

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Docket No. _____

Petition of UPC Vermont Wind, LLC for a Certificate of)
Public Good pursuant to 30 V.S.A. section 248,)
authorizing it to construct up to a 52 MW wind electric)
generation facility, and associated transmission and)
interconnection facilities, in Sheffield and Sutton, Vermont,)
and operate the same.)

**PREFILED DIRECT TESTIMONY OF
JEFFREY A. WALLIN**

ON BEHALF OF UPC VERMONT WIND, LLC

February 21, 2006

Summary:

Mr. Wallin's testimony summarizes his evaluation of the impacts of the proposed Sheffield Wind Farm on wildlife habitat for large mammals, including deer, moose, and bear. He concludes that the Project will not have an undue adverse impact on bears, moose, or deer.

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

2 Response. My name is Jeffrey Wallin. I am the Founder and sole proprietor of
3 Multiple Resource Management, Inc, a firm that specializes in wildlife consulting.
4

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

6 Response. My undergraduate degree was a Bachelor of Science in Forestry/Wildlife
7 from the University of Vermont in 1970. I also obtained a Master of Science degree
8 in Natural Resource Planning (Wildlife Biology) from the University of Vermont in
9 1983. I worked for nearly twelve years for the State of Vermont as a Wildlife
10 Biologist, and 22 years as a wildlife consultant. My work experience includes
11 assessment of wildlife habitat and populations, and population management;
12 mitigation of environmental conflicts with development; long-term forest & wildlife
13 management plan preparation; design and implementation of site-specific or species-
14 specific research studies; custom design of wildlife corridor movement studies;
15 wildlife habitat appraisal and expert testimony in connection with local, state and
16 federal regulatory proceedings; accurate mapping of remote habitats and features
17 using sub-meter Global Positioning System (GPS) satellite technology; hydroelectric
18 generation license preparation involving water quality data collection, stream flow
19 measurements, minimum flow determination, wildlife impact appraisal, and fisheries
20 population modeling. Clients have included developers, planners, professional
21 corporations, banks, utilities, industry, ski areas, State government, and
22 municipalities. My complete resume is attached as *Exhibit UPC-JW-1*.

23

1 **Q. Have you previously testified before the Public Service Board?**

2 Response. I recently provided testimony in the petition of Catamount Energy
3 Corporation for a Certificate of Public Good authorizing the installation of two
4 temporary wind measurement towers on the ridgeline of Glebe Mountain, PSB
5 Docket No. 6786. Additionally, I have provided expert testimony in numerous Act
6 250 land use cases before most District Environmental Commissions in the state and
7 the Environmental Board, and I have testified in Environmental Court.

8

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

10 Response. I was hired by UPC Vermont Wind, LLC to investigate and evaluate the
11 impacts of the proposed Sheffield Wind Farm on wildlife habitat for large mammals,
12 including deer, moose, and bear. The purpose of my testimony is to summarize the
13 methodology and results of my investigations. My testimony also presents
14 conclusions as to whether the Project may cause any impacts to these natural
15 resources. A copy of my report is attached as *Exhibit UPC-JW-2*.

16

17 **Q. Please describe your general approach in conducting a review of this project.**

18 Response. My investigation was primarily based on a detailed field assessment of the
19 natural resources in the Project area. I conducted an initial investigation of the area
20 on foot in June 2005 to develop a general overview of the site and its surroundings.
21 Once the proposed layout for the Project was established, I developed the
22 appropriate search protocol for each turbine and access road using a geo-referenced
23 background map of the project layout. The search area was defined as a 600- foot

1 diameter (300-foot radius) circle around each proposed turbine site, and a 100-foot
2 wide section centered on each proposed access road.

3 Over the course of 9 days, between mid-September 2005 and mid-December
4 2005, my firm conducted ground searches for necessary habitat in the direct impact
5 area for each turbine and road. Mapping grade GPS was used to navigate the site,
6 and to collect relevant information on natural resources. The ground search was
7 conducted by navigating to a tower location as indicated on the GPS background
8 map, and then investigating the entire area within the 600-foot diameter around the
9 proposed turbine location. The access road was searched in a similar fashion. Data
10 collected during the site assessment included the locations of all bear scarred beech
11 (BSB) within the defined search area. After conducting these field investigations, the
12 geo-referenced data points were incorporated into the Project master plan map to
13 allow for an assessment of the Project's impacts.

14 In addition to these initial investigations, I also returned to the site in late
15 January 2006 to evaluate a specific habitat block in order to determine if moose
16 utilized the habitat as a winter concentration area.

17

18 **Q. Please describe any white-tailed deer habitat or signs of deer at or near the**
19 **site.**

20 Response. I did not identify any deer winter shelters in the proposed project area.
21 Some dense spruce/fir habitat exists within the project bounds, and deer tracks were
22 frequently encountered throughout the project area during the summer and fall.
23 However, the elevation of this habitat is above 2,000 feet and generally too high to

1 find deer wintering at this latitude. None of the softwood areas exhibited extensive
2 winter browsing indicative of winter concentration. The VT Department of Fish and
3 Wildlife (VDFW) has mapped two deer winter shelters in Sheffield: one immediately
4 west of the project, adjacent to the interstate highway; and the other to the southwest
5 near Bruce Pond. Both of these deer wintering shelters are located at approximately
6 1,500 feet in elevation, well outside of, and below, the Project's direct impact area.
7

8 **Q. Do you consider this habitat to be necessary wildlife habitat for deer?**

9 Response. No, the spruce/fir habitat within the project area is above 2,000 feet and
10 is generally too high to support deer wintering habitat. More conclusive, however, is
11 that my investigations of the site did not find indicators of winter concentrations of
12 deer in these areas, and I do not believe that the stands of softwood in the project
13 area are critical or decisive for the survival the local deer population.
14

15 **Q. Will the project result in any undue adverse impacts on deer?**

16 Response. No. There is no indication that deer rely on the habitat within the project
17 area, nor is there any indication that the project will destroy or significantly imperil
18 any necessary habitat. I do not believe that the Project will result in an adverse
19 impact on the local deer population.
20

21 **Q. Please describe any moose habitat, or signs of moose, at or near the site.**

22 Response. Moose are prevalent throughout the project area. Active logging in the
23 area has provided low growth browse for moose to feed on and it is likely that

1 moose are active on the site year round. One spruce/fir site was encountered that
2 exhibited light characteristics of winter concentration by moose. This site is located
3 within the direct impact area for wind turbine (WT) 19. It extends to the north
4 beyond the project, westerly towards WT 18, and southerly to the access drive to
5 WT 18. (Shown on *Exhibit UPC-CRV-18*).

6 This particular softwood block was revisited on January 20, 2006 for the
7 express purpose of documenting winter concentration behavior. Moose activity in
8 the area was widespread, particularly along the road edges where browse was readily
9 available. Within the softwood cover, however, there was no sign of moose
10 concentrations. Only one set of fresh tracks and one bed were found in the cover,
11 and there were no distinct trails.

12

13 **Q. Do you consider this habitat to be necessary wildlife habitat for moose?**

14 Response. No. As an initial matter, VDFW has not defined any particular habitat
15 types as “necessary” habitat for moose, so there is no clear definition of what habitat
16 should be considered “necessary.” Nevertheless, my investigations of the site did
17 not reveal any indication that habitat in the project area is necessary for the survival
18 of the local moose population. Although available browse adjacent to the area of
19 softwood near the site for WT 19 exhibits heavy utilization by moose, this use was
20 consistent with use of available browse elsewhere. Furthermore, typical use
21 characteristics within the softwood cover did not exhibit concentration behavior. I
22 do not believe that this stand of softwood is critical or decisive for the survival of the
23 local moose population.

1

2 **Q. Will the project result in any undue adverse impacts on moose?**

3 Response. No. Active forest management over the region likely keeps the moose
4 population dispersed. Moose browsing throughout the project area is uniform and
5 moderate to heavy in intensity. This is most apparent along the roads where edge
6 effect has resulted in seedling/sapling growth that has been consumed by the moose.
7 When the construction road is converted to a service road, more than 50% of the
8 cleared width will be allowed to revegetate. This process will rejuvenate the present
9 over-exploited browse resource and actually enhance winter conditions for moose.

10

11 **Q. Please describe any black bear habitat, or signs of black bear, at or near the**
12 **site.**

13 Response. There is a limited amount of black bear habitat located within the area
14 encompassed by the Project. This habitat primarily includes one wetland and several
15 American beech stands.

16 With respect to wetlands, we identified a number of small, forested wetlands
17 near the project area. In general, these wetlands are not large enough to provide
18 significant habitat for black bears, either individually or collectively. Only two
19 wetlands that are of significant size to be considered viable black bear habitat were
20 identified. The first wetland is located approximately 1/2 mile west of WT 24,
21 adjacent to and south of the existing VELCO transmission line. Original plans called
22 for the turbine string to continue westerly from WT 24, which could have resulted in
23 potential impacts to this wetlands complex. The Project has been redesigned to

1 completely avoid this area through the elimination of these additional turbines.
2 Currently, the collector line from the southern array to the substation is shown
3 passing near this area. The exact location of this line has not been formalized since
4 the wetland delineation has not yet been finalized along the entire length of the
5 proposed route. This is further discussed in Mr. Gilman's testimony.

6 The only remaining wetland in the project area that is of any significance for
7 bear habitat is located at the western edge of the northern turbine complex. The
8 wetland is in the horseshoe loop below the proposed access road joining WT 18, WT
9 12 and WT 16. The site is a flat saddle area whose hydrology has been enhanced
10 through beaver activity. Although the wetland is large enough to provide viable bear
11 habitat, we do not have any evidence of historic bear use in this wetland.

12

13 **Q. What, if any, impact will the Project have on this wetland?**

14 Response. The Project will have little, if any, impact on this wetland, and to the
15 extent it does impact the wetland, I do not believe the impact will be ecologically
16 significant from the perspective of the local bear population. The access road in this
17 area will avoid the beaver dam by approximately 19 feet or more. The wetlands
18 downstream of the beaver dam are impacted slightly by the project. However, the
19 impact has been minimized as much as practical via the relocation of the road to its
20 present location, as discussed in the testimony of Gilman and Nelson.

21

1 **Q. You mentioned that you also identified American beech stands in the project**
2 **area – can you please describe those?**

3 Response. In general, the project area does not contain a uniform concentration of
4 American beech. The southern complex contains very few BSB; only 9 trees were
5 located within the 6-turbine area and access road system. There are, however,
6 several beech stands scattered across the northern complex. The majority of these
7 beech trees are located in the higher elevations of the northern turbine array. There
8 are several stands of beech in the western portion of the northern array, as well as a
9 band of mast producing beech that sweeps along the northern edge of the wind
10 turbines on the eastern side of this array.

11 In all, we identified approximately 377 bear scarred beech trees in the 600-
12 foot diameter search areas around the proposed turbine locations. An additional 58
13 BSB were identified within the search envelope defined for proposed access roads.
14 Only 10 of 20 turbine locations in the northern string contained BSB. A breakdown
15 of BSB by turbine location is provided in Appendix A of my report.

16 The 57 BSB found within the road corridors were concentrated in two
17 reaches of access road: 31 BSB in the reach between WT 13 and WT 20, and 23 BSB
18 between WT 12 and WT16; 1 additional BSB was found just off the road between
19 WT 1 and WT 19. In the southern complex, 3 BSB were found in the access road, 4
20 BSB at WT 22 and 1 each at WT 21 and WT 25.

21

1 **Q. What, if any impact, will the Project have on the American beech stands you**
2 **have identified?**

3 Response. The Project will have a direct physical impact on BSB in the area through
4 clearing necessary for construction. However, it is important to emphasize that the
5 Project will not directly impact all of the BSB identified in our habitat assessment.
6 Our search area was much larger than the expected direct physical impact associated
7 with construction of the turbines. While we investigated a 300-foot radius area
8 around the turbines, clearing for the turbines actually only requires an opening with a
9 125-foot radius. As a result, by controlling the size of the clearing necessary for each
10 turbine, only 108 of the 377 BSB we identified at the turbine locations will be
11 removed. Removal of these 108 trees is spread across nine turbine locations, with no
12 single turbine site causing the removal of more than 29 individual trees. The
13 breakdown of BSB removal associated with each turbine is documented in Appendix
14 A to my report.

15 In addition to the BSB loss associated with turbine construction, another 59
16 BSB trees may potentially be impacted by clearing for access roads, resulting in a
17 total direct impact of 167 trees.

18 It is unknown whether operation of the Project will have any indirect impacts
19 on the other beech trees in the vicinity of the project, or on bears' use of those trees,
20 though the available evidence suggest that it will not. Studies conducted at other
21 operating wind farms indicate that bears are quite capable of acclimating to operating
22 wind turbines. Studies at the Searsburg wind farm indicate that post-construction
23 black bear movement in and around the wind farm returned to normal levels. I have

1 also personally observed evidence of bears within 80 feet of the operating Searsburg
2 facility. As a result, I do not believe that those beech trees in the vicinity of the
3 project area but not directly affected by project construction will be effectively lost
4 because of their proximity to the turbines.

5

6 **Q. Do you know of any bear travel corridors in the Project area?**

7 Response. No. There are no known bear corridors crossing the ridgelines on which
8 the Project is proposed, nor are there any identified large blocks of seasonal habitat
9 for black bear on either side of this ridgeline that would require routine access over
10 the ridge. Our evaluation of the project site did not provide any evidence of potential
11 corridors.

12

13 **Q. What, if any, impacts will the Project have on potential bear corridors?**

14 Response. As mentioned above, there is no reason to suspect that bears are utilizing
15 the project area as a travel corridor. However, even if bears are using specific travel
16 corridors in the area, it is unlikely that a wind turbine string would impede
17 movement of bears over the ridge. Human activity within wind turbine projects is
18 typically restricted to service personnel, and following construction there is little
19 human activity. As a result, any impacts would likely be temporary and limited to the
20 construction season. A study previously conducted at the Searsburg wind project
21 supports this conclusion. The study showed a dramatic drop in bear movement over
22 the ridge during the year of construction, but black bear movement was back to pre-
23 construction levels the year after construction.

1 **Q. Based on your evaluation, do you believe that the Project will result in an**
2 **undue adverse impact on bears?**

3 Response. No, I do not believe that the Project will have an undue adverse impact
4 on bears. Construction and operation of the Project are not likely to result in any
5 direct or indirect impacts on the one wetland in the area that could potentially
6 provide viable bear habitat. In addition, there is no evidence that bears rely on the
7 project area for particular travel corridors, nor is there any evidence that the Project
8 would result in a long-term impact on bears' use of travel corridors if they do exist.

9 The Project will result in the removal of some beech trees. However, the
10 Project Applicant has done an excellent job mitigating the scope of this Project's
11 potential impacts on beech trees, and there is no reason to suspect that the loss of
12 approximately 167 beech trees in this area will be ecologically significant to the local
13 bear population. First, the cumulative impacts of the Project are spread over a large
14 area. The Project leased area encompasses 3,000 acres, and the removal of the
15 majority of trees is spread across 2 miles of ridgeline. No individual stand of beech
16 will be significantly affected – with 29 trees being the largest impact at any single
17 turbine site. Given the small number, it is unlikely that these trees cumulatively
18 constitute a significant contribution of hard mast for any bears in this habitat unit.

19 Furthermore, there is no evidence that the beech stands that will be affected
20 are unique or irreplaceable from a regional perspective. Given the size of typical bear
21 ranges, and the forest composition in the region, these stands do not amount to a
22 rare or exclusive source. Only BSB in the vicinity of WT 3 and WT 12 showed any
23 fidelity with numerous multi-climbs over many years. Most BSB exhibited light use.

1 The overall beech component appears small and spread out relative to other beech
2 habitats considered important for black bear. Because of this, I question the
3 significance of the stand in providing any type of adequate or reliable food source.
4 This is particularly true given that beechnut crops have been sporadic, at best, over
5 the past several years, and thus could not serve as a reliable food source. Though it
6 is well documented that winter survival and cub production is enhanced in a year
7 with a good beechnut crop, I do not consider this habitat to be necessary habitat that
8 is critical or decisive for the survival of the local or regional bear population when
9 many consecutive years can pass between beechnut crops. Beechnuts are not a
10 meat-and-potatoes staple to a bear's diet but rather a delicacy that is exploited when
11 nature makes it available. Consequently, I do not believe the loss of beech associated
12 with this project will have an undue adverse impact on bears.

13

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

15 Response. Yes, it does.