

**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  
JEFFREY PARSONS**

**ON BEHALF OF DEERFIELD WIND, LLC**

January 8, 2007

Summary:

Mr. Parson's describes his investigation of the Project's impacts on wildlife and wildlife habitat. In particular, he addresses the potential impacts on large mammals, small mammals, and rare threatened and endangered species. He also investigates indirect impacts of the Project on black bear. Mr. Parsons concludes that the Project is unlikely to have any significant impact on mammals and that the area of impact to black bear would be minimal.

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

2 Response: My name is Jeffrey Parsons. I am an ecologist with Arrowwood  
3 Environmental Inc.

4  
5 **Q. Please describe your qualifications and experience.**

6 Response: I attended Michigan State University for 4 years majoring in Wildlife  
7 Biology. I received a BS in Zoological Anthropology from the University of  
8 Michigan, and an MS in Natural Resources Planning from the University of Vermont  
9 (UVM). I have worked professionally in Vermont on wildlife, wetlands, and overall  
10 water issues for over 17 years. My clients include the State of Vermont, UVM, many  
11 Vermont municipalities and environmental groups, and a wide variety of business  
12 clients, among others.

13 I teach ecology and other courses at Sterling College, and in the past at  
14 UVM, Vermont Law School and Johnson State College. For a full range of my  
15 experiences and qualifications please refer to my resume, ***Exhibit DWP-JP-1***.

16  
17 **Q. Have you testified before the Public Service Board before?**

18 Response: Yes, I testified in 2005 regarding wildlife and wildlife habitat at the  
19 hearings for the East Haven Wind Project.

20  
21 **Q. Have you testified on wildlife and wildlife habitat in other hearings in VT?**

1        Response: Yes, I have testified regarding wildlife approximately 20-25 times before  
2        Act 250 District Commissions, the Vermont Environmental Board, Environmental  
3        Court, the Water Resources Board, jury trials, and local and regional boards.

4

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

6        Response: Arrowwood Environmental (AE) was retained by Deerfield Wind, LLC  
7        to conduct an environmental assessment and prepare recommendations for the  
8        proposed Deerfield Wind Farm in Searsburg and Readsboro, Vermont. The purpose  
9        of my testimony is to describe AE's investigation of the Project's impacts on wildlife  
10       and wildlife habitat. In particular, my testimony addresses the potential impacts on  
11       large mammals, small mammals, and rare threatened and endangered species. My  
12       business partner, Michael Lew-Smith, discusses the Project's impacts on wetlands,  
13       rare and irreplaceable natural areas, and rare plants in his testimony. The results of  
14       our analysis are contained in two separate reports and accompanying maps, marked  
15       as ***Exhibit DFLD-MLS-2, Exhibit DFLD-MLS-3, and Exhibits DFLD-MLS-***  
16       ***4a, 4b, and 4c.*** Jeffrey Wallin addresses the direct and indirect impacts to black  
17       bears in further detail in his testimony and reports.

18

19       **Q.     Please summarize the investigations that you conducted on the**  
20       **environmental impacts of the proposed Deerfield Wind Project.**

21       Response: Arrowwood Environmental (AE) utilized both office and field  
22       methodologies to investigate the resources at and near the proposed project site,  
23       including both the Eastern Project Area and the Western Project Area. Using

1 desktop GIS (Arc View 3.2a) software, AE reviewed the available data layers for the  
2 Deerfield Project location, including: Vermont Nongame and Natural Heritage  
3 information, NWI maps, Vermont deeryard maps, black bear habitat, surface waters,  
4 USGS topographical maps, digital orthophotographic images, and color infrared  
5 (CIR) aerial photography images. Field work began in the summer of 2003 and  
6 continued into the winter of 2006. Field inventories were conducted by my business  
7 partner Michael Lew-Smith and myself. Initial field assessments consisted of walking  
8 the access roads and turbine strings and an approximate 100-foot radius from the  
9 proposed disturbance area. More detailed and extensive assessments were made in  
10 areas where resources were present (wetlands, streams, wildlife habitat etc.).  
11 Resources were mapped using a sub-meter GPS. AE spent all or part of 7-8 days  
12 conducting field studies at the site. I also conducted an extensive literature review of  
13 potential indirect impacts on bears, which is marked as ***Exhibit DFLP-JP-2***.

14

15 **Q. Based on your evaluations, do you believe that the Project will have an undue**  
16 **adverse impact on white-tailed deer?**

17 Response: No. The Project as designed does not impact necessary wildlife habitat  
18 for white-tailed deer. There are no mapped or unmapped deer wintering habitats  
19 located within the project area. The Eastern Project Area is characterized by spruce-  
20 fir forest and could potentially be utilized by deer for winter cover. However, the  
21 access road and towers are all located at or above 2800 feet above sea level (a.s.l.)  
22 and are too high to be utilized by deer in the winter months.

1           The Western Project Area is nearly all dominated by northern hardwood  
2 forest and is not appropriate cover for white-tailed deer in the winter. Throughout  
3 the Western Project Area, deer sign was noted, although it was light and consisted of  
4 evidence from use during the spring, summer, and fall months. The nearest  
5 Department of Fish and Wildlife mapped deeryard to either the Eastern or Western  
6 Project Areas is over 1.5 miles away.

7

8   **Q     Are you familiar with definition of “necessary wildlife habitat” as it is referred**  
9 **to in Criterion 8(a) of Act 250?**

10       Response: Yes I am.

11

12   **Q.     In your expert opinion, will the Project destroy or significantly imperil**  
13 **necessary habitat for white-tailed deer?**

14       Response: No. The Project, as designed, does not impact necessary wildlife habitat  
15 for white-tailed deer.

16

17   **Q.     Please describe the potential moose habitat located in or near the project area.**

18       Response: The two most important areas for moose habitat appear to be the  
19 Montane forest in the Eastern Project Area, indicated on ***Exhibit DFLD-MLS-4c***,  
20 and the existing clearcut area in the Western Project Area, indicated on ***Exhibit***  
21 ***DFLD-MLS-4b***. Both of these areas contained moose sign including moose  
22 browse, moose scats, and trails. Both of these areas also contained significant  
23 amounts of understory growth such as hobblebush, beech and fir. Other moose

1 habitat has been noted in a conifer forest along the southern access route, and in  
2 wetlands outside of the Project area.

3

4 **Q. Will the Project destroy or significantly imperil “necessary wildlife habitat”**  
5 **for moose?**

6 Response: No. I do not believe the Project will destroy or significantly imperil  
7 necessary wildlife habitat for moose. The forest area to be cleared for the turbines  
8 and access roads is not optimal winter moose habitat, and I do not believe this  
9 habitat is critical or decisive for the survival of the local moose population. To the  
10 extent that moose utilize this area now, it is my opinion that they will continue to  
11 utilize it even after the Project is constructed.

12 None of the mature spruce-fir forests will be cut for any project  
13 infrastructure. As shown on **Exhibit DFLD-MLS-4c**, the moose wintering habitat  
14 near the Eastern Project Area is located approximately 285-300 feet to the south and  
15 east of the proposed wind Turbine #1E. The limits of clearing near the wind turbine  
16 will extend out to a distance of about 210 feet, so a treed buffer of about 75 feet will  
17 remain in place between any clearing and moose wintering habitat. The turbine  
18 clearing will occur in a conifer-dominated forest that exhibits some use by moose,  
19 although only at moderate levels.

20 If the southern access route is selected for the Western Project Area, a small  
21 portion of moose habitat near the southern end of the Western Project Area may be  
22 cut. Field investigation in 2006 has revealed only extremely limited use by this habitat  
23 by over-wintering moose.

1

2 **Q. What, if any, impact will the operation of the facility have on the local moose**  
3 **population?**

4 Response: Operation of the wind facility will not have a significant impact on the  
5 local moose population. There may be a very limited displacement of moose away  
6 from the immediate turbine opening and deeper into the mature spruce-fir forest,  
7 but I would not expect this displacement to be very large. I would not expect that  
8 this displacement would be significant. We have seen evidence of moose in the  
9 immediate area surrounding the existing Searsburg wind turbines, and I strongly  
10 suspect that moose will continue to use the area around these turbines as well once  
11 the project is in operation. Mr. Wallin has captured several moose on remote  
12 cameras within 300 feet of operating wind turbines.

13

14 **Q. Will the construction of the road and opening for the wind turbine provide**  
15 **any potential benefits for the moose?**

16 Response: Yes, it is likely that a small amount of additional woody browse will grow  
17 along the edge of the road and turbine clearings. Moose may benefit from that food  
18 source during the winter months. It is also likely that moose will utilize the low-  
19 traffic dirt roads as travel corridors during periods of deep snow.

20

21 **Q. Please describe your evaluation of the Project's potential impact on black**  
22 **bears.**

1        Response: As part of our wildlife analysis, Arrowwood Environmental was asked to  
2        evaluate the Project's potential indirect impacts on black bears. Jeffrey Wallin has  
3        conducted an extensive analysis of the Project's direct and indirect impacts on bear  
4        habitat, and our evaluation of indirect impacts is intended to complement his  
5        analysis. My evaluation of indirect impacts is based on my own site review, as well as  
6        an extensive literature review of the reported impacts of human facilities and  
7        activities on bears. I have also reviewed Mr. Wallin's reports and testimony, which  
8        document beech stands and wildlife corridors used by bears with and around the  
9        Project area.

10

11    **Q.     Based on your review, what, if any, indirect impacts will the Project have on**  
12    **black bears?**

13        Response: Based on my evaluations of the project site, and my review of relevant  
14        literature, it is my opinion that the Project will not have a significant indirect impact  
15        on black bears. Black bears will continue to use beech trees near the Project area for  
16        their nuts during the years when the trees produce beechnuts. There is the potential  
17        for some displacement effect near the project infrastructure, which could reduce  
18        black bear use of the beech resource immediately adjacent to the Project. However,  
19        prior studies of bear activity adjacent to operating wind farms have not demonstrated  
20        significant avoidance. Jeff Wallin documented a decline in black bear use near the  
21        existing Searsburg turbines during and immediately following their construction, and  
22        then a return to relatively normal bear activity in the vicinity of the turbines. More  
23        recently, in 2006, Mr. Wallin documented bear activity within 300 feet of the

1 operating Searsburg Wind Farm. Mr. Wallin has photographed several bear,  
2 including a sow with a cub, within 300 feet of the wind turbine string. At least 2  
3 (and possibly 3) of these bear were within 300 feet of a wind turbine when it was  
4 operating at relatively high capacity (i.e., the blade was spinning fast). Mr. Wallin's  
5 report indicates that a wide range of species were caught on camera within 300 feet  
6 of the turbines, including moose, bear, deer, fisher, and coyotes.

7

8 **Q. Do we know the distance that black bears may be displaced near the project**  
9 **road and wind turbines?**

10 Response: No, we do not know the exact distance that bears may avoid operating  
11 turbines, nor do we know if they will be displaced at all. There is not a lot of existing  
12 information to guide us in making such a determination. However, as I have  
13 previously noted, the few studies of the operating Searsburg Wind Farm seem to  
14 demonstrate that bears can habituate to such operations, and indicate that bears are  
15 likely to continue using the area immediately adjacent to wind farms.

16

17 **Q. Can you explain how black bears habituate to changes in their environment or**  
18 **home ranges?**

19 Response: In general, bears respond differently to different types of changes based  
20 on previous experiences with that particular type of change or activity. Inanimate  
21 objects, such as a new building, may pose little problem for a bear, particularly when  
22 few people, pets or other direct threats to the bear are associated with the new  
23 building. If the bear's experience with a particular feature in its environment is

1 favorable, one would expect the bear's response to be mild and any displacement  
2 behavior to be minimal.

3 The types of interactions and or events that might negatively condition a  
4 bear's response include frequent vehicular traffic, frequent encounters with people or  
5 pets, bright lights or loud, sharp noises, and encounters with hunters or bear dogs.  
6 These features are not associated with the proposed project, and there is nothing  
7 inherent in the turbines themselves that would negatively condition a bear's  
8 response. In fact, as noted above, the evidence that is available suggests that bears  
9 can and do become acclimated to the presence of wind turbines.

10

11 **Q. Are there project management and design features that can be implemented**  
12 **at the Project site to minimize the occurrence of events which may negatively**  
13 **condition bear behavior?**

14 Response: Yes, there are. First, access to the facility should be limited, preferably by  
15 gating the access road. In addition, the number of vehicular trips that will be made  
16 by operations and maintenance personnel should be limited. And finally, on-the-  
17 ground lighting at the facility should be limited. By limiting human and vehicular  
18 activity at the Project site, you can reduce the potential indirect impact on bears. The  
19 turbines themselves are not likely to have a negative impact. The turbine noises are  
20 fairly constant, relatively flat in nature, and not sudden and sharp – they are not the  
21 type of noise that typically elicits a negative response in black bears.

22

1 **Q. With respect to the access road, what factors are important in determining the**  
2 **indirect impact of this Project upon black bear use of the area?**

3 Response: First, whether or not it is to be paved or dirt; second, the width of the  
4 road; and third, the amount of traffic. The road will remain dirt, and there is some  
5 evidence that black bears do not react as negatively to dirt roads as to paved roads.  
6 The road will be approximately 35 feet wide during construction and then re-  
7 vegetated to only 16 feet wide during the operation of the wind facility. This is a  
8 relatively narrow roadway and likely has only a minor, perhaps insignificant barrier  
9 effect (of course traffic volume dependent). The road will initially be driven on by  
10 construction vehicles. The disturbance effect of this activity is likely to be  
11 significant, and black bears may be displaced for a considerable distance during  
12 construction activity. During operation of the wind facility, the road will be gated  
13 and the traffic will be greatly restricted. Wind turbine maintenance will require  
14 approximately only a few traffic trips per day.

15  
16 **Q. Is there evidence to suggest that traffic volumes as low as 1-2 cars per day can**  
17 **significantly alter a bear's use of the area?**

18 Response: No, there is not. The traffic volume on roads at which bear avoidance  
19 behavior is noted (i.e., avoidance of crossing the road or the habitat near the road)  
20 generally occurs only when traffic volumes are greater than 10 cars/day and in many,  
21 if not most, cases, hundreds of car/day.

22

1 **Q. You've mentioned bear hunting as a potential issue; does a bear's behavior**  
2 **near roads change in the presence of bear hunters with strike dogs?**

3 Response: Yes, it does. A bear may avoid going near a road where bear hunters with  
4 trucks and strike dogs are found. These types of hunter-bear encounters are already  
5 present in this area, as hunters are currently utilizing the woods in and around the  
6 Project area for running dogs in pursuit of bears. Mr. Wallin has sighted bear dog  
7 teams several times on the western side of Route 8. My experience with black bears  
8 in Vermont is that they adjust their behavior if they are being harassed by bear dogs  
9 in their feeding habitats. For example, bears may begin visiting the feeding sites at  
10 night when the bear dogs are not present.

11

12 **Q. Is it your understanding that strike dogs and bear hunters will have access to**  
13 **the Wind Project roads?**

14 Response: No, it is not. My understanding is that the access road will be gated and  
15 will not be accessible to vehicles, except personnel associated with the wind project  
16 itself. Because the Project will be located in the National Forest, hunters may be able  
17 to access the Project Area on foot. However, no truck, ATVs or other vehicles  
18 associated with hunting will be allowed past the gated entrance. As mentioned  
19 above, the project area is currently used by hunters and bear dog teams;  
20 development of the Project should not increase or otherwise affect this existing use.

21

22 **Q. Please summarize likely effects of the access roads on black bear in the area.**

1        Response: The gated, narrow, dirt access roads may create a narrow displacement  
2        band within the adjacent forest where black bear use could be diminished. Due to  
3        the low traffic volume, and controlled access, the area of impact will likely be  
4        minimal. Past experience and a review of available literature sources strongly suggest  
5        that black bears will also continue to cross this narrow, low traffic volume, dirt road  
6        in the future. This is especially true if there is a food resource (such as a beech  
7        stand) nearby.

8

9        **Q.     Will the people, noise and construction vehicle traffic associated with wind**  
10       **turbine and access road construction displace black bears?**

11       Response: Yes, I would expect that black bears may avoid the project site during  
12       construction, due to the lights, sounds, and people associated with construction  
13       activity.

14

15       **Q.     Would you expect this displacement or avoidance by black bears to be**  
16       **permanent?**

17       Response: No, I believe any displacement associated with construction will be  
18       temporary. Permanent displacement as a result of construction would be extremely  
19       unlikely. If there are resources that are important to black bear in the area, I would  
20       expect the avoidance of the area to last only as long as construction activities  
21       continue. After that, one would predict that black bears would begin to return to the  
22       area, as construction activities switch over to operational conditions, with minimal

1 lighting, few or no loud, sharp noises, very light vehicular traffic, and only occasional  
2 visits by people.

3

4 **Q. Did you investigate the site for any other species?**

5 Response: Yes. The different habitats present within the Project area suggest that a  
6 wide variety of animals are present. The fisher, bobcat, coyote, and red and gray fox  
7 are all likely present at or near the proposed Project area. These predators inhabit  
8 both hardwood and coniferous forest in southern Vermont. The fox and coyote are  
9 more likely found in managed forests and near the presence of humans, clearings and  
10 roads. The fisher is more likely associated with the wetlands and deeper woods of  
11 the Project, while the bobcat likely inhabits all the areas associated with the Project.

12 The Eastern cottontail, snowshoe hare, Eastern chipmunk, gray squirrel, red  
13 squirrel and flying squirrels are likely inhabitants of the Project area or the immediate  
14 vicinity. A wide variety of moles, voles, mice, shrews, and weasels likely inhabit the  
15 area as well. Although not within the Project area, the extensive beaver wetlands  
16 near the Western Project Area likely provide habitat for mink, river otter, and  
17 American beaver. These areas are over 1500 feet from any of the proposed  
18 development.

19

20 **Q. What, if any, impacts will the Project have on these small mammal species?**

21 Response: The Project is unlikely to have any significant impact on these species.  
22 There are no “necessary” habitat elements for any of the above-mentioned species

1 identified at or near the Project area (within a ¼ mile). There is no evidence that the  
2 proposed wind project would negatively impact these species.

3

4 **Q. Please describe any rare, threatened or endangered animal species at or near**  
5 **the Project site.**

6 Response: No state or federally listed species were discovered during this inventory.

7 In addition, no species occurring on the GMNF Regional Forester's Sensitive Species  
8 list were discovered during this inventory.

9

10 **Q. Does that conclude your testimony at this time?**

11 Response: Yes, it does.