

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Docket No. \_\_\_\_\_

Petition of Deerfield Wind, LLC for a Certificate )  
of Public Good pursuant to 30 V.S.A. section 248, )  
authorizing it to construct up to a 45 MW wind electric )  
generation facility, and associated transmission and )  
interconnection facilities, in Searsburg and Readsboro, )  
Vermont, and operate the same. )

**PREFILED DIRECT TESTIMONY OF  
HOPE E. LUHMAN  
ON BEHALF OF DEERFIELD WIND, LLC**

January 8, 2007

Summary:

Ms. Luhman testifies regarding the work performed by The Louis Berger Group, Inc., concerning the archaeological and historic resources at or near the Deerfield Wind Project. Ms. Luhman's conclusion, to date, is that the Project is unlikely to have an undue adverse effect on any known historic resources or on any significant archaeological resources.

1 **Q. Please state your name and occupation.**

2 Response. Hope E. Luhman  
3 Senior Archaeologist  
4 The Louis Berger Group, Inc.  
5

6 **Q. Please describe your qualifications and experience.**

7 Response. As Senior Archaeologist with The Louis Berger Group, Inc. (Berger), in the  
8 Albany, New York office, my responsibilities include the overall management of cultural  
9 resource investigations and general business development throughout the Northeast. I have  
10 a Ph.D. in Anthropology from Bryn Mawr College and am certified by the Register of  
11 Professional Archaeologists (RPA) in Documents Research, Field Research, Historical  
12 Archaeology, Museology, and Teaching. I have more than fifteen years of college teaching  
13 and advising experience in anthropology and currently serve as an Adjunct Instructor of  
14 Anthropology at Marist College in Poughkeepsie, New York. Since joining Berger in 1994,  
15 my responsibilities have also included active participation in public outreach and education  
16 programs, and direct involvement in the preparation of public outreach media. I serve on the  
17 Transportation Research Board's Committee on Historic and Archaeological Preservation in  
18 Transportation (ADC50) and am a member of the Society of American Archaeology's Public  
19 Education Committee. A copy of my resume is attached as ***Exhibit DFLD-HL-1***.

20

21 **Q. Have you previously testified before the Public Service Board or in other judicial or**  
22 **administrative proceedings?**

23 Response. No.

1 **Q. What is the purpose of your testimony?**

2 Response. My testimony summarizes the work performed to date by Berger concerning the  
3 investigation of archaeological and historic resources that could potentially be impacted by  
4 the Deerfield Wind Project.

5

6 **Q. Please summarize the investigations you conducted regarding cultural and historic**  
7 **resources at or near the proposed Deerfield Wind Farm.**

8 Response. Berger was hired in November 2005 by Deerfield Wind, LLC to complete a *Phase*  
9 *IA Archaeological Survey and Historic Resource Screening Study* for the proposed Deerfield Wind  
10 Farm (the Project), in conjunction with the federal NEPA and state section 248 permitting  
11 processes.

12 The goals of the Phase IA background research with regard to cultural resources  
13 were to: (1) determine local chronological sequences; (2) characterize the distribution and  
14 type of known sites; (3) summarize environmental characteristics; (4) outline the history of  
15 the project area; and, (5) delineate pertinent research issues with which yet-to-be-identified  
16 cultural resources may be associated.

17 The objective of Berger's historic resource screening study was to identify all historic  
18 resources (e.g., buildings, structures, and districts) that are listed in or previously identified  
19 and determined eligible for inclusion in the National Register of Historic Places or the State  
20 Register of Historic Places within a ten-mile radius initially developed for the Project's  
21 viewshed analysis.<sup>1</sup> The ten-mile radius served as a starting point for Berger's analysis of

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<sup>1</sup> The ten-mile radius was established in the Project's viewshed analysis and served as Berger's starting point for the identification of historic resources; however, the distance at which visual impacts become significant from an historic perspective are lessened by the diminished size of the turbines as distance increases, and by the surrounding complex landscape of hills and diverse vegetation that obstruct many actual views toward the Project.

1 historic impacts, and was used for initial data gathering only. The ten-mile radius does not  
2 constitute the Project's Area of Potential Effect (APE). The Advisory Council on Historic  
3 Preservation (ACHP) defines APE as the geographic area or areas within which an  
4 undertaking may directly or indirectly cause alterations or character of historic properties, if  
5 any such properties exist. The area of potential effects is influenced by the scale and nature  
6 of an undertaking and may be different for different kinds of effects caused by the  
7 undertaking (36 CFR 800.16(d)). As noted further below, the viewshed within a three-mile  
8 radius appears to be the appropriate APE for the Project.

9 For purposes of the Phase IA and screening study, Berger used the proposed limits  
10 of construction as the area in which historic properties could be directly (e.g. physically)  
11 affected, if any exist. In order to provide a conservative analysis of potential indirect impacts  
12 to historic properties, Berger used the viewshed within a ten-mile radius of the Project as the  
13 limit for its analysis of potential indirect impacts, despite the fact that the APE is likely a  
14 much smaller area. In addition, vehicular reconnaissance of the area was conducted to  
15 characterize the overall built environment and landscape with regard to potential for visual  
16 effects.

17 The Phase IA Archaeological Survey and Historic Screening Study is provided in  
18 ***Exhibit DFLD-HL-2.***

19 Although our investigations are not yet complete, based upon available information,  
20 Berger's experience at other projects, and the manner in which similar potential impacts have  
21 been addressed by state and federal regulators in the past, it is my opinion that the proposed  
22 Project is unlikely to have an undue adverse effect on any known historic structures. In  
23 addition, the Project is unlikely to have an undue adverse effect on any significant

1 archeological resources as any potential effects will be mitigated through data recovery  
2 excavation designed in consultation with state and federal regulators. These preliminary  
3 opinions are discussed further below.  
4

5 **Q. Please describe the specific components of Berger's work.**

6 Response. The Phase IA background research involved: examination of archaeological site  
7 files, maps, and cultural resource management reports held by the Vermont Division for  
8 Historic Preservation (DHP) including Berger's (1995) surveys of the existing Searsburg  
9 facility and related materials available at the DHP; examination of appropriate Soil  
10 Conservation Service (SCS) maps, and surface geology maps. Berger also consulted with  
11 David Lacy, Archaeologist with the Green Mountain and Finger Lakes National Forest, who  
12 provided GIS mapping of archaeological sites and potential sites on NFS lands.

13 Background research proceeded along two fronts: previous archaeological work  
14 conducted in the area, and paleogeography. To provide a preliminary assessment of the  
15 potential for prehistoric archaeological resources the basic predictive modeling used included  
16 completion of DHP's *Environmental Predictive Model for Locating Archaeological Sites*. This form  
17 provides a differential ranking of topographical features and soil associations. Berger also  
18 conducted a field inspection of the APE associated with potential ground disturbance to  
19 assess the conditions and noting areas of potential concern.

20 Through a site file search at the Vermont Division for Historic Preservation,  
21 Montpelier, Berger compiled a list of those properties which are currently listed in or are  
22 considered eligible for the National and State Registers within a ten-mile radius initially  
23 developed in association with viewshed studies supporting this project.

1           Additionally, David Lacy the U.S. Forest Service Archaeologist was consulted. Mr.  
2 Lacy did not identify any historic National Forest Service structures in this radius. A  
3 vehicular reconnaissance, in which the primary roads (e.g., Routes 8 and 9), and some  
4 secondary roads (e.g., Putnam Road) were traveled within a limited portion of the ten-mile  
5 radius, sought to identify previously unidentified historic period properties. The vehicular  
6 reconnaissance identified types of historic period resources in the general study area that  
7 have not been evaluated for eligibility for the National or State Registers and may prove to  
8 be located within the Project's Area of Potential Effect (APE).

9  
10 **Q. Please describe the results of this work.**

11 Response. The proposed Eastern and Western Project Areas both possess locations that  
12 would be sensitive for prehistoric resources. In general, prehistoric sensitivity is judged to be  
13 variable and is predicated on localized variations in topography, the presence of water, and  
14 natural resource base exploitability. Therefore, due to the variable nature of conditions  
15 within the Project area itself, the prehistoric sensitivity will vary accordingly and the potential  
16 for unknown prehistoric sites remains a consideration, due to the project area's location and  
17 attributes.

18           Historic archaeological sensitivity in the proposed Eastern Project Area is low. The  
19 project components are proposed on a ridge that is a distance away from the dendritic  
20 historic settlement pattern exhibited along watercourses in the region's valleys.

21           However, historic archaeological sensitivity for the proposed Western Project Area is  
22 high. Site SSG02.00 – the site of the former "S. Crosier" residence – is located within the

1 Project's proposed preliminary building footprint and is associated with the first permanent  
2 settler of Searsburg dating to the 1820s.

3 A list of existing National and State Register-listed and eligible resources within a  
4 ten-mile radius previously used in the Project viewshed analysis was compiled from the  
5 Vermont Division for Historic Preservation (VT DHP) files. These resources are listed and  
6 mapped as shown in ***Exhibit DFLD-HL-2***. VT DHP files record three National Register-  
7 listed historic districts, the nearest being the Wilmington Village Historic District, located  
8 approximately five miles east of the Project, four individually-listed National Register  
9 properties, and 70 state register-listed properties within this radius. The nearest recorded  
10 historic properties are two State Register-listed buildings in Heartwellville, approximately 1.5  
11 miles south of the Project. Two surveyed resources are recognized as eligible by VT DHP  
12 despite not being formally listed in either the National or State Registers. These listings,  
13 however, are not comprehensive, as none of the towns represented within the Project area  
14 have conducted comprehensive surveys to identify all state or National Register-eligible  
15 resources within their boundaries. It, therefore, may be necessary to record and evaluate the  
16 State/National Register eligibility of heretofore unsurveyed buildings and structures over 50  
17 years of age in order to fully assess the potential effects of the Project on historic properties.  
18 A number of such buildings and structures were noted during the vehicular reconnaissance,  
19 mainly nineteenth- and early twentieth-century houses.

20 Such survey would first necessitate identification of the Project's Area of Potential  
21 Effect (APE). The provisional delineation of the Project's APE is based on information  
22 from the viewshed analysis. Based on that study, the presence of the Project within the  
23 foreground view (within ½ mile) and nearer portion of the middle ground (up to

1 approximately three miles) from a historic property could potentially alter characteristics of  
2 setting that qualify the property for inclusion in the National Register/State Register, if in  
3 fact the property's setting is integral to its significance. However, locations in which the  
4 Project would be visually perceived as simply another element in a large and varied landscape  
5 (generally around and beyond three miles) would not fall within the area in which the Project  
6 would have demonstrable potential to affect historic properties. It would therefore appear  
7 appropriate to use the viewshed within three miles of the Project as the APE for the Project.

8  
9 **Q. Have you relied on the work of any other experts concerning this Project?**

10 Response. Yes, the work of U.S. Forest Service Archaeologist David Lacy. In addition,  
11 Berger acquired copies of the viewshed analysis maps for the ten-mile project radius created  
12 by Deerfield Wind. The viewshed maps, which also serve to delineate a preliminary APE,  
13 were consulted during research at the VT DHP.

14  
15 **Q. What contact have you had with the Vermont Division of Historic Preservation**  
16 **(DHP)?**

17 Response. Berger contacted Judith Ehrlich, Project Review Coordinator at the VT DHP, by  
18 telephone on November 21, 2005. The purpose of the contact was to informally advise Ms.  
19 Ehrlich of the Project and the preliminary screening studies so far conducted. A formal  
20 Project initiation letter was submitted to the VT DHP (**Exhibit DFLD-HL-3**). The letter  
21 describes the preliminary findings of the Phase IA and historic resource screening study and  
22 requests VT DHP's comment and concurrence regarding the need for additional survey  
23 work and analysis of potential Project effects.

1           On May 3, 2006, Berger received a response from the State Historic Preservation  
2           Officer, Jane Lendway (***Exhibit DFLD-HL-4***). In her letter, dated April 18, 2006, Ms.  
3           Lendway notes that the VT DHP is in general concurrence with the efforts completed to  
4           date as detailed in the Project initiation letter. She further notes the need to consider the  
5           actual visibility of the Project to evaluate the Project's effect on historic buildings and  
6           districts. In addition, she suggested that the archaeological portion of the report be  
7           considered as an "Archaeological Resource Assessment" as opposed to a "Phase IA" and  
8           noted that the future availability of project plans will make it possible to delineate  
9           archaeologically sensitive areas in the project area with more precision.

10  
11 **Q.     Please describe your preliminary conclusions and recommendations regarding the**  
12 **design or siting of the Project based upon the results of your initial investigations.**

13           Response. Based on the initial archaeological survey findings, Berger recommends that when  
14           project plans become available that a Phase IB archaeological survey of the archaeologically  
15           sensitive areas associated with ground disturbance be conducted to identify archaeological  
16           resources that could be affected by project construction. This work should be conducted in  
17           consultation with the VT DHP. Such a survey would indicate whether the Project would  
18           impact archaeological sites in addition to those already identified, and would provide the  
19           basis for determining the need for further work or mitigation (e.g., Phase II/site evaluation  
20           investigation, Phase III/data recovery excavation).

21           Based on the results of the historic resources screening study, a number of National  
22           and State Register-listed and eligible properties may be located in the Project's APE. The  
23           consultants performing the viewshed analysis included a number of known historic

1 properties in their field examinations. The Project would not be visible from the  
2 Williamsburg Village, West Dover Village, Whitingham Village, or Jacksonville historic  
3 districts, nor from resources such as Crow's Nest or the Medburyville Bridge. The Project  
4 would have only limited visibility from the King-Atwood House, Heartwellville, Amos  
5 Brown House, Sadawga Lake House and the area of Stamford Village. Such preliminary  
6 findings strongly suggest that the area's complex topography and extensive vegetation greatly  
7 limit the locations from which the Project would actually be seen. From some locations, in  
8 which Green Mountain Power's Wind Project is already visible, the proposed project would  
9 simply add one or more like elements in the middle or far distance (three miles or greater).  
10 Other historic properties may prove to exist within the APE; thus, the nature and extent of  
11 potential visual impacts of the proposed project on historic buildings, structures, and/or  
12 districts is still under review. Review of the potential visual impacts will continue, in  
13 consultation with the VT DHP. It is important to note that no buildings or structures will be  
14 acquired or physically altered or removed by the Project, and thus impacts, if any, would be  
15 limited to those resulting from the visibility of the wind project from the historic structure.

16 Although our investigations are not yet complete, based upon available information,  
17 Berger's experience at other projects, and the manner in which similar potential impacts have  
18 been addressed by state and federal regulators in the past, it is my opinion that:

- 19 i. The proposed project is unlikely to have an undue adverse effect on any known  
20 historic resources. No historic structures will be physically impacted, and it is  
21 unlikely that the visibility of the Project would demonstrably diminish any  
22 aspects of setting that might contribute to the significance of such historic  
23 properties. Should mitigation be required, it could be accomplished through

1 vegetative screening around the affected property to limit the extent to which the  
2 Project is visible from the resource. Other forms of mitigation may also be  
3 employed.

4 ii. The proposed project is unlikely to have an undue adverse effect on any  
5 significant archaeological resources as any potential effects will be mitigated  
6 through data recovery excavation designed in consultation with the FS and VT  
7 DHP. Should future studies determine that the Project may adversely affect  
8 archaeological resources, data recovery excavations are an accepted mitigation  
9 measure.

10

11 **Q. Does this conclude your testimony at this time?**

12 Response. Yes it does.