessing scenic impacts as has been established already in projects before Maine's regulatory review bodies.

For example, the analysis conveniently selects findings from the survey work and omits other findings which indicate that users, despite the effect on scenic quality, which the applicant does not hide or omit, will return to recreate on these lakes after the Project is built. Specifically, the Kleinschmidt Survey found that 80% of the users surveyed will return and use these lakes after the project is built. Additionally, a majority of those surveyed (55%) indicated that the

project would have no effect or a positive effect on their enjoyment of the lakes. This is clearly not an unreasonable effect as such an effect cannot be considered "senseless", "irrational", or "unconscionable" – all synonyms for the word "unreasonable". In fact, after the Project is built, and as we have continually pointed out – the waters will still be clear, the fish will still be biting, the shorelines will still look the way they do today and people will still be enjoying them for many generations to come – with cleaner air and sustainable energy to help get them to the lakes and to keep the lights on in their camps.

Pre-Filed Direct Testimony of Kevin J. Boyle on behalf of Champlain Wind, LLC

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CHAMPLAIN WIND, LLC	)	Pre-Filed Direct Testimony of
CARROLL PLT./KOSSUTH TWP.	)	Kevin J. Boyle on behalf of
PENOBSCOT/WASHINGTON COUNTY	)	Champlain Wind, LLC
#L-25800-24-A-N/#L-25800-TE-B-N	)	

On behalf of Champlain Wind, LLC, Dr. Kevin J. Boyle is submitting this pre-filed direct testimony in support of the Bowers Wind Project (Bowers Project hereafter). This testimony is based on my written report (Boyle, 2012) and the material cited below in this testimony.

I. Executive Summary

In preparing this testimony I have reviewed four surveys and the resulting reports that investigate the impact of wind farms on recreation, and lake-based recreation specifically. Three surveys were conducted by or on behalf of the applicant and the fourth survey was conducted by University of Maine researchers. The three applicant surveys are:

- A pre-construction survey of users of lakes that would be potentially impacted by the Bowers wind farm (Junior, Pleasant and Scraggly Lakes).
- A post-construction survey of Baskahegan Lake users where the 55 turbine Stetson wind farm was in place.
- A pre-construction survey where a specific wind-farm proposal was not being evaluated that asked New England residents (some living within 50 miles of the Bowers project) about their use of lakes near the Bowers project and elsewhere and how observing a wind farm would affect their recreation experiences of those lakes.

The University of Maine conducted a survey of the Baskahegan watershed immediately after completion of the Stetson wind farm. This purpose of this survey was to elicit recreational users' evaluations of the lake and watershed, not the wind farm specifically. All the same, especially when considered with the applicant's Baskahegan survey, it provides important information for the permitting process.

a. The Extent, Nature, Duration of Public Uses (35-A § 3452 3E).

The survey results collectively demonstrate that Pleasant, Scraggly, Junior and Shaw Lakes receive very low use. The predominant boat type was motor boat, and the primary activity

engaged by respondents on those lakes was relaxing (40% of the respondents), followed by fishing (32% of the respondents). The primary activity for respondents on Baskahegan Lake was fishing (70%).

b. Expectations of the Typical Viewer (35-A §3452 3C).

The survey results collectively indicate that respondents expect a "high" quality experience when they visit lakes and respondents collectively rate the current scenic value as "high". This includes users of Baskahegan Lake with the 55 turbine Stetson wind farm. In the 2010 Baskahegan survey conducted by the University of Maine, none of the respondents mentioned the wind farm as a current or future problem associated with visiting the lake and in the 2012 survey 93% of users rated the scenic quality as "high" with the existing turbines visible from 90 % of the Lake.

Respondents to the 2010 Baskahegan survey had been visiting the lake for an average of 19 years. The 2012 Baskahegan survey reveals that respondents had visited for an average of 21 years. Given that two years elapsed between the 2010 and 2012 surveys and average years of use increased by two years, this is strong evidence that there is no user attrition, i.e., people are not stopping using Baskahegan Lake due to the construction of the Stetson wind farm. If there was user attrition due to the construction of the wind farm, it would not be the case that the average user had been visiting the lake for about 20 years and the average years of use increased by two years over the two-year interval between the two survey administrations.

Finally, 59% of Baskahegan Lake users also have visited Junior, Pleasant, Scraggly and Shaw Lakes, which are within eight miles of the proposed Bowers project. This result indicates that Baskahegan Lake users visit lakes without wind farms and therefore know what a lake looks like with and without a wind farm during their recreation experiences. With this knowledge and past use, if a wind farm diminished the expected quality of their recreation experiences, they could visit other lakes, but have chosen not to substitute to another lake.

c. Potential Effect on Continued Use and Enjoyment (35-A §3452 3E).

Only 33% of users of Junior, Pleasant and Scraggly Lakes rated scenic quality of these lakes as high when shown simulated images of the Bowers project. However, 55% of these respondents indicated that that the presence of the Bowers project would have no impact or a positive impact on their enjoyment of the visits to the lakes.

In contrast, 80 percent of respondents indicated that if the Bowers project were constructed it would have no effect on their decisions to visit the lakes in the future or they were likely to return.

The low evaluation of scenic quality with the simulated images of the proposed Bowers wind farm in contrast to the high future visitation if the wind farm were constructed is likely due respondents using *precautionary* and *hyperdefensiveness* strategies in answering questions to pre-construction survey questions. With the *precautionary* strategy people follow a "why take a chance" approach rather than acting strictly rationally. Since an unknown outcome might be desirable, neutral or undesirable the *precautionary* strategy results in people erring on the side of being conservative. *Hyperdefensiveness* is directed at reducing anxiety and avoiding danger. As with the *precautionary* strategy, the *hyperdefensiveness* strategy results in people erring on the side of being conservative when answering a pre-construction survey.

Both of the above strategies would tend for respondents to pre-construction surveys to rate simulated images lower than they would in responding to a post-construction survey where the impacts of a wind farm are known. The post-construction survey results support from Baskahegan lake support this insight. No one responding to the 2010 survey indicated that wind farm diminished quality and 93% of respondents to the 2012 survey rated scenic quality as "high".

Considering results from the 2012 Baskahegan post-construction survey and the telephone survey that was not conducted in the environment of permitting a specific wind farm, these data indicate the share of users that might be disadvantaged by the construction of the Bowers project is less than one might think from only viewing the results of the Bowers survey. Further, very few people use Junior, Pleasant, Scraggly and Shaw lakes. Survey interviewers did not find any users at Shaw Lake and observed about 12 users per interview period at Junior, Pleasant and Shaw Lakes. This includes half of the survey days on weekends when use is expected to be greater than weekdays and surveying on two major holiday weekends (Memorial Day and the 4th of July). While there are no baseline data for lake use rates in Maine that I am aware of, my professional experience studying Maine's lakes indicates that this is a very low use rate.

d. Conclusion

Construction of the Bowers project will have a minimal impact on user perceptions of visual quality and use of lakes within eight miles of the project and certainly less of an impact than reflected in the pre-construction Bowers survey results.

II. Qualifications/Background

I am currently a Professor in the Department of Agricultural and Applied Economics at Virginia Tech. From September 2005 through March 2012, I served as Department Head. I will serve as the Founding Director of Virginia tech's new Program in Real Estate.

Prior to September 2005 I was a Distinguished Maine Professor in the Department of Resource Economics and Policy at the University of Maine. I also served as a cooperating Professor of Wildlife Ecology and Ecology and Environmental Sciences, and was the Founding Director of the Center for Tourism Research and Outreach. I served on the faculty at the University of Maine from 1986-2005.

I received my B.A. in Economics with Distinction from the University of Maine and M.S. in Agricultural and Resource Economics from Oregon State University where I received the Savery Masters Student of Excellence award. I received my Ph.D. in Agricultural Economics from the University of Wisconsin.

I have a long personal relationship with the State of Maine. I grew up in Presque Isle, went to college in Orono, and have spent most of my professional career working with natural resource issues in Maine.

I have designed and conducted scores of surveys to elicit the public's preferences for Maine's natural resources. Most of these studies have dealt with hunting, fishing and nonconsumptive uses of Maine's wildlife, forest management, lake and river use, and water quality. For these applications I have used mail, telephone and on-site surveys to collect the necessary data. I have served as a technical advisor for the national Survey of Fishing, Hunting and Wildlife Associated Recreation conducted periodically by the U.S. Fish and Wildlife Service.

Using the results of my research I have advised Maine officials in the Governor's office, Department of Agriculture, Conservation and Forestry, Department of Attorney General, Baxter State Park Authority, Maine Center for Disease Control, Department of Environmental Protection, Office of Fiscal and Program Review, Department of Inland Fisheries and Wildlife, Land Use Regulation Commission, Department of Marine Resources, various committees of the Maine House of Representatives and the Maine Senate, and various other groups.

I have done over a score of studies that investigate how lake quality affects lake-user preferences. I have done numerous studies of fishing (open water and ice), boating on Maine lakes, and studied the effects of eutrophication and Eurasian milfoil on property values in Maine, New Hampshire and Vermont lakes. I have also done studies of fishing, hunting and boating guides who cater to users of lakes and forests. Exhibit 1 provides examples of the studies that I have conducted.

The first study of public preferences I conducted, as part of my PhD dissertation, investigated scenic beauty along the Wisconsin River as perceived by recreational boaters and anglers (Boyle and Bishop, 1984). The State of Wisconsin says that:

> *"The Wisconsin River valley is a scenic marvel comprised of stately bluffs, mysterious wooded bottomlands and over 500 miles of sandy shoreline. Numerous islands provide camping and outdoor recreational opportunities free from crowds"* (http://lwr.state.wi.us/docview.asp?docid=11222).

This area is one of the most important scenic assets in Wisconsin, and my research was used to support the passage of Wisconsin Act 31 (1989) that created the Lower Wisconsin State Riverway. In this study we used actual pictures of scenes along the river to elicit user preferences.

Currently, I am the co-Principal Investigator of a national study for the National Park Service of public preferences for reducing human-caused haze in Class I visibility areas (national parks and wilderness areas) to background (natural) levels. Here we are using visual simulations of what national park and wilderness areas would look like as haze levels are reduced. A pilot survey was administered by mail in Southeastern states and the Four Corners area of the Southwest. When the final survey is implemented the results will be used by the National Park Service and the U.S. EPA to assist in implementing U.S. EPA's Regional Haze rule (http://www.epa.gov/visibility/pdfs/20120530finalrule.pdf).

My education, experience and knowledge described above qualify me as an expert. I have testified in state and federal rule-making and policy hearings, and have been qualified as an expert in both state and federal courts.

III. Experience with the Bowers Project, Baskahegan Lake, and Wind Power

On July 9, 2012, I made a visit to the Bowers Mountain area with Neil Kiely and Marcia Phillips. We approached the area along Route 6 from Lincoln, passing through and observing the Rollins project turbines.

Our first stop was at the boat launch at the eastern edge of Baskahegan Lake to view the Stetson project turbines from the lake shore where the Baskahegan surveys interviews would be conducted. It was a fairly clear day and most turbines were clearly visible. From the vantage point where we viewed the lake my view was of a natural shore line with the wind turbines on the horizon in the distance.

Our second stop was at the camping/public access area on the southern edge of Pleasant Lake. Here we viewed simulated photos of the Bowers project wind turbines from this point on the shore in the same manner that participants in Bowers survey would view the photo simulations. Here I observed cuts in the shoreline forest for a few camps and several areas on the ridges towards the north and northwest where logging had occurred. Even in a scenic location such as this there were clear signs of human development on the horizon from timber harvesting.

Our third stop was at Junior Lake where we took a boat tour of Junior and Scraggly Lakes. We visited the southern end of Junior Lake to observe the Junior Stream outlet. I viewed simulated photos of the Bowers project wind turbines from the lake in the same manner that participants in Bowers survey would view the photo simulations. My observations were of a northern shore that had numerous camps along the shore, mostly on Junior Lake. The camps had aluminum docks

that reflected the sun, red roofs and other features that disrupted the view of a natural shore line. I also noticed large areas of timber harvesting on the ridges to the north and northeast. My perspective is that development along the lake shore is likely more intrusive to a natural scene than would be the Bowers project.

After visiting Junior Lake we drove into the Rollins wind farm and observed the turbines operating.

I have also reviewed numerous documents related to the Bowers project, other wind projects in Maine, and other documents related to wind farms in general. I have a Masters student who is doing her thesis on wind farm siting on the Eastern Shore of Virginia and I have reviewed literature with her as she designs her study. I have also attended sessions at conferences in the U.S. and Europe where researchers have discussed the potential effects of the development of wind farms on local populations.

IV. Surveys

a. Use of Surveys in the Permitting Process

Surveys can play an important role in supporting public decision making, such as the permitting of a wind farm, by providing information on how the public perceives the potential effects of a proposed activity. Here, the survey results provide insight on recreational use and users' perceptions of the proposed wind farm.

The applicant conducted three surveys that provide complementary information. One survey was conducted by intercepting users as they visited Junior, Scraggly and Pleasant Lakes during the summer of 2012 (Kleinschmidt 2012b) (the "Bowers survey").[1] These three lakes, plus Shaw Lake and other lakes within eight miles of the Bowers Project, will be referred to as the Project lakes. The second survey was conducted by intercepted users of Baskahegan Lake at the primary access point as they completed their visits to the lake during the summer of 2012 (Kleinschmidt 2012a) (the "2012 Baskahegan survey").[2] The third survey was a telephone survey of recreational users of Maine lakes conducted in January 2011 (Portland Research Group, 2011) (the "Telephone survey").[3]

The Bowers survey provides pre-construction information on how the construction of the wind farm might affect users of Junior, Pleasant and Scraggly Lakes. These are three lakes immediately south of the Bowers Project and are among those closest to the project and have the potential to see the greatest number of turbines.

[1] The Bowers survey is attached as Exhibit 2.
[2] The 2012 Baskahegan survey is attached as Exhibit 3.
[3] The Telephone survey is attached as Exhibit 4.

The Baskahegan survey provides post-construction information from a nearby lake where some users also use the Project lakes. This survey is important because it collects user perceptions when a wind farm is already in place. The Bowers survey, and other wind farm surveys conducted to date in Maine, ask respondents to evaluate simulations of what a wind farm will look like and make judgments on the potential impact the wind farm will have on them. With the Baskahegan survey, the Stetson wind farm is in place and users were surveyed as they completed their visits to the lake. Respondents were not asked to make judgments based on simulations and the expectations of possible impacts, they could respond from actual experience. Results from this survey will be compared with a survey conducted by the University of Maine at Baskahegan Lake in 2010 (2010 Baskahegan survey).[4]

The Telephone survey sets the context of how recreation users generally, including some who use lakes near the Bowers Project, view wind energy. Rather than just focusing on current users of Project lakes, the telephone survey interviews people who participate in outdoor recreation; there were 191 respondents with 22 of these respondents residing within 50 miles of the Project lakes. Thus, the telephone survey results provide insight on how the Bowers Project might affect potential users of the Project lakes.

b. Criteria for Credible Survey Data

Surveys can be administered on-site where people are participating in an activity, by telephone, by mail, by internet, in peoples' homes, and various other modes of administration. Any mode of survey administration can collected credible data to support decision making if three key criteria are followed:

1) The survey is designed to elicit credible answers to survey questions;
2) The survey is administered to a known population; and
3) People who respond to the survey are randomly selected from the known population.

Satisfying the first criterion requires that questions and their answer options be designed so respondents understand what is being asked and how they can respond. Additionally, answer options must match the questions asked. The second criterion requires a definition of who is eligible to participate in the survey so the group that survey results apply to is known. The third criterion ensures that people have a known likelihood of being selected to participate in the survey. That is, people cannot participate in the survey multiple times and recruitment into the survey is not bias toward or away from any group of potential respondents. I will explain below that all three of the surveys the applicant conducted meet these three criteria.

[4] The 2010 Baskahegan survey is attached as Exhibit 5.

c. Limitations to Consider When Interpreting Survey Data

Even when surveys meet the three criteria outlines immediately above, the results of such surveys must be interpreted with caution. I discuss some of these key issues that apply to the Bowers survey.

i. Respondents Use a Precautionary Strategy

People who are uncertain about the outcome of a change may employ what is known as a *precautionary* strategy (Maddux and Rogers, 1983). With the *precautionary* strategy people follow a "why take a chance" approach rather than acting strictly rationally. Since an unknown outcome might be desirable, neutral or undesirable the *precautionary* strategy results in people erring on the side of being conservative.

In the case of the proposed Bowers Project people employ the *precautionary* strategy because they may not be able to fully visualize what the wind farm would look like when constructed and cannot predict future impacts with certainty. The consequence of this uncertainty is people would tend to say, based on simulated images of a wind farm, that the Bowers Project would have a negative impact when answering pre-construction survey questions. This *precautionary* strategy would not occur if survey respondents were able to observe the actual wind farm.

ii. Respondents Use a Hyperdefensiveness Strategy

People who fear that a change *may* result in an undesirable outcome employ what is known as a *hyperdefensiveness* strategy (Maddux and Rogers, 1983). *Hyperdefensiveness* is directed at reducing anxiety and avoiding danger. As with the *precautionary* strategy, the *hyperdefensiveness* strategy results in people erring on the side of being conservative when answering a pre-construction survey.

Hyperdefensiveness arise for reasons similar to the *precautionary* strategy, but here the focus is on the fear of a negative outcome. Because they fear possible negative impacts of a wind farm they would tend to answer questions in a preconstruction survey that would not support construction of a wind farm. However, their answers to a post-construction survey would be very different if they found that the negative impacts they feared did not occur.

iii. Survey Responses Influenced by Adverse Publicity

Adverse publicity about a wind farm can activate and exacerbate the *precautionary* and *hyperdefensiveness* strategies; the negative publicity creates uncertainty and fear among the public regarding the likely impacts of a wind farm.

It is true that the applicant, who is proposing the wind farm, has presented information on the positive aspects of the wind farm. It is also true that the Partnership for the Preservation of the Downeast Lakes Watershed (PPDLW) has presented negative

publicity. I would expect that the negative publicity presented by PPDLW would have a greater impact on how people answered the Bowers survey questions than would the positive publicity provided by the applicant. I would expect that local people would be dismissive of information provided by the applicant and more accepting of information provided by their neighbors who are members of PPDLW; they are perceived as sharing a common interest as opposed to the developer who is proposing a project in another town.

The positive and negative publicity create uncertainty that gives rise to survey respondents acting *precautionary*, which is likely to result in people giving survey responses that are less favorable toward the proposed wind farm. Hyperdefensiveness could stimulate greater fear that the wind farm might have a negative impact or that the negative impact might be greater than they expected.

An example of the fear generated by PDDLW's negative publicity are the claims on their website that property values will decrease by up to 30% and that a "very thorough" study of the impact of wind turbines on property values shows an average decrease in value of 20.7% (http://www.ppdlw.org/bwrs_propval.htm, accessed March 3, 2013). The information these claims of diminished property values are based on requires a great deal of analytical sophistication to understand. Three points need to be considered. First, only a hedonic analysis provides credible market information on the potential impact of wind farms on property values. Although PPDLW does reference one such study (Heintzelman, 2012; http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1803601), this type of study presents many estimates that require considerable economic and statistical sophistication to understand. Third, no context is provided for the proximity of wind turbines to residential properties or other intervening considerations. Without this information, the information presented simply foments fear among local residents that a very large drop in property values will occur when the wind farm is constructed.

In addition, the property value impacts PPDLW report simple are not plausible. Boyle and Bouchard (2003) looked at the effect of lake eutrophication on sale prices (actual market values) of lakefront homes in Maine, New Hampshire and Vermont. Eutrophication reduces water quality by affecting the esthetics and uses of a water body. They report reductions in property values from increasing eutrophication (reduced water quality) ranging from about 1 to 9%. If a reduction in water quality right in front of someone's lakefront home reduces property values by less than a 10%, it simply is not believable that the possible negative aesthetic of a distant wind farm would depress property values by 20% or more. As a consequence of this type of negative publicity distributed by PPDLW, local property owners would likely conclude they have a great potential for harm if the Bowers Project was built.

In addition, Hoen et al. (2009) studied the effects of wind farms on sale prices of 7,459 wind farms located near 24 existing wind farms in nine states. They concluded that "...

none of the models uncovers conclusive evidence of the existence of any widespread property value impacts that might be present in communities surrounding wind energy facilities. Specifically, neither the view of the wind facilities nor the distance of the home to those facilities is found to have any consistent, measurable, and statistically significant effect on home sales prices.

iv. Interpreting the Bowers Survey Data

The fact that the Bowers intercept survey was administered after and during the communication of negative publicity about the Bowers Project most likely stimulated some respondents to employ the *precautionary* and *hyperdefensiveness* strategies when responding to the preconstruction survey. These are normal and expected coping strategies, but they result in evaluations of the proposed Bowers Project being more negative than they would have been in the absence of the negative publicity and if respondents could observe the actual wind farm. It is not that everyone employs theses coping strategies, but those who do, bias survey responses toward a greater expected impact of the proposed wind farm. This consequence should be taken into consideration when interpreting the Bowers survey data. Such a concern does not exist for the Baskahegan Survey because the Stetson wind farm was constructed prior to the administration of the survey and lake users were surveyed after completing their visits to the lake; the impact of the wind farm is known. Such a concern also does not exist for other pre-construction surveys because they were not conducted with preceding or concurrent negative project publicity.

d. Caution in the Use of Survey Data to Support Permitting Decisions

Survey data provide useful information, but these data must be evaluated in the context of all the available information. Even if a survey meets the three criteria for credibility outlined above, the survey data are an imperfect gauge of the actual impact a wind farm. Thus, each survey presented in support of the permitting process must be evaluated to determine if credible data are provided, and if credibility is established, then the survey data must be evaluated for potential biases. Thus, survey data should not be the sole basis for determining whether the Bowers Project meets the visual impact standard. In short, the user surveys provide useful, but not perfect or conclusive information to consider in evaluating the impact of the Bowers Project on scenic quality and recreational uses.

In survey research there is a concept of convergent validity. Convergent validity occurs if two methods of measuring the same item provide statistically similar results, then convergent validity of the finding is established. Here, the applicant conducted three separate surveys and also relies on the results of a fourth survey conducted by University of Maine researchers. These studies are not designed such that a statistical test of convergent validity can be applied, but they collectively provided common insights that establish the credibility and robustness of the insights I draw from the survey results.

V. Surveys Conducted in Support of the Bowers Project

a. Bowers survey

This survey investigated the potential effects of the proposed Bowers Project on recreational users on three lakes immediately south of the project. The two key areas of investigation include:

- Recreation use - uses of the lakes, where use occurs, how it occurs, and how many people participate.
- User perceptions – impacts of the proposed project as perceived by lake users based on simulated images of the constructed wind farm.

Addressing these topics required use of on-site, intercept survey to collect data (Kleinschmidt, 2012b). This work was done by Kleinschmidt Associates (Kleinschmidt hereafter) under the technical supervision of Marcia Phillips.

Interviews were designed to be completed with people recreating on Junior, Pleasant and Scraggly Lakes during the summer of 2012. Questions were similar to previous preconstruction wind-farm surveys implemented across Maine when possible to provide user comparisons across projects where possible.

i. Survey Design and Administration Follows Best Practices

Kleinschmidt's user intercept survey for the Bowers Project was designed and implemented using best practices that are consistent with established survey-research procedures. These procedures ensure that high quality data are collected that represent users of Junior, Pleasant and Scraggly Lakes.

1) The survey was designed to elicit credible answers to survey questions.

- Kleinschmidt used their knowledge of the lakes, the area and recreational uses of the lakes from prior work with Domtar on a local hydro-power relicensing project to customize the study to local conditions.
- Kleinschmidt visited with local people, and the local game warden and local fishery biologist, who are familiar with Junior, Pleasant and Scraggly Lakes, to include local knowledge in the design and implementation of the survey.
- Several drafts of the Bowers survey were provided to me as a survey design expert to review and critique. The final survey reflects the recommendations I made for improving the survey.

- The survey was designed to be short to entice participation and questions worded clearly so that respondents could easily respond.

- The survey was pretested on Kleinschmidt employees and project members to ensure that questions and answer categories were clear and understandable.

2) The survey was administered to a known population.

- The survey was administered to users of Junior, Pleasant and Scraggly Lakes during their visits to the lakes.

3) People who responded to the survey were randomly selected from lake users.

- The survey was administered using on-site interviews from a roving boat on the lakes. This was an appropriate and cost effective approach. There are multiple access points on the lakes, which precludes effective sampling at access point. The water-based sampling approach provided the ability to interview users on the water and on the shore. This approach also ensures that no group of users in inadvertently excluded from participating in the survey and ensures that people who do not fit the population are not included as survey respondents.

- One person was selected at random to interview from each party intercepted. Since the interview is verbal and party members can hear the responses of other party members, interviewing one party member avoids undesirable anchoring and sequencing effects in survey responses from people in the party who might be interviewed subsequently.

- People were interviewed once so that no single person could unduly influence survey results.

Kleinschmidt took a number of other actions to ensure the survey data are credible.

- Interviews were conducted on Fridays and Saturdays when most recreational use occurs. This pattern of recreational use and has been observed by Kleinschmidt and me in all of our previous work studying recreational users of Maine's lakes.

- Kleinschmidt trained the interviewers prior to fielding the survey, observed their interview practices and made recommendations for improvements for approaching potential interviewees, requesting their participation and administering the survey.

- Interviewers were provided with an interview manual to reference if they had questions on survey protocol.

- Kleinschmidt used feedback from the first fielding of the survey to make improvements in the survey design and implementation (e.g., moving to an electronic survey instrument with a paper back-up). These changes enhanced the effectiveness of the survey implementation, but did not modify the substance of the survey.

- Kleinschmidt checked all survey data before statistical analyses were conducted and summary statistics were produced.

ii. Use of Questions from Previous Wind-Power Surveys

Kleinschmidt attempted to use questions from previous preconstruction surveys administered to elicit recreation user perceptions' of wind-farm simulations. This proved difficult because question were not consistent across existing surveys and some questions, when evaluated, did not seem appropriate to duplicate.

Consider the following example. The Saddle Back Ridge survey asked the following:

"*Please think about how a change from the current view of Saddleback Mountain to the one in the image would affect your likelihood of returning to Mt. Blue. On a scale of 1-7 where 7 means you are more likely to return and 1 means you are less likely to return, how likely are you to return to Mt. Blue, given the change in the view? A "4" means the change in the view would have no effect on your return.*" (Market Decisions, 2010, page 12).

The comparable, but not identical, Bowers survey question was:

"*Now I'd like you to think about your trip here today. Imagine the proposed wind project was built. On a scale of 1 to 7, where a 1 means you are very unlikely to return, a 4 means the change in view would have no effect on your return, and a 7 means you are very likely to return, how likely are you to return to* _____ *Lake* ***given the presence of the wind turbines?***" (emphasis added)

The Bowers question reinforced that the change in view was due to the presence of wind turbines. More importantly, the Bowers survey question allowed respondents to state they are unlikely to return. In comparison, Saddleback Ridge survey question contains an implicit bias in the response categories; respondents cannot say that they are "unlikely" to return, just "more" or "less" likely.

To my knowledge there is no standardized set of survey questions or standardized framing of individual questions for preconstruction wind surveys. Kleinschmidt tried to incorporate legacy questions from previous wind surveys where possible and make modifications when needed to best elicit user perceptions of the proposed Bowers Project.

iii. Sampling

Kleinschmidt conducted surveys on 12 days, 6 week days and 6 weekend days, between May 25 and August 11, 2012 (Table 3, Kleinschmidt 2012b). This represents 11% of the eligible week days and 27% of the eligible weekend days. Surveys were conducted on Memorial Day weekend and the 4th of July weekend to contact users on the major holiday weekends when recreation use is expected to be highest.

Kleinschmidt conducted surveys on Pleasant, Scraggly and Junior Lakes. The lake-specific sample sizes range from 13 (Scraggly) to 31 (Pleasant). These differences are due to the intensity of public use of the lakes, not differing intensities of sampling effort. Additionally, Kleinschmidt attempted to conduct intercept surveys on Shaw Lake, but ceased this effort due to no users being present on survey dates. The sampling effort from Shaw Lake was redirected to sampling on Junior, Scraggly and Pleasant Lakes to increase sample sizes for these lakes.

The locations of the interviews were determined by the locations where people were recreating on the lakes. Figure 9 in the Bowers survey report shows that interview sites were distributed across each of the three Project lakes where the intercept surveys were conducted. Comparing the visual simulation information in Figure 2 with the interview locations from Figure 9 of the Bowers survey report indicates the sample provides a good spatial representation of lake use and sites where the Bowers project would be visible while recreating on the lakes. The information is portrayed in Exhibit 6.

As shown in Table 1, no one who was contacted refused to participate in the survey, which is extremely high since some refusals are usually expected. This high response rate is testimony to the training Kleinschmidt provided to their interviewers.

Table 1. Survey Response Rate; Boats and People Observed
(excerpted from Table 4 in Kleinschmidt 2012b)

SURVEYS COMPLETED	70
PEOPLE APPROACHED	78
REFUSALS	0
REPEATS (ALREADY COMPLETED SURVEY)	8
BOATS OBSERVED	123
AVERAGE NUMBER OBSERVED PER DAY	10*
PEOPLE OBSERVED	486
AVERAGE NUMBER OBSERVED PER DAY	12*
AVERAGE GROUP SIZE	3

* These numbers are different from those reported in Kleinschmidt 2012b and the numbers reported here are correct.

A second insight from the sampling results reported in Table 1 is that use of Junior, Pleasant and Scraggly Lakes is very low. The interviewers only observed 12 users per day and with an average group size of 3, this is only about 4 groups of people recreating per day. These numbers are similar to the results of two boat counts conducted on Junior Stream in 2011 and again in 2012. Those results showed an average of 4 boats per day in 2011 and 3 boats per day in 2012. The observations occurred for 14 hours per day in 2011 and 13 hours per day in 2012 (Table 2, Kleinschmidt 2012b). While I do not know of any source of baseline data on recreational user counts for Maine's lakes, my professional and personal experience with Maine's lakes reveals to me that these are very low use rates. This implies that the number of people potentially affected by the Bowers Project is quite small.

iv. Summary of the Bowers Survey Results

The survey results show that 86% of respondents were repeat visitors, which indicates that most respondents were familiar with the lakes (Table 2). All respondents expected a "high quality" recreation experience and 90% rated the current scenic value as "high". When these results are considered on a lake-by-lake basis, they are similar across lakes with the exception of Junior Lake, where only 81% rated the scenic value of this lake as "high" (Table 3). I believe this relative rating follows the extent of shoreline development; Junior Lake has the most shoreline development (Figure 2, Kleinschmidt 2012b) and the lowest scenic rating.

Table 2. Key Results from the 2012 Bowers Project User Survey

Statistics	Description
86%	**Repeat** visitors
100%	Expect a **high quality** experience
90%	Rated scenic value with current conditions as **high**
33%	Rated scenic value with simulated conditions as **high**
55%	Stated the Bowers wind farm would have **no effect** or a **positive effect** on their enjoyment of a visit
99%	Are **likely to return** with current conditions
80%	Said wind farm simulated conditions would have **no effect** on decision to visit in the future or they are likely **to return**

Source: Kleinschmidt, 2012b.

Table 3. Key Results from the 2012 Bowers Project User Survey Stratified by Lake

Junior	Pleasant	Scraggly	Description
26	31	13	People **interviewed**
100%	100%	100%	Expected a **high quality** experience
81%	93%	100%	Current conditions have **high** scenic value
23%	46%	23%	Simulated conditions have **high** scenic value
40%	70%	50%	Simulated conditions would have **no effect** or **positive effect** on enjoyment of visit
100%	97%	100%	Are **likely to return** with current conditions
74%	87%	77%	Simulated conditions would have **no effect** on decision to visit in the future or they are **likely to return**

Source: Kleinschmidt, 2012b.

When asked to rate the scenic value of the lakes with the wind farm simulations, 33% of all respondents rated the simulated scene as "high" scenic value (Table 2). The results by lake indicate 46% of Pleasant Lake respondents indicated that the scenic value of the lake would continue to be "high" with the wind farm, which is substantially above the ratings for Junior and Scraggly Lakes (Table 3). Notably, Pleasant Lake has the greatest potential visibility of the wind farm (Figure 2, Kleinschmidt 2012b). A majority (55%) of all respondents said the presence of the wind farm would have "no effect" or a "positive effect" on the enjoyment of their visits to the lake (Table 2). The individual lake results again are highest for Pleasant Lake (70%), which provides the greatest potential to view the wind farm, and lowest for Junior Lake, which has the greatest level of shoreline development (Table 3).

The key results are that when asked about the likelihood of a return visit to the lakes with the simulated wind farm conditions, the vast majority (80%) said the simulated

conditions will have no effect on their decisions to visit in the future or they are likely to return (Table 2). This result holds for each of the individual lakes as well, ranging from 74% for Junior Lake to 87% for Pleasant Lake (Table 3).

Additional data collected by Kleinschmidt (2012a) helps to understand this last result. The primary activities when visiting the lakes are relaxing (40%), fishing (32%) and camping (13%), and only 3% reported viewing scenery as their primary activity. Thus, while most visitors to the lakes report viewing scenery as an activity when they visit the lakes, this is not a primary reason for visitation.

Thus, while only about a third of respondents rated the scenic value of the lakes as "high" based on simulated images of the Bowers Project, 74% or more of the visitors to each lake said that the wind farm would have "no effect" or they are "likely" to visit in the future if the wind farm is constructed. I believe this dichotomy of results is a direct function of survey respondents employing the *precautionary* and *hyperdefensiveness* strategies when answering the question regarding images of the simulated wind farm. Further, I believe the lower evaluations of the simulated images for Junior and Scraggly Lakes are likely biased toward lower scenic value ratings by the public opposition to the Bowers Project. Junior Lake has the most shoreline development of these three lakes and is physically connected to Scraggly Lake. Thus users of these two lakes were likely to be more exposed to the Bowers Project opposition. In contrast, Pleasant Lake is geographically remote from the more developed community around Junior Lake and although it has greater Project visibility, it had higher ratings of scenic quality of the simulations of the wind farm in place.

v. **User Perceptions of the Effect on Scenic Character (35-A §3452)**

The Bowers Survey results provide the following insights for the permitting process.

Expectations of the Typical Viewer (35-A §3452 3C). The results above indicate that all respondents expect a "high quality" experience and nearly all rate current scenic value as "high". Ratings of scenic quality appear to decrease with the level of recreational use. The number of interviews conducted by Kleinschmidt is an indication of the level of use of these lakes. Scraggly Lake had fewer interviews conducted (13) than Pleasant Lake (31), and Scraggly Lake had a higher scenic quality rating. Scenic quality ratings also appear to decrease with the amount of shoreline development. Junior lake has the most shoreline development and the lowest scenic value rating.

Potential Effect on Continued Use and Enjoyment (35-A §3452 3E). Ninety-nine percent of users are likely to return with current conditions and this figure drops to 80% when survey respondents were shown simulated images of the wind farm. Thus, the vast majority of users would continue to visit the lakes, and at most, 19% of users would potentially be displaced. However, my professional opinion is that this 19% is likely

overstated due to *precautionary* and *hyperdefensiveness* strategies being employed by some when answering the pre-construction survey questions. As will be shown when I discuss the telephone survey results below, only about 5% of people indicate an impact when asked in a neutral setting.

The percentages of respondents who stated the wind farm would have "no effect" or a "positive effect" on their enjoyment ranges from 40% for Junior Lake to 70% for Pleasant Lake. The overall figure is 55%.

I believe these latter figures are suppressed by respondents using *precautionary* and *hyperdefensiveness* strategies when answering this question that were heighten by the PPDLW negative publicity campaign. Below I will show that long-term users of Baskahegan Lake continue to visit the lake after the Stetson wind farm was constructed and rate the scenic quality on that lake as "high" with a visible wind farm that has 56 turbines. In addition, 59% of Baskahegan Lake users have visited Junior, Pleasant, Shaw or Scraggly Lakes in the past. If the Stetson wind farm had substantially diminished the quality of their recreational experiences they have ample opportunity to substitute to nearby lakes without a wind farm present and choose not to.

vi. Applicability of Survey Results to Other Lakes

While I have summarized the combined results and lake-specific results above, I believe the combined results are most relevant. First, all of the Project lakes are in close physical proximity and some lakes are physically connected by water, e.g., Junior and Scraggly Lakes. In addition, visitors to Baskahegan Lake indicated that they had previously visited Pleasant, Scraggly, Junior and Shaw Lakes. Thus, it would be inappropriate to assume that each person interviewed visits one lake only. It is likely that each person interviewed uses multiple project lakes. Differences in responses by lake are likely driven by three factors: 1) the worst-case simulated image selected to show users; 2) the extent of shoreline development; 3) the level of recreational use; and 4) familiarity with the PPDLW opposition to the Bowers Project. These are worst case images, as identified by LandWorks. The Junior Lake image portrayed an area where 9-12 turbines would be visible, and 13-16 (maximum) turbines would be visible from the simulation sites on Scraggly and Pleasant Lakes.

Consider one example. Kleinschmidt attempted to conduct surveys at Shaw Lake, which is within 8 miles of the Bowers Project, but ceased this effort because no users were present on survey dates. The sampling effort from Shaw Lake was redirected to sampling on Junior, Pleasant and Scraggly Lakes to increase sample sizes for these lakes. I believe the general results from Junior, Pleasant and Scraggly Lakes can be used to infer what the responses might be for users of Shaw Lake. All four lakes are in the same geographic

region and users of Shaw Lake likely visit Junior, Pleasant and Scraggly Lakes. I believe preferences of Shaw Lake users would be most like those of Pleasant Lake users. Shaw and Pleasant Lakes are physically separated from the other two lakes and both have low levels of shoreline development. In addition, Shaw Lake users may actually be less concerned about the wind farm than Pleasant Lake users because fewer wind turbines will be visible (Figure 2, Kleinschmidt 2012b).

vii. Comparison of Bowers Project Results with other Wind Farm Surveys Conducted in Maine

As wind farms are developed in Maine a number of surveys have been conducted that ask recreational users to evaluate simulated scenes of what conditions will look like with the wind farm in place. The surveys are typically intercept surveys where people are contacted during their recreational experiences and the simulated scenes are designed to portray worst-case conditions. Intercept surveys are appropriate because this is often the only efficient way to contact recreational users as there are generally no lists of users with contact information for specific sites. Considering worst case conditions is a standard approach to evaluating environmental changes and the Bowers survey followed these established practices.

The Bowers survey was administered to the third largest sample of the eleven studies that have been conducted, only exceeded by Bull Hill and Highland Winds surveys, and covered the largest period of time of any of the survey efforts (Table 4).

The proportion of the respondents to the Bowers survey who reported a positive impact of seeing a wind farm while recreating (19%) is similar to the results from the Nicatous Lake (Passadumkeag Project), Mattawamkeag and Pleasant Lakes (Oakfield II project) and the Highland, Saddleback Ridge and Spruce Mountain surveys (Table 3). In other words, the proportion stating a positive impact is similar to six out of the 10 other surveys that have been conducted.

The Bowers survey result for the proportion of respondents who indicated the wind farm will have a negative effect on their experiences is similar to the proportions reported for four of the 10 surveys. Saponac Pond and Bull Hill results are similar and there is not much difference from the proportions reported for Lower Pistol Lake (Passadumkeag project) and Pleasant Lake (Oakfield II project).

The Bowers survey results demonstrate the smallest percentage of neutral responses in terms of the impact of seeing a wind farm, 36%. A majority of respondents to the Bowers survey, 55%, indicated a positive or neutral impact of seeing the wind farm, but only one other wind farm survey had a lower combined percentage, Bull Hill at 54%.

Table 4. Comparison of Results of User Surveys at Proposed Wind Projects in Maine

		Passadumkeag			Oakfield II						
	Bowers	Saponac Pond	Nicatous Lake	Lower Pistol Lake	Mattawamkeag Lake	Pleasant Lake	Bull Hill	Highland Wind	Highland Wind	Saddleback Ridge	Spruce Mountain
Date	Summer 2012	August/ Sept. 2011	August/ Sept. 2011	August/ Sept. 2011	August/ Sept. 2011	August/ Sept. 2011	October 2010	Summer/Fall 2010	August 2010	Sept. 2010	May 2010
Method	Intercept	Intercept	Intercept	Intercept	Intercept	Intercept	Intercept	Intercept	Web	Intercept	Intercept
Sample Size	70	29			20	40	81	58	304	22	15
Impact of seeing wind farms on enjoyment											
Positive	19%	0%	20%	0%	23%	20%	9%	8%	21%	23%	20%
Neutral	36%	59%	48%	62%	43%	42%	45%	73%	61%	45%	47%
Negative	44%	41%	31%	37%	34%	37%	47%	19%	18%	32%	27%
Refused	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
Likelihood of returning if respondent saw wind farms											
		Boating			*Boating*						
Likely	61%	0%	7%	0%	13%	13%	6%	14%	15%	27%	13%
No Change	19%	73%	81%	78%	58%	60%	75%	73%	68%	50%	73%
Unlikely	21%	28%	11%	22%	28%	27%	20%	14%	17%	23%	7%
Refused	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%

Source: With the exception of data collected by Bowers (Kleinschmidt, 2012b), Passadumkeag (Robertson and MacBride, 2011a) and Oakfield II (Robertson and MacBride, 2011b), all data presented is from the May 23, 2011 response by Portland Research Group to the "review of the Bowers Wind Project Visual Impact Assessment" by James F. Palmer, dated April 28, 2011. Note, the Passadumkeag and Oakfield II reports present results by activity for likelihood of return and I replicate the recreational boating results here, and results were quite similar across activities.

In contrast, Bowers survey respondents are much more likely to visit if the wind farm were constructed than respondents to any of the other 10 lakes. However, when the "likely" and "no change" responses are combined, the Bowers results are similar to four other wind –farm surveys (Lower Pistol Lake, Bull Hill, Highland Wind and Saddleback Ridge) and three had higher percentages (Nicatous Lake, Highland Wind and Spruce Mountain).

Given the differences in survey administration (geographic regions, land versus water-based recreation, timing of surveys, type of survey modes, sample sizes, etc.) it is surprising that there is a common thread to the results reported in Table 4. For all 11 surveys, a majority of respondents indicate a neutral or positive impact of seeing a wind farm. For all 11 surveys, the vast majority (70% or more of respondents) indicate they are likely to visit or there will be no change in their visitation if the winds farms are constructed. It is important to recognize that the Bowers survey results are similar to other wind-farm projects despite the negative publicity that preceded the survey and was ongoing during survey administration. An April 2010 press release by PPDLW's states that this group was organized

"*… to oppose the construction of an industrial wind project on Bowers Mountain*" (http://www.ppdlw.org/articles/Press_Release_041510.pdf).

To influence public opinion, PPDLW posts media stories (http://www.ppdlw.org/pressrel.htm), communicates through a mailing list (http://www.ppdlw.org/form_add2list.htm) and other activities. To my knowledge, none of the other surveys for wind projects in Maine were conducted following a lengthy negative campaign regarding the potential impacts of the projects.

To obtain objective survey results it is desirable to conduct a survey when a heightened media campaign, positive or negative, is not ongoing. In some case this is not possible and this is one of those cases. It is necessary to conduct the survey to inform the permitting process while the issue is being debated. For this reason, it is important to recognize the negative perceptions of the wind farm simulations are overstated.

viii. Likely Impacts on Users of Lakes Within Eight of the Bowers Project

Users of Junior, Pleasant and Shaw Lakes expect a "high quality" experience when they visit these lakes. The survey responses indicate that the Bowers Project will reduce scenic quality and the enjoyment of recreational experiences. These reductions in response to survey simulations are in line with other survey results and are likely overstated by the coping strategies people employ to address uncertainty and fear that were perpetuated by the PPDLW negative publicity towards the Bowers Project. The reported reduction in scenic quality, however, did not translate into projections of

reduced use as the vast majority of users indicated they would return with the Bowers Project in place.

b. Baskahegan Surveys

Two studies have been conducted of Baskahegan Lake users, which individually and collectively provide important insights into the impact that visibility of wind turbines has on lake recreation. Importantly, both studies were conducted after the Stetson wind farm was constructed; one study was conduct by the University of Maine in 2010 immediately after the Stetson wind farm was completed (2010 Baskahegan Survey) and the second study was conducted by the applicant in 2012 (2012 Baskahegan Survey). The Stetson wind farm includes 55 turbines, most are visible from the primary lake access point, and users can see 30 or more turbines from 68% of the surface are of the lake (Kleinschmidt 2012a). The key contribution of these studies is that they provide two post-construction observations of recreation use and evaluation of scenic quality. That is not possible with pre-construction surveys that are summarized in Table 4.

Baskahegan Lake is particularly relevant for drawing insights on how users of the Project lakes would react after the Project is built. Baskahegan Lake is located in the same geographic region and is a short drive from Project lakes. As a result, users can easily substitute their use from Baskahegan Lake to one of the Project lakes. The 2012 Baskahegan survey results also show that the lakes share common users. Thus, the surveys at Baskahegan Lake provide important insights on how users of the Project lakes might react to construction of the Project. Additionally, the Stetson wind farm is more than three times larger than the proposed Bowers Project and nearly the entire Stetson wind farm is visible from the site where users access and leave Baskahegan Lake. This type of visibility would not occur on Junior, Pleasant and Scraggly Lakes if the Bowers project is constructed. Thus, the impact of the Stetson wind farm on Baskahegan lake users is likely an upper bound on the post-construction effect from the Bowers Project.

i. The 2010 Baskahegan Survey

In 2010, University of Maine researchers conducted a study of recreational use patterns and site conditions around the Baskahegan watershed area (Ednie et al., 2010), including Baskahegan Lake. As noted above, at the time of the 2010 Baskahegan survey, the Stetson wind farm was fully constructed and operating, with turbines visible from 90% of the lake, and visibility of more than 30 turbines from 68% of the lake. This survey was not conducted by or on behalf of the applicant for the Bowers project, but because it provides relevant data I discuss important results.

Forty-seven interviews were conducted along the shores of Baskahegan Lake, and additional, in-depth interviews, were conducted with knowledgeable users of the lake. Interviewees were asked questions that included the length of time they had visited the

lake and what they felt were the best qualities of the region. No question mentioned the presence of the Stetson wind turbines.

The 2010 Study found that the principal use of the Baskahegan watershed is fishing. Interviewees also mentioned as important attributes such as the scenery, quietness and opportunity to camp. Respondents identified the undeveloped shoreline, recreational access and wild character of the resource as important aspects of the landscape worthy of protection.

Items in need of long-term planning and improvement related to infrastructure such as boat launch improvements or outhouse facilities. When asked what the biggest threat to future enjoyment of the resource would be, additional residential development was selected as the item most likely to diminish the aesthetic quality of the watershed.

There was no evidence in the survey responses that the use of Baskahegan Lake had declined since construction of the Stetson project; not one interviewee mentioned the presence of turbines in the viewshed as having either a positive or negative effect on their experience. In fact, the results were so surprising that First Wind contacted the 2010 Study's principal author to discuss the specific omission of turbine impacts from the findings (see Pre-Filed Direct testimony of David Raphael dated June 10, 2011 in DP 4860 at 22). The author confirmed that no reference of the turbines was made in any of the responses and that residential development was perceived as the key negative threat.

The 2010 Baskahegan user survey found that 94% of those surveyed were repeat visitors and had been visiting the lake for 19 years on average (Table 5). Thus, the construction of the Stetson wind farm with 55 turbines did not cause long-term users of Baskahegan Lake to stop visiting the lake, and none of the respondents mentioned the existence of the wind farm as a problem for recreation on Baskahegan Lake. In addition over 50% of the boating use was observed in the southwest area of Baskahegan Lake (Figure 8, Ednie, Everett and Daigle, 2010), where there is significant visibility of the Stetson turbines.

These results collectively reveal that the Stetson wind farm does not diminish recreation quality and did not cause users of Baskahegan Lake to stop visiting the lake. Because respondents were not asked about and did not comment on the impact of the wind farm visibility on recreational use, the 2012 Baskahegan survey was conducted to specifically answer this issue.

Table 5. Key Results from the 2010 Baskahegan User Survey

Statistics	Description
47	People Surveyed
51-55	Number of turbines visible from the interview site
94%	Repeat visitors
19	Average years of visitation
0%	No one mentioned Stetson wind farm as a problem for recreation

Source: Ednie, Everett and Daigle, 2010.

ii. 2012 Baskahegan Survey

The applicant undertook additional surveys at Baskahegan Lake to build on the information developed in the 2010 Baskahegan survey and specifically to learn if recreational visitation to and enjoyment of Baskahegan Lake are influenced by the presence of the Stetson wind farm turbines. This was the first and to my knowledge the only post-construction survey at an operational wind farm in Maine specifically designed to assess the impact of turbine visibility on scenic quality and recreational use.

iii. Design and Administration of the 2012 Baskahegan Survey Follows Best Practices

Kleinschmidt's user intercept survey for Baskahegan Lake was designed and implemented using best practices that are consistent with established survey-research procedures (Kleinschmidt, 2012a). These procedures ensure that high quality data were collected that represent users of the lake. The design and survey administration processes followed the steps outlined for the Bowers survey in section III, a, i above as closely as possible. The Baskahegan survey was designed after the Bowers survey and Kleinschmidt used the lessons learned from the Bowers survey in the design and implementation of the Baskahegan survey. Two notable features of this survey are:

- Kleinschmidt drafted the Baskahegan survey to provide complementary data to the Bowers surveys.

- The Baskahegan survey was administered through on-site interviews at the public boat launch on the east side of the lake, which is the access point for the vast majority of users (Ednie, Everett and Daigle, 2010).

iv. Summary of the 2012 Baskahegan Survey Results

The 2012 Baskahegan user survey reveals that two years later the vast majority of users continue to be repeat visitors (86%) and have visited for an average of 21 years (Table 6). Given that two years elapsed between the 2010 and 2012 surveys and average years of use increased by two years, this is strong evidence that there is no user attrition, i.e.,

people are not stopping using Baskahegan Lake due to the construction of the Stetson wind farm. Given this long term use, it not surprising that 100% of respondents are "likely" to visit again.

The 2012 Baskahegan user survey found that 59% of users also visit Pleasant, Shaw, Scraggly and Junior Lakes, which do not currently have wind turbines visible (Table 6). This means that visitors to Baskahegan Lake visit lakes without wind turbines visible and still also choose to visit Baskahegan Lake where many turbines are visible.

Fully 81% of respondents rated their experiences on Baskahegan Lake as "high quality" and 93% rated the scenic quality as "high". Eighty-one percent of the respondents indicated that turbines have "no effect" or a "positive effect" on scenic quality and 93% indicated that the turbines had "no effect" or a "positive effect" on the quality of their visits.

Table 6. Key Results from the 2012 Baskahegan User Survey

Statistics	Description
27	People **Interviewed** (over 11 days of monitoring)
51-55	Number of **turbines visible** from the interview site
86%	**Repeat** visitors
21	Average **years** of visitation
59%	**Also visit** Pleasant, Scraggly, Junior and Shaw Lakes
100%	**Likely** to visit again and **93%** are **very likely**
81%	Rated experience as **high quality** and **59%** of these individuals rated experience **very high quality**
93%	Rated views as **high scenic quality** and **80%** of these individuals rated views **very high quality**
85%	**Aware** of wind turbines before visit
81%	Turbines had **no effect or positive effect** on scenic quality and **69%** of these individuals said **no effect**
93%	Turbines will have **no effect** on return
93%	Turbines had **no effect or positive effect** on quality of visits

Source: Kleinschmidt, 2012a.

The Baskahegan survey results in Table 6 provide strong evidence that turbine visibility is not adversely impacting scenic quality; 93% rate scenic quality as high and 81% stated turbines had no effect or a positive effect on scenic quality. Further, 93% of respondents stated turbines had no effect or a positive effect on quality of visits and will not affect return visitation. These results are compelling in that only a small percentage of respondents were adversely impacted by the Stetson wind farm.

These results differ from the Bowers survey results presented in Table 2. Only 33% of Bowers survey respondents rated scenic value of Junior, Pleasant and Scraggly lakes as "high" when viewing simulations of the Bowers wind farm. Fully 93% of Baskahegan

survey respondents rated scenic quality as "high" when a wind farm was already in place. To make this distinction even sharper, recall the Stetson wind farm has 55 wind turbines and nearly all are visible from the Brookton boat launch where the interviews occurred; the Bowers Project will have 16 turbines that may or may not be visible from where users access the lakes.

On might argue that Baskahegan Lake has lower scenic quality and attracts users who are less sensitive to scenic quality so they would not be influenced by the presence of 55 wind turbines. I do not think this is the case. Fifty-nine percent of those interviewed at Baskahegan Lake had previously visited Junior, Pleasant, Scraggly and Shaw Lakes. If Baskahegan Lake had lower scenic quality and 56 percent of respondents had visited lakes with high scenic quality, we would expect to observe lower scenic ratings for Baskahegan Lake than we did for Junior, Pleasant and Scraggly Lakes. This did not happen.

Thus, the 2012 Baskahegan survey results, supported by the 2010 Baskahegan survey results, strongly indicate that pre-construction surveys are heavily influenced by respondents using *precautionary* and *hyperdefensiveness* strategies when answering survey questions. The low scenic quality ratings given to simulated wind farm images, when people are uncertain of actual impacts and fear negative impacts, are not representative of evaluations that would be given after a wind farm is constructed.

v. User Perceptions of the Effect on Scenic Character (35-A §3452)

The Baskahegan survey results provide the following insights for the permitting process.

Expectations of the Typical Viewer (35-A §3452 3C). The results above indicate that vast majority of Baskahegan Lake users knew of the Stetson wind farm prior to their visits and nearly all, 93%, rate the scenic quality as "high".

Potential Effect on Continued Use and Enjoyment (35-A §3452 3E). Ninety three percent of users stated that the turbines had no effect or a positive effect on the quality of their visits. All respondents are likely to visit Baskahegan Lake in the future and 93% indicated that the presence of the wind farm will have no effect on whether they return or not. In addition, these are long-term users who have visited the lake for 21 years on average and are not choosing to go elsewhere because of the construction of the Stetson wind farm.

vi. Insights for Lakes within Eight Miles of the Bowers Project

The current Bowers Mountain proposal will have only 16 wind turbines. The old adage that "the proof of the pudding is in the eating" is analogous here. The proof is that with 55 turbines visible at Baskahegan Lake 93% of users' rate scenic quality as high. It is illogical, therefore, that only 33% of visitors to Junior, Pleasant and Scraggly Lakes rate

scenic quality as high in evaluating the photo simulations when there will only be 16 turbines and there is a common core of visitors to the lakes surveyed for the Bowers survey and Baskahegan Lake.

The post-construction survey conducted at Baskahegan Lake provides very strong evidence that users apply *precautionary* and *hyperdefensiveness* strategies when answering questions in preconstruction surveys that ask about simulated wind-farm scenes. The use of these coping strategies is likely present in responses to all of the wind surveys cited in Table 4, but are likely most prevalent for the Bowers survey because of the negative publicity about the Bowers Project that was not present for the administrations of the previous 10 wind surveys.

Diener, Lucas and Scollon (2006) state that "... good and bad events temporarily affect happiness, but people quickly adapt back to ... neutrality." However, because there are imperfections in peoples' understanding of adaptation to change, Lowenstein and Fredrick (1997) suggest that policy decisions should not be made solely on expectations of change. That is, in the case of a proposed wind farm, perceptions of undesirable effects likely do not fully take account for user adaptation once the wind farm is constructed.

The Baskahegan survey results, when compared to the Bowers survey results, clearly indicate that:

- Bowers survey respondents clearly overstated the likely negative impacts of the Bowers Project due most likely to an interaction of negative publicity with the *precautionary* and *hyperdefensiveness* strategies when answering the survey questions.
- Bowers survey respondents underestimated their ability to adapt to the change in visibility after the Bowers Project is constructed.

The Baskahegan survey results do not suffer from these survey response anomalies because the Stetson wind farm was constructed and impacts known.

c. PRG telephone survey

The Telephone survey provides important information that cannot be obtained from a user survey conducted with on-site intercept interviews. The telephone survey contacted 191 New England Residents who participate in outdoor activities, including lake-based recreation. Twenty two of these respondents live within 50 miles of the Bowers Project. The telephone survey provides two key contributions. First, it provides a gauge on public opinion toward wind farms when users are not faced with an imminent wind farm in their back yard, which minimizes potential NIMBY responses. Second, it provides a gauge about how a wind farm might affect potential users of the Project lakes.

i. Survey Design and Administration follows Best Practices

The telephone survey follows the criteria outlined in sections II, b above for the administration of a credible survey. The survey was administered by one of the most experienced survey-research firms in Maine. The survey was administered to a known population; New England residents who participate in outdoor recreation with an oversample of people who live within 50 miles of the Bowers project. The survey was administered using random dialing so each survey participant was randomly selected.

Selecting a subsample of respondents within 50 miles of the Bowers project makes sense because my research has found that most people recreate within about a one hour drive from their home.

ii. Summary of the Telephone Survey Results

About half (48%) of the respondents had seen wind turbines in Maine, and 70% had seen wind turbines outside of the state.

A majority of respondents (52%) indicated that they support wind energy development in Maine, with only 13% opposing wind farm development in the state.

Sixty-eight percent of respondents said seeing a wind farm when they were recreating would have no effect or make them more likely to visit in the future. This result is qualitatively similar to the results reported in table 4 for the 11 wind-farm pre-construction surveys.

Of the respondents who indicated that a wind farm would have a negative effect on the likelihood of return to visit that area in the future, the vast majority (84%) indicated that they could go elsewhere in Maine for their recreation activities.

iii. User Perceptions of the Effect on Scenic Character (35-A §3452)

The Telephone survey results provide the following insights for the permitting process.

Expectations of the Typical Viewer (35-A §3452 3C). The results indicate that people expect to see development (e.g., trails, evidence of timber harvesting, roads and second homes), but few expect to see wind farms during their recreation visits.

Potential Effect on Continued Use and Enjoyment (35-A §3452 3E). For most people, seeing a wind farm while recreating will have no effect or a positive effect on their experiences. Of those who would be negatively affected, most indicate there are other locations where they could go to recreate in Maine.

Substitution is a key element of recreation choice and economic studies have shown that people easily substitute between different lakes for their recreation experiences. A change, such as the construction of a wind farm does not take away all of the value of a recreation experience, only the difference between the value they receive from the original site where they recreated and the new site that they move to. The economics literature on recreation demand is clear that when substitute opportunities are available recreational users will use the substitutes (Parsons, 2003) and, for example, this substitution has been demonstrated for fishing in Maine (Parsons, Plantinga and Boyle, 2000). The loss in value is related to how much farther people must travel to the new site, the number of new sites they can choose from and the quality of the new site. People who recreate on Project lakes, if displaced by the construction of the Bowers wind farm, have many nearby substitute lakes to choose from with similar quality so the loss to these individuals will be small. Since there are nearby substitutes, the economic impact on local communicates would also be minimal.

iv. Insights for Users of Lakes Within Eight of the Bowers Project

The Telephone survey results indicate that about 5% of respondents would be negatively affected by the presence of a wind farm in the area where they recreate. Thirty-two percent said that a wind farm would have a negative impact and 16 percent indicated that they could not go elsewhere to recreated (0.32x0.16=0.15). This result suggests that a small number of people will people substantially negatively affected by the construction of a wind farm, but for 95% of people it will be a positive experience, have no effect or they can find another suitable place to recreate.

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Date: 3/8/2013

Kevin J. Boyle

STATE OF VIRGINIA
County of Giles

Date: 3/8/13

Personally appeared before me the above named Kevin J. Boyle, who, being duly sworn, did testify that the foregoing testimony was true and correct to the best of his knowledge and belief.

Before me,

Notary Public
My commission expires: 6/30/2016

ASHLEY FOLCIK
NOTARY PUBLIC
REGISTRATION # 7524756
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
JUNE 30, 2016

Kevin Boyle Pre-Filed Direct Testimony Exhibits

Exhibit 1	Boyle Example Studies
Exhibit 2	Kleinschmidt, Bowers Wind Project User Surveys, Sept. 2012
Exhibit 3	Kleinschmidt, Baskahegan Lake User Surveys, Oct. 2012
Exhibit 4	Portland Research Group, Bowers Mountain Wind Project Outdoor Activities Users Research Telephone Survey, Jan. 2011
Exhibit 5	University of Maine Baskahegan Stream Watershed Recreation Use and Resource Analysis, Summer, 2010
Exhibit 6	Location of Intercept Surveys

Exhibit 1. Example Studies I have Designed and/or Conducted

- National study of public preferences for visibility improvements in Class I visibility areas, national parks and wilderness areas.
- Georgia, Virginia, Maryland and Pennsylvania residents' preferences for horticulture products grown with disease free and water conserving production practices.
- Overweight and obese Virginia residents' preferences for weight loss incentive programs.
- Maine residents' preferences for low impact timber harvesting on small woodlots.
- Maine women's responses to fish consumption advisories.
- Australians' preferences for restoring Murray River flows.
- Atlanta residents' preferences for the Trees Atlanta program.
- Canadian smokers' preferences for smoking cessation therapies.
- National study of preferences for policies to reduce global warming.
- Public preferences for alternative timber harvesting practices in Maine.
- National study of public preferences for food safety.
- Bangladeshi households' preferences for avoiding well water contaminated with arsenic.
- National study of public preferences for farmland protection.
- Public preferences for farmland protection in Ohio, Maine and Ohio.
- National study of public values for farmland conservation policies that increase grassland bird populations.
- User preferences for Fort Sumter National Monument.
- User preferences for South Padre Island National Seashore.
- Maine residents' opinions on wolves.
- Maine residents' preferences for an environmental license plate (led to the chickadee plates).
- Vermont hunters' preferences for lifetime licenses.
- Maine hunters' preferences for lifetime licenses.
- Vermont lake users' preferences for avoiding lake eutrophication and invasive Eurasian milfoil.
- New Hampshire lake users' preferences for avoiding lake eutrophication.
- Maine lake users' preferences for avoiding lake eutrophication.
- Recreational users and camp owners' preferences for Flagstaff Lake levels.
- White water boater preferences for Dead River flows.
- Maine residents' opinions on Bald Eagle restoration.
- Doughty County, Georgia and Aroostook County, Maine residents' preferences for protection of groundwater.
- Maine wildlife managers' opinions on nongame and endangered species management.
- Maine deer hunting effort and hunter preferences.
- Maine upland bird hunting effort and hunter preferences.
- Angler preferences for Atlantic salmon restoration in Maine.
- Angler responses to Maine's fish consumption advisories.
- Maine migratory waterfowl hunting effort and hunter preferences.

Exhibit 1. Example Studies I have Designed and/or Conducted -- CONTINUED

- Public preferences for reducing bird deaths in waste oil holding ponds.
- Maine ice fishing effort and angler preferences.
- Maine bear hunting effort and hunter preferences.
- Angler preferences for removal of Edwards Dam on the Kennebec River.
- Nonconsumptive uses of Maine's wildlife surveys.
- National Survey of Fishing, Hunting and Wildlife–Associated Recreation, economic valuation section and consultant on other sections.
- Maine salt water fishing effort and angler preferences.
- Maine open water fishing effort and angler preferences.
- Maine turkey hunting effort and hunter preferences.
- Maine trapping effort survey.
- Maine fishing effort surveys.
- Maine hunting effort surveys.
- Maine moose hunter preferences for season timing and other hunting regulations.
- Maine residents' preferences for reducing black fly populations.
- Wisconsin anglers' preferences for enhanced brown trout fishing.
- Wisconsin residents' preferences for protecting endangered species, striped shiner and Bald Eagle.
- Angler preferences for perch restoration in Green Bay, Wisconsin.
- White water boater and white water guides preferences for Colorado River flows through the Grand Canyon.
- Wisconsin deer hunter preferences for hunting in the Sandhill Preserve.
- Public preferences for protecting the Illinois Beach State Nature Preserve.
- Boater preferences for scenic vistas along the Lower Wisconsin River.