

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Docket No. 7250

Amended Petition of Deerfield Wind, LLC for a certificate)
of public good authorizing it to construct and operate 17 turbines,)
34 to 35.7 MW wind generation facility, and associated transmission)
and interconnection facilities, on approximately 80 acres in the)
Green Mountain National Forest, located in Searsburg and)
Readsboro, Vermont, with 7 turbines to be placed on the east side)
of Route 8 on the same ridgeline as the existing GMP Searsburg)
wind facility (Eastern Project Area), and 8 turbines along the)
ridgeline to the west of Route 8 in the northwesterly orientation)
(Western Project Area))

**PREFILED REBUTTAL TESTIMONY OF
HOPE E. LUHMAN**

ON BEHALF OF DEERFIELD WIND, LLC

July 3, 2008

Summary:

Hope Luhman's rebuttal testimony responds to issues related to historic and archaeological resources raised by Devin Colman and R. Scott Dillon on behalf of the Division for Historic Preservation. Ms. Luhman's testimony also addresses the July 2008 Project revisions provided by Deerfield Wind.

1 **Q. What is your name, occupation, and business address?**

2 Response: Hope E. Luhman, Ph.D. I am the Assistant Director for Cultural
3 Resources for the Louis Berger Group, Inc., located at 20 Corporate Woods Blvd.,
4 Albany, New York 12211.

5

6 **Q. Have you previously prefiled testimony in this case?**

7 Response: Yes.

8

9 **Q. What is the purpose of your rebuttal testimony?**

10 Response: First, my testimony responds to DHP's comments on the Project's
11 potential impact on historic architectural and archaeological resources and provides
12 additional information responsive to those comments. The *Phase IB Archaeological*
13 *Survey: Deerfield Wind Project* ("Phase IB Survey"), attached as ***Exhibit DFLD-HL-5a***,
14 describes our work performed regarding archaeological resources in response to the
15 testimony of and subsequent guidance offered by Scott Dillon of DHP. The
16 *Historical Architectural Investigations: Determinations of Eligibility: Deerfield Wind Project*
17 ("Determinations of Eligibility"), attached as ***Exhibit DFLD-HL-6a***, and the
18 *Assessment of Effects: Deerfield Wind Project* ("Assessment of Effects"), attached as
19 ***Exhibit DFLD-HL-6b***, describes our work on historical architectural resources and
20 is responsive to the testimony of Devin Coleman of DHP.¹

21

¹ At the conclusion of the Determination of Eligibility Report, there is a 39-page "List of Supplemental Plates," and a 2-page document of photos of Laurel Lake, both of which Berger provided to DHP during discovery.

1 Second, Deerfield Wind revised the Project in July of 2008, and the second
2 portion of my testimony addresses the project revisions provided by Deerfield Wind.
3 The *Addendum Report: Phase IB Archaeological Survey: Deerfield Wind Project* (“Phase IB
4 Addendum Report”) discusses the revision’s impact on archaeological resources and
5 is attached as ***Exhibit DFLD-HL-5b***. The *Addendum Report: Historical Architectural*
6 *Investigations: Determinations of Eligibility and Assessment of Effects: Deerfield Wind Project*
7 (“Architectural Addendum Report”) assesses the revision’s impact on historical
8 architectural resources and is attached as ***Exhibit DFLD-HL-6c***.

9

10 **Historical Architectural Resources, Prior to July 2008 Project Revision**

11 **Q. DHP has provided comments on the assessment of the Project’s impacts on**
12 **historic properties. Can you please describe the general approach The Louis Berger**
13 **Group, Inc. (Berger), agreed to undertake in order to evaluate the Project’s potential**
14 **impacts on historic resources?**

15 Response: In an agreed-upon protocol designed in consultation with the Vermont
16 Division of Historic Preservation (DHP), Berger’s primary task as part of the historic
17 property survey was to identify historic properties listed and/or eligible for listing in
18 the National Register of Historic Places and the Vermont State Register of Historic
19 Places within the Area of Potential Effect (“APE”), and to evaluate the effect of the
20 Project on each identified listed or eligible property. An APE of 10 miles
21 surrounding the proposed Deerfield Wind Project was utilized at the request of
22 DHP.

1 The evaluation of impacts on historic properties proceeded in two phases.
2 Berger first conducted a file review at DHP in Montpelier. Properties listed in the
3 Vermont State Register located within the designated 10-mile APE were identified
4 and located on United States Geological Survey (USGS) maps, and State Register
5 inventory forms were copied. The National Register files maintained at VT DHP
6 were checked for National Register-listed properties within the APE.

7 Following the file review, Berger conducted a reconnaissance survey of the
8 10-mile-APE surrounding the proposed Deerfield Wind Project. The field survey
9 verified the continued existence of the historic properties identified during the file
10 review and confirmed each property's architectural and historical integrity. The field
11 survey also documented, through digital photographs and narrative field notes, each
12 historic resource 50 years and older within the APE not previously inventoried and
13 evaluated for National or State Register eligibility. The survey effort also included
14 background research and an historic context that provided data for evaluating each
15 resource's potential eligibility for inclusion in the National Register using the
16 National Register's criteria for evaluation of historic significance and integrity (36
17 C.F.R. § 60.4).

18 Following the initial field work to identify eligible properties, Berger
19 submitted the initial results of its eligibility determination to DHP for review and
20 comment, as agreed upon in the protocol established with DHP. See *Exhibit*
21 *DFLD-HL-6a*. DHP requested additional photographs of some properties, and
22 offered comments on the eligibility report, recommending that 51 additional
23 properties be included as "eligible" for listing on the State or National Register. The

1 final stage of the agreed-upon protocol involved assessment of effects. Once Berger
2 had received DHP's final recommendations regarding eligibility, Berger revisited
3 each of the eligible properties and completed a survey of the property to determine
4 whether or not the Project would have an adverse effect on the property. See
5 ***Exhibit DFLD-HL-6b***.

6

7 **Q. Have you conducted an evaluation of the properties in the 10-mile viewshed**
8 **that may be eligible for listing on the National Register of Historic Places?**

9 Response: Yes. Berger conducted a field survey that documented through digital
10 photographs and narrative field notes each historic resource 50 years and older
11 within the APE not previously inventoried and evaluated for National or State
12 Register eligibility. The survey effort also included background research and an
13 historic context that provided data for evaluating each resource's potential eligibility
14 for inclusion in the National Register using the National Register's criteria for
15 evaluation of historic significance and integrity (36 C.F.R. § 60.4).

16 Documentation of these findings can be found in Berger's *Determinations of*
17 *Eligibility* Report, dated October 2007. ***Exhibit DFLD-HL-6a***.

18

19 **Q. Mr. Colman has testified that DHP concurs with 57 of your eligibility**
20 **determinations, but believes that 51 additional properties are eligible for listing on**
21 **the National Register of Historic Places (Colman pft at 7). How do you respond to**
22 **this comment?**

1 Response: Berger has not taken a position as to whether these additional 51
2 properties actually are eligible for listing, but as described below we have included all
3 of these additional 51 properties in our evaluation of the Project's potential effects
4 on listed or eligible properties.

5

6 **Q. Mr. Colman has testified that DHP does not yet have sufficient information to**
7 **reach a determination as to the effect of the Project on historic properties (Colman**
8 **pft at 5-6). Have you conducted an evaluation of the Project's effects on listed or**
9 **eligible properties in the 10-mile viewshed?**

10 Response: Yes. As described above, after Berger received comments from DHP
11 concerning the eligible properties in the APE, Berger revisited each of the eligible
12 properties to evaluate the potential effects of the Project on those properties. The
13 results of our analysis is are presented in the *Assessment of Effects* Report, attached as
14 ***Exhibit DFLD-HL-6b***

15

16 **Q. Has the information been provided to DHP for review?**

17 Response: Yes. It was provided to DHP on July 2, 2008

18

19 **Q. What conclusions have you reached based on your additional field work?**

20 Response: Based on our extensive field work and thorough review of the historic
21 properties in the APE, it is our opinion that the Project will not have an adverse
22 effect on any of the listed or eligible properties in the APE. Although a desktop
23 viewshed analysis indicated that the Project might be visible from some historic

1 properties in the area, a site visit has confirmed that the Project will not be visible
2 from most of the historic resources in the area. Potential views of the Project from
3 listed or eligible properties is generally limited by the surrounding vegetation and the
4 topography of the landscape, with the majority of the historic resources actually
5 facing away from the project area. From those few properties where the Project may
6 be partially visible, the limited visibility will be at such a great distance that it will
7 have no effect on the qualities and characteristics that make the resource eligible for
8 listing on the State or National Register. As a result, it is our opinion that the
9 construction of the Project will not alter or otherwise affect the characteristics that
10 qualify these properties for potential listing on the National and/or State Register of
11 Historic Places. Documentation of these findings can be found in Berger's *Assessment*
12 *of Effects (Exhibit DFLD-HL-6b)* and the subsequent *Architectural Addendum Report*
13 *(Exhibit DFLD-HL-6c)*.

14
15 **Q. Mr. Colman has requested that you consider DHP's "Criteria for Evaluating**
16 **the Effect of Proposed Telecommunications Facilities, Transmission Lines, and**
17 **Wind Power Facilities on Historic Resources" in your analysis of the Project's**
18 **potential impacts (Colman pft at 11). Have you considered these criteria in your**
19 **evaluation?**

20 Response: Yes, as outlined in our report Berger considered and applied the
21 evaluation criteria developed by DHP entitled "Criteria for Evaluating the Effect of
22 Proposed Telecommunications Facilities, Transmission Lines, and Wind Power
23 Facilities on Historic Resources." These criteria assess whether the "installation of a

1 telecommunications facility, transmission line, wind power facility or other similar
2 project would cause significant alteration and deterioration of the setting or character
3 of an historic resource.” After reviewing and applying these sets of criteria, Berger
4 reached the conclusion that the Project would not have an undue adverse impact on
5 any listed or eligible properties under the criteria.

6

7 **Archaeological Resources, Prior to July 2008 Project Revision**

8 **Q. Mr. Dillon has expressed some concerns about the scope of your evaluation of**
9 **archaeological resources in the project area (Dillon pft at 4-5). How do you respond**
10 **to these comments?**

11 Response: Mr. Dillon was concerned that the sampling strategy of the initial Phase
12 IB survey was not consistent with the scope of work outlined in our initial
13 Archaeological Resource Assessment and Scope of Work for the Deerfield Wind
14 Project (“ARA”) (2007). In particular, Mr. Dillon expressed the opinion that he was
15 expecting to see a greater quantity of shovel tests, and that shovel tests be excavated
16 at a closer (less than 10-meter) interval.

17 As described in our communications with DHP, two factors resulted in
18 Berger conducting fewer test pits than we originally estimated would be necessary.
19 In most incidences, the actual sensitive locations were not as large in extent as
20 initially estimated during the field reconnaissance. In addition, the increased visibility
21 provided by a lack of foliage during the initial Phase IB work allowed Berger to
22 develop a greater understanding of the complexity of the surface conditions of each
23 sensitive area. Specifically, the sensitive areas all contained sections or patches that

1 were excessively sloped, contained bedrock and boulder outcrops, and hummocky or
2 wet areas. As a result of the topographic characteristics, we determined that fewer
3 test pits were possible in certain areas. These factors contributed to a decrease in the
4 size of individual sensitive areas within the APE and/or the actual amount of
5 testable space within each sensitive area. Together, these factors contributed to a
6 modest decrease in shovel tests within the APE from the original estimate in the
7 initial sensitivity assessment (ARA) of 175 to the actual 115 shovel tests excavated
8 during the initial Phase IB survey. This change between the estimate in the initial
9 sensitivity assessment (ARA) and the final Phase IB is not uncommon in
10 archaeological surveys.

11 Notwithstanding the justifiable reasons for the reduced number of shovel
12 tests, Berger consulted with DHP to discuss the concerns Mr. Dillon raised. As a
13 result of these consultations, Berger has conducted additional field work in the area
14 to address these concerns.

15
16 **Q. What additional work have you conducted to address these concerns?**

17 Response: To address DHP's comments, Berger discussed the Stage 1 Phase IB
18 survey results with Mr. Dillon, and developed a Stage 2 Phase IB survey strategy that
19 would meet the expressed concerns. Berger increased the excavated shovel tests
20 from 115 to 176 by closing the testing interval in the sensitive areas as requested by
21 DHP. The report of that additional Stage 2 survey work has been completed by
22 Berger and was incorporated into the final Phase IB Report. *Exhibit DFLD-HL-*
23 *5a.*

1

2 **Q. Have you provided this additional information to DHP for review?**

3 Response: Yes. The final Phase IB report was provided to DHP on July 2, 2008.

4

5 **Q. What conclusions have you reached based on your additional field work?**

6 Response: Neither Stage 1 nor Stage 2 of Berger's Phase IB investigations recovered
7 any cultural materials in the project area associated with the Deerfield Wind Project.

8 Berger excavated 176 shovel tests and did not identify any prehistoric or historical
9 archaeological resources. Given these findings, it is Berger's opinion that no

10 additional work is warranted and that the Project will not have an undue adverse

11 impact on archaeological resources in the project area.

12

13 **July 2008 Project Revision**

14 **Q. Have you reviewed the July 2008 revised project layout, consisting of 15**
15 **turbines total (8 on the western string and 7 on the eastern string), as well as minor**
16 **revisions to the project access roads?**

17 Response: Yes.

18

19 **Q. Is the revised project layout within the project area that you originally**
20 **investigated?**

21 Response: Yes, it is. The majority of the revised project layout is within the original
22 Project. In a few areas the Project extends beyond the original investigation area. In
23 particular the changes include a reduction in the number of wind turbines from 17 to

1 15. The primary changes occurred in the western ridgeline. The three southernmost
2 wind turbines on the western ridgeline have been eliminated from the Project and an
3 additional turbine will be included toward the northern end of the western turbine
4 string, closer to the existing transmission line. As a result of these changes the
5 number of turbines on the western ridge has been reduced from 10 to 8 turbines.
6 The access road in the western ridgeline has also been shortened and the road has
7 been slightly rerouted to fit with the new turbine layout. Minor changes were also
8 made to the layout of the eastern access road, but the location and number of
9 turbines on the eastern portion remains the same. As a result of these changes the
10 overall “footprint” of the Project has been reduced.

11

12 **Q. Have you performed any additional work in connection with the July 2008**
13 **revised project layout?**

14 Response: Yes. First, with respect to potential new impacts on architectural
15 resources, Berger completed a review of the revised layout, analyzed the revised
16 viewshed for the 15-turbine Project, and completed any necessary additional
17 fieldwork. We have prepared an addendum report based on this assessment which
18 identified any additional historic resources listed in or eligible for listing in the
19 National Register of Historic Places within the 10-mile APE for the new 15-turbine
20 Project. The viewsheds of the previous 17-turbine Project and the revised 15-turbine
21 Project are remarkably similar. As a result of very minor changes in the viewshed,
22 Berger identified 11 additional properties which may be eligible for listing in the
23 National Register. Berger surveyed those properties on June 17 and 18, 2008, and

1 Berger's *Architectural Addendum Report* summarizes the findings of the architectural
2 investigation, including determinations of eligibility/resource evaluations and
3 assessment of effects for each of the 11 properties. ***Exhibit DFLD-HL-6c.*** We
4 provided the *Architectural Addendum Report* to DHP on July 2, 2008.
5 Berger also conducted a complete archaeological field reconnaissance of the revised
6 project layout. This work, described in the *Phase IB Addendum Report*, included a
7 walkover of the entire Project, as well as some supplementary subsurface testing in
8 the vicinity of four previously identified archaeologically sensitive areas. Berger
9 excavated 29 additional shovel tests and no cultural materials or intact cultural
10 deposits were identified. Berger's walkover inspection of the revised Project was
11 undertaken to determine that none of the revised Project was located in an area of
12 archaeological sensitivity. In particular, Berger assessed the areas for the proposed
13 Substation on the western ridgeline, the proposed Operations and Maintenance
14 Facility near the northern access point, as well as all shifts in turbine, access road,
15 and transmission line locations. No new sensitive areas were identified. ***Exhibit***
16 ***DFLD-HL-5b.*** We provided the *Phase IB Addendum Report* to DHP on July 2, 2008.

17 Finally, subsequent to our last field review a few additional minor changes
18 were made to the Project layout in order to further reduce impacts to bear-scarred
19 beech habitat. As a result of these last-minute changes there are a few small
20 additional areas in the anticipated clearing limits for the Project.

21 We reviewed the revisions, and on July 2, 2008 we returned to the field for
22 further assessment. Berger's walkover of both areas revealed no new sensitive areas.
23 As the road revision near Turbines W2 and W3 is slightly closer to an identified

1 sensitive area, Berger conducted supplementary subsurface testing in the area of that
2 road revision. Berger excavated 13 additional shovel tests; these revealed no new
3 cultural materials or intact cultural deposits.

4

5 **Q. Do the July 2008 changes to the project layout alter your conclusions? Please**
6 **explain.**

7 Response: No, the changes do not alter Berger's conclusion that the Project will not
8 have an undue adverse impact on the architectural and archaeological resources in
9 the area of potential effect.

10

11 **Conclusion**

12 **Q. Based on all of the field work and analysis conducted by Berger, what is your**
13 **opinion regarding the Project's potential impacts on historic resources generally?**

14 Response: It is Berger's opinion that the Project will not have an undue adverse
15 impact on architectural or archaeological resources in the area of potential effect, and
16 therefore conclude that the Project will not have an undue adverse impact on historic
17 resources.

18

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

20 Response: Yes, it does.