

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Docket No. 7156

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 REBUTTAL TESTIMONY OF  
ROBERT D. ROY**

**ON BEHALF OF UPC VERMONT WIND, LLC**

September 25, 2006

Summary:

Mr. Roy responds to issues related to the Project's potential wildlife impacts raised by Mr. Scott Darling, Mr. John Austin, and Dr. William Kilpatrick. His testimony also explains the results of additional bird and bat studies conducted in response to concerns raised by other parties in this proceeding

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

2 Response. Robert D. Roy, Woodlot Alternatives, Inc., 30 Park Drive, Topsham,  
3 Maine 04086. I am a wildlife biologist.

4  
5 **Q. Have you previously filed testimony in this proceed?**

6 Response: Yes, on behalf of the Petitioner UPC Vermont Wind, LLC

7  
8 **Q. What is the purpose of your rebuttal testimony?**

9 Response: The purpose of my testimony is to respond to issues related to the  
10 Project's potential wildlife impacts raised by Mr. Scott Darling, Mr. John Austin, and  
11 Dr. William Kilpatrick. My testimony also explains the results of additional bird and  
12 bat studies conducted in response to concerns raised by other parties in this  
13 proceeding.

14  
15 **Q. What materials have you reviewed in preparing your rebuttal?**

16 Response: I have reviewed the prefiled testimony of Mr. Scott Darling and Mr. John  
17 Austin and the prefiled testimony and discovery response of Dr. William Kilpatrick.  
18 I have also reviewed the results of additional bird and bat studies conducted under  
19 my supervision.

20  
21 **Q. Dr. Kilpatrick appears to have concerns regarding the methodologies**  
22 **employed to assess wildlife impacts for the Project. Is there a standard method, or**

1 **series of methods, for assessing the potential effects of proposed wind energy**  
2 **developments on wildlife prior to construction?**

3 Response. In my experience, the assessment of any kind of impacts to wildlife  
4 requires defining the project characteristics, determining the use of the project area  
5 by wildlife, and then using the best available information from other similar projects  
6 to infer what effects the proposed project will have. It is also my experience that not  
7 all projects undertake this process in the same manner or using the same types of  
8 information. For example, some projects undertake radar surveys prior to  
9 submitting permit applications while others do not. Consequently, I am not aware of  
10 any single method for assessing the potential effects of wind projects.

11 With respect to the evaluations of impacts, some types of impacts are  
12 relatively easy to define. For example, habitat loss can be directly calculated using  
13 the footprint of a project. This can even be split into long-term, permanent habitat  
14 loss versus short-term losses from temporary vegetation clearing or other  
15 construction activities.

16 Other types of impacts cannot be so easily evaluated. These include indirect  
17 effects such as disturbance during and after construction, edge or fragmentation  
18 effects, or collision-related mortality. Assessing these types of potential impacts  
19 requires more qualitative evaluations and the use of information from other wind  
20 energy developments or developments that create similar types of habitat  
21 disturbances. It also sometimes requires on-site data from multiple methods to more  
22 fully describe the existing wildlife communities that could inhabit the area, a  
23 characterization of the existing habitats to provide the proper context for the types

1 of habitat changes that the local wildlife community will encounter, and the ecology  
2 of the local and regional wildlife in the area. The result is a holistic review of the  
3 existing wildlife communities potentially affected by the project, and a sound,  
4 biologically-based opinion on the relative level of impacts that draws upon  
5 documented impacts at other facilities.

6

7 **Q. Dr. Kilpatrick has suggested that the Applicant has not conducted sufficient**  
8 **analysis of the project site to determine whether the Project will or will not have an**  
9 **undue adverse impact on wildlife. In your opinion, has UPC conducted appropriate**  
10 **field surveys in the project area to support an assessment of potential impacts at the**  
11 **Sheffield Wind Farm?**

12 Response. Yes. In fact, of the projects that I am familiar with in Vermont and other  
13 parts of the Northeast, UPC has conducted more pre-construction natural resource  
14 studies than other projects. UPC has also worked closely with the Vermont  
15 Department of Fish and Wildlife (DFW) in designing, conducting, and evaluating  
16 those studies, particularly in the last 14 months. The combination of these studies  
17 probably makes a stronger assessment possible on this project than on other  
18 projects.

19 The majority of the studies undertaken by UPC were originally summarized  
20 in Exhibit UPC-RR-6, which is the Sheffield Wind Farm Wildlife Habitat Summary  
21 and Assessment that was provided as part of the prefiled submittal on February 21,  
22 2006. That document summarized work dating back to 2003, including breeding  
23 bird surveys, raptor migration surveys, reconnaissance-level surveys and incidental

1 wildlife observations, radar surveys of nighttime bird migration, bat detector surveys,  
2 and an assessment of potential small-footed bat habitat in the vicinity of the Project.  
3 The document also summarized the habitat conditions in the project area. Finally,  
4 the assessment provided in that document used the on-site survey information, the  
5 habitat conditions in the project area, results of post-construction studies at other  
6 projects, and comparisons of the project area with those other existing facilities to  
7 assess the potential impacts of the project.

8

9 **Q. Have any additional studies been conducted subsequent to the studies**  
10 **described in your prefiled testimony?**

11 Response. Several additional field surveys were conducted after the  
12 completion of the assessment provided in my earlier Exhibit UPC-RR-6, based on  
13 consultation and on-site field surveys with DFW. The additional field work includes  
14 bat detector surveys in the project area from spring to fall, avian acoustic surveys  
15 during the spring and fall migration seasons, and bat detector data collection at Duck  
16 Pond, an area identified as potential small-footed bat maternity roost habitat in my  
17 earlier Exhibit UPC-RR-5.

18

19 **Q. Do you have any new exhibits related to the studies requested by VDFW?**

20 Response. Yes. The bat detector data collection effort on June 14, 2006 at  
21 Duck Pond was summarized in a memo dated July 12, 2006 and is submitted as  
22 ***Exhibit UPC-RR-Reb1a***. The memo provides a summary of the number, location,  
23 and timing of the survey effort as well as a summary of the number of recorded files

1 at each of the four detectors used (919 calls on that one night). As agreed upon with  
2 DFW, the data from that survey effort was provided to the DFW. The DFW, either  
3 internally or by using a third party, will provide an assessment of the species  
4 identification of the recorded call files. I have not yet heard if that analysis is  
5 complete.

6 The spring bat detector survey was summarized in a memo dated July 16,  
7 2006 and is submitted as **Exhibit UPC-RR-Reb1b**. The memo provides a  
8 summary of data recorded by four bat detectors located along the project area  
9 ridgelines. A total of approximately 1,113 bat call sequence files were recorded by  
10 those detectors during the approximately seven-week, April 24-June 13 2006  
11 deployment period. It should be noted that the survey site identified as Turbine 12  
12 in **Exhibit UPC-RR-Reb1b** is located adjacent to the turbine site that is now  
13 identified as C-10 on the revised project site plans, **Exhibit UPC-CRV-Reb4b**.

14 The spring avian acoustic survey was summarized in a memo dated August  
15 16, 2006 and is submitted as **Exhibit UPC-RR-Reb1c**. The memo provides a  
16 summary of the information recorded by two acoustic monitoring stations (one on  
17 the peak of Hardscrabble Mountain and one at the peak of Barrett Mountain) that  
18 were deployed from May 16 to June 10, 2006. Very few flight calls were recorded  
19 during that time period and the results of the survey effort were discussed by phone  
20 between Dave Cowan and John Austin on September 1, 2006.

21 Finally, the results of the summer and early-fall bat detector survey efforts  
22 have been summarized in a memo dated September 20, 2006, submitted as **Exhibit**  
23 **UPC-RR-Reb1d**. The memo provides a summary of data recorded from five bat

1 detectors located along the project area ridgelines that were deployed from June 14  
2 to September 11, 2006. A total of approximately 7,215 bat call sequences were  
3 recorded during the approximately fifteen-week period. It should be noted that the  
4 survey locations identified as Turbine 12A and 12B in **Exhibit UPC-RR-Reb1d** are  
5 located adjacent to the turbine site that is now identified as C-10 on the revised  
6 Project site plans, **Exhibit UPC-CRV-Reb4b**.

7 A map identifying the location of all bat detectors and bird acoustic detectors  
8 in relationship to the revised Project plans is attached as **Exhibit UPC-RR-Reb3**

9  
10 **Q. Please briefly summarize the relevant results of the new studies requested by**  
11 **VDFW.**

12 Response. The sampling at Duck Pond yielded a total of approximately 900 call  
13 sequences on the night of June 14. Interestingly, four detectors along the Project site  
14 ridgelines documented almost exactly half as many call sequences on that same night.  
15 During all three bat detector survey efforts in 2006, results were variable among sites  
16 sampled with individual sites documenting peak numbers at different times. Overall,  
17 bat activity seemed to be greatest during the latter half of June.

18 The avian acoustic survey documented very few night migrants passing over  
19 Hardscrabble and Barrett Mountains. There were differences in the total number of  
20 flight calls recorded but, as discussed between Mr. Cowan and Mr. Austin during a  
21 September 1, 2006 call, the overall low number of calls (33) provides too small of a  
22 sample size to make any definitive conclusions.

23

1 **Q. Are any field studies still on-going ? If so, when will results from those studies**  
2 **be available?**

3 Response. Yes. There are two field studies still being conducted on the Project site  
4 that will provide additional data requested by the VDFW. The first is the  
5 completion of the fall bat detector survey effort. Detectors will remain in place in  
6 the project area until October 15, 2006, after which the recorded data will be  
7 analyzed and reported. This latter report will likely summarize the complete April 24  
8 to October 15, 2006 survey effort and will also provide a summary of the species  
9 identification of the recorded call sequences.

10 The second study currently underway is a fall nighttime avian acoustic survey.  
11 Similar to the spring survey, two acoustic detectors (Autonomous Recording Units  
12 (ARUs) provided by the Cornell Laboratory of Ornithology) have been deployed –  
13 one at the peak of Hardscrabble Mountain and one at the peak of Barrett Mountain.  
14 The first download of recorded data is anticipated to occur in the very near future,  
15 with a final download of all data to be completed upon retrieval of the ARUs on  
16 October 15, 2006, after which a summary report will be prepared.

17

18 **Q. Have recently proposed changes to the Project altered the Project's impact on**  
19 **birds and bats? If so, please explain.**

20 Response. The assessment of impacts provided in my original Exhibit UPC-RR-6  
21 was based on the original Project design. Since that time, the Project has been  
22 redesigned, reducing the total number of turbines from 26 to 16. In general, the  
23 revised project design will result in fewer impacts to local wildlife than the design

1 assessed in my original Exhibit UPC-RR-6. The overall conclusion of the original  
2 assessment, however, has not changed. That assessment of the original project  
3 design led to a conclusion that the Project did not present an undue adverse impact  
4 to local and regional wildlife populations or their habitats. The revised project  
5 design would lead to the same conclusion.

6 Examples of how the revised project design will lead to reduced impacts and  
7 maintain a conclusion of no undue adverse impacts to wildlife include the reduced  
8 total extent and area of the Project, fewer new roads and road alignments, and fewer  
9 turbines. The removal of the southern ridgeline (Hardscrabble Mountain) reduces  
10 the overall footprint of the Project. This reduces direct loss or conversion of habitat  
11 and eliminates any potential indirect effects of the Project in that area.

12 The new road alignments appear to make the maximum use of existing  
13 roadways in the project area as possible, which helps to reduce habitat loss from new  
14 roads. Alteration of the road system to access the Norris Mountain turbines also  
15 appears to greatly reduce the amount of cut-and-fill construction (a process that can  
16 magnify any barrier or filter effects to wildlife movements) that was formerly needed  
17 along the eastern slope of Barrett Mountain to access those turbines. Additionally,  
18 the new road system to access the Libby Hill and Granby Mountain turbines  
19 eliminates the need to construct a road in close proximity to the beaver wetland  
20 located just north of Libby Hill. Roads encircling three sides of this wetland had  
21 been identified as a concern by DFW due to the potential for those roads to act as  
22 barriers or filters to wildlife movements, particularly breeding amphibians. The new  
23 road alignments to access turbines north and south of the beaver wetland reduce this

1 potential effect. In fact, this potential effect has been eliminated north of the  
2 wetland because the road is aligned largely perpendicular to the edge of the wetland  
3 and is located more than 500' away from it. South of the wetland, the road is parallel  
4 to the wetland edge but it has been moved further away from it (more than 1,000'  
5 away now versus less than 300' originally).

6 The reduced number of turbines also reduces the potential for collision-  
7 related mortality. Collision-related mortality documented at existing wind facilities  
8 has typically been reported as fatalities per turbine per year, regardless of the number  
9 and size of the turbines or the project. By using this reporting convention, fewer  
10 turbines simply represent a decreased risk of collisions with night migrants and bats.

11 My understanding is that the revised project design also avoids more of the  
12 bear-scarred beech trees along the ridgeline than the original design. The revised  
13 Project's potential impact on bear and bear habitat is addressed further in the  
14 rebuttal testimony and exhibits of Mr. Jeff Wallin. Mr. Wallin also discusses impacts  
15 to deer and moose habitat.

16 The net result of the reduced project size (i.e., number of ridgelines, length of  
17 road system, and number of turbines) is a reduced effect on the local and regional,  
18 resident and migratory wildlife community. I believe it is also important to note that  
19 UPC has been able to attain this reduced potential impact without substantially  
20 reducing the overall capacity of the Project to produce electricity, especially when  
21 that electricity production will not result in air and water emissions or use non-  
22 renewable fuels.

23

1 **Q. Both Dr. Kilpatrick and Mr. Darling have expressed concerns regarding the**  
2 **risk to bats using the beaver pond near Libby Hill. In your opinion, does the Project**  
3 **pose a high risk to bats at this location?**

4 Response. No, it does not. There is a high likelihood that some bats may use the  
5 beaver pond regularly. This area represents a potential feeding area as well as a water  
6 source for summer resident bats, and it would not be unexpected to find a  
7 concentration of bats in this location. However, the presence of the beaver pond  
8 does not necessarily increase the risk of bat collisions with the wind turbines. Given  
9 the location and nature of the beaver pond, it is likely that bats using this resource  
10 are resident and not migratory bats. Transient migratory bats would not be aware of  
11 the presence of the pond as they approach the project area ridgelines and would,  
12 therefore, not necessarily concentrate over or near the pond.

13 Available evidence indicates that bats are most vulnerable to turbine  
14 collisions during migration, and not during resident feeding activities (please see my  
15 original Exhibit UPC-RR-6 for a review of known bat collision mortality  
16 information). Whether as a result of familiarity with local terrain, or other reasons,  
17 resident bats appear to collide less often with turbines during the summer months.  
18 As a result, even if the pond does support a high concentration of resident bats, it  
19 does not mean that the Project will pose a risk of undue adverse impact to those  
20 bats. It is also important to note that the revised Project has reduced the potential  
21 impact on bats utilizing the beaver wetland by eliminating one of the three original  
22 turbines adjacent to the beaver wetland.

23

1 **Q. Are there certain times of day or parts of the season when bats are more or**  
2 **less at risk of collision?**

3 Response. Yes. Bats do not appear to be vulnerable during daily resident activity.  
4 As explained above, late-summer swarming periods and nighttime migration in the  
5 fall appear to be the times when bats could be more at risk of collisions with  
6 turbines. This is based on post-construction mortality surveys conducted in the mid-  
7 west and central Appalachian states (see Exhibit UPC-RR-6 for a complete review of  
8 bat collision information). However, it should be noted that not all post-  
9 construction studies of bat fatalities have been conducted at the same time or over  
10 long periods of time.

11

12 **Q. Dr. Kilpatrick suggests that UPC has not evaluated or addressed the Project's**  
13 **impact the seven species of rare or uncommon terrestrial mammals in Vermont. Are**  
14 **these rare species likely to occur on the Project site, and what if any impact will the**  
15 **Project have on the species.**

16 Response. As outlined in the information summary and risk assessment for the  
17 project (Exhibit UPC-RR-6), the study area contains habitat that is typical for the  
18 region and that reflects the land use history in the project area. Specifically, periodic  
19 forest harvesting has resulted in forest stands of different species composition,  
20 structure and age. None of these habitats are particularly unique or critical to species  
21 listed as "rare or uncommon" in the state. Despite this, there is the potential for  
22 some of these species to occur on the project site. However, the Project is not likely  
23 to have an adverse impact on habitat critical to these species

1           For wide-ranging mammals, the project area represents a very small fraction  
2 of their potential seasonal, annual, and life-time home ranges. Even assuming that  
3 they are either present in the project area or abundant enough in the region to  
4 theoretically pass through the project area, the Project would not represent a loss of  
5 habitat and avoidance of the area would not result in an undue adverse effect.

6           With respect to rare animals with smaller ranges, the project largely avoids  
7 their preferred habitats. Many New England small mammals prefer cool, damp  
8 forested mountaintop and hillside wetlands, seeps, and stream corridors. These are  
9 regulated resources that the project design has avoided, to the extent practicable.  
10 Other species use cool steep hillsides, rocky slopes, and talus areas. These areas are  
11 very difficult and expensive to work in and, consequently, the project design has also  
12 avoided these areas to the extent practicable. Should populations of these animals  
13 occur in the project area, the Project is likely to impact very little, if any, of their  
14 habitat and would not represent an undue adverse impact to these species.

15           Several of the bats that occur in Vermont are considered rare. Contrary to  
16 Dr. Kilpatrick's suggestion, potential impacts to these bats listed as rare have been  
17 addressed through long-term and ongoing field surveys and a review of known  
18 collision-related impacts to these species. Based on these evaluations there is  
19 sufficient evidence to conclude that the Project will not have an undue adverse  
20 impact on any of these species.

21           Finally, of those species protected by Vermont's Endangered Species Law  
22 (10 V.S.A. Chap 123), such as those with a state status of Threatened or Endangered,  
23 very few have any potential to occur in or routinely use the project area. This is due

1 either to a lack of habitat or the known range of the species to not include the  
2 project area. As indicated in the information summary and risk assessment, field  
3 surveys have not documented these species, but that does not mean the potential for  
4 occasional use of the project area by one of these species is not possible. For  
5 example and as explained above, many of these species have extremely large home  
6 ranges and the project area represents a very small area that an animal would be  
7 exposed to. Additionally, some predator species in particular could occur during the  
8 fall dispersal period of young males. While these occurrences are technically  
9 possible, they are highly unlikely and their presence in the project area would be  
10 transitory and unpredictable. The placement of the Project in this area would not  
11 preclude this type of use by these species. Dr. Kilpatrick has not presented any  
12 evidence to suggest otherwise.

13

14 **Q. Are the reconnaissance-level surveys, habitat assessment, and incidental**  
15 **observations adequate to support a conclusion that the project will not cause an**  
16 **undue adverse impact to rare species identified by Mr. Kilpatrick?**

17 Response. Yes. Rare species are, by their very nature, of low abundance  
18 locally or regionally and it is often difficult to confirm their presence in an area.  
19 Even using established protocols to survey for different species, it is not possible to  
20 confirm the absence of a species, simply because wild animals are free-roaming and  
21 despite what is known about a particular species' range, dispersal characteristics, and  
22 habitat preferences, any given individual could show up in any odd location (this is  
23 particularly true for larger animals with large ranges). Consequently, a conservative

1 assessment of potential impacts to any species can be made by assuming that the  
2 species could occur on the project site, and then by evaluating the project's impact  
3 on habitat that may be critical for these species. As described above, this Project will  
4 not adversely impact habitat for these species. The Project largely avoids habitat that  
5 might be critical for rare small mammals and the Project area represents only a small  
6 fraction of the typical range of most rare large mammals. There is no evidence that  
7 the Project would have an undue adverse impact on these species even if they were  
8 to occur on the Project site.

9

10 **Q. Has the Agency of Natural Resources expressed any concern over the**  
11 **Project's impact on the rare terrestrial species identified by Dr. Kilpatrick?**

12 Response: No. To my knowledge neither Mr. Darling nor Mr. Austin has expressed  
13 any specific concerns over the Project's potential impacts to these rare terrestrial  
14 mammal species. Mr. Darling has expressed some specific concerns over the  
15 Project's impacts on bat species, the silver-haired bat in particular. These concerns  
16 have been addressed through collection of additional bat data, as described in more  
17 detail above.

18

19 **Q. Has a post-construction mortality monitoring plan been developed for the**  
20 **Project, as requested by the VDFW?**

21 Response. UPC has developed a draft post-construction monitoring plan for the  
22 Project that incorporates an adaptive approach to define the intensity of field efforts.

23 ***Exhibit UPC-RR-Reb2.*** Essentially, the plan calls for sampling at one-half of the

1 turbines twice per week for a six-week period during the first spring and fall  
2 migration periods (sampling only a portion of the turbines is a relatively standard  
3 practice during post-construction mortality surveys at wind energy developments).  
4 This level of effort should be effective in determining if mortality at the projects is of  
5 concern or not. Following the initial year of surveys, a determination for the need  
6 for, and scope of, any additional years of surveys will be made in consultation with  
7 DFW. If further surveys are needed, UPC anticipa tes conducting searcher efficiency  
8 surveys and scavenging rate trials in association with the searches in order to provide  
9 more definitive rates of annual mortality at the project, such as the number of  
10 fatalities per turbine per year.

11

12 **Q. Have mitigation measures been developed in the event that post-construction**  
13 **mortality monitoring efforts indicate potentially high rates of mortality at the project,**  
14 **an issue raised by the VDFW witnesses?**

15 Response. UPC is open to considering mitigation measures based on the results of  
16 post-construction monitoring, in the event that such monitoring indicates a specific  
17 undue adverse impact. A proposed mitigation plan is attached as ***Exhibit UPC-RR-***  
18 ***Reb4.***

19

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

21 Response. Yes.