

APPENDIX F

Bear Panel Review

APPENDIX F CONSULTATION AND ASSESSMENT OF POTENTIAL IMPACTS OF THE PROPOSED DEERFIELD WIND PROJECT ON AMERICAN BLACK BEARS

The three action alternatives for the Deerfield Wind Project propose construction of a commercial wind facility on Green Mountain National Forest lands in Searsburg and Readsboro, Vermont. The proposed facility would be located on the ridges to the east and west of Vermont Route 8. The region encompassing the Project area includes high-quality habitat for American black bears (*Ursus americanus*). Much of the land in the region is hilly and relatively remote, with few roads and little development. The landscape is dominated by mature forest habitats, much of which is northern hardwood forest types that include a large component of American beech (*Fagus grandifolia*). Mature beech trees produce nuts that are an important source of fat and nutrition for bears as they prepare for hibernation. The area includes dense concentrations of beech trees that have been scarred by black bears climbing them to forage on beechnuts.

The Vermont Agency of Natural Resources (ANR), parent agency for the Vermont Fish and Wildlife Department, considers areas of abundant and concentrated bear-scarred beech (BSB) to be “necessary habitat” for black bears in Vermont (ANR 2006). The 2006 GMNF Forest Plan acknowledges the importance of mast-bearing trees in general, and BSB in particular, including an objective to increase or expand mast production where practical (USDA Forest Service 2006: p. 12). Guidelines in the Forest Plan provide that groups of BSB should be retained in favor of single BSB, and single BSB exhibiting repeated use should be retained where clumps are absent (USDA Forest Service 2006a: p. 29). The Forest Plan does not specifically identify any individual BSB sites or other sites of special interest for bears.

The Deerfield Wind Project would upgrade approximately 1.2 miles of existing road (currently used by the existing Searsburg Wind facility) and construct approximately 4.3 miles of new road for the Proposed Action, and 3.7 miles or 1.6 miles of new road for Alternatives 2 and 3, respectively (Table 1). See Chapter 2 of the DEIS for a full description of the alternatives to the Proposed Action. Roads would be upgraded or built to a width of 35 feet for construction but maintained to a width of 16 feet during operation. At each proposed turbine site, approximately 1½ to 2 acres of forest land would be cleared to allow for assembly, construction, and erection of each turbine. After construction, only about ½ acre of cleared area would be maintained around each turbine for normal operation. The Project also would require cleared areas for electrical collection lines, substations, and other facilities. The total amount of land cleared for roads, turbine sites, power lines, and structures would be approximately 85 acres for the Proposed Action, 75 acres for Alternative 2, and 40 acres for Alternative 3 (Table 1). After completion of construction, cleared areas along roads outside of 16 feet and construction clearing around the edges of turbine sites would be allowed to revegetate.

The “footprint” for the Deerfield Wind project, the outline of areas that would be cleared for turbine sites, roads, for electrical collection lines, and other facility structures, intersects areas of concentrated mature beech trees and BSB on the Western Project site. The Project footprint also overlaps less-concentrated and scattered BSB on the Western and Eastern Project sites. The estimated number of BSB that would be removed by the Proposed Action is approximately 480-490 BSB on the Western project site and 50-55 BSB on the Eastern Project site (Table 1). Lesser numbers of BSB would be removed from the Western

Project site under Alternatives 2 and 3, but the number would remain the same on the eastern Project site for all action alternatives (Table 1).

Table F-1: Summary of number of turbines, approximate number of acres of forest land that would be cleared, and approximate numbers of bear-scarred beech (BSB) trees that would lie within the Project footprint and be removed under each of four alternatives for the Deerfield Wind Project.

Alternative	Acres cleared	Miles of new road	Number of Turbines		Number of Bear-Scarred Beech Trees Removed		
			Western Project site	Eastern Project site	Western Project site	Eastern Project site	Total
Proposed Action	85	4.31	10	7	480-490	50-55	530-540
Alternative 1 No Action	0	0	0	0	0	0	0
Alternative 2 Reduced West	75	3.65	7	7	335-340	50-55	380-390
Alternative 3 East Only	40	1.57	0	7	0	50-55	50-55

Direct impacts to black bears from the action alternatives for this Project are based on removal of mature American beech trees, including BSB, and the resulting loss of available beech mast. The Project could also result in some beneficial direct impacts from increased availability of alternate food resources (other than beech mast) in cleared areas and edges where cleared areas intersect with the remaining forest. Potential indirect impacts would include displacement of bears away from the Project area during construction, and during operation and routine maintenance of roads, turbines, and associated structures. Other potential indirect impacts would include altered behavior and movement patterns of bears in the area in response to the proposed Project.

Direct impacts, the number of mature beech trees or BSB removed from the area, can be measured, but the potential repercussions of that removal on bears are difficult to quantify. Potential indirect effects of displacement and of changed movements and behavior are also difficult to measure, compounding the difficulty of assessing the overall potential impacts of these changes to individual bears, whether local or transient, or to the regional population as a whole.

Little scientific information is available to assess the impacts that a wind facility of the scale of the proposed Deerfield Wind Project would have on black bears. Most research on the impacts of development on black bears has focused on construction or expansion of roads, residential complexes, ski resorts (many of which in Vermont are becoming active, four-season resorts), and the effects of continuing automobile traffic and human activity associated with these developments (e.g., Beringer et al. 1990, Brown 1980, Brody and Pelton 1989, Hammond 2002, Hugie 1982, Reynolds-Hoagland and Mitchell 2007). These kinds of development likely include greater potential for disturbance of black bears than the Proposed Action or other action alternatives after construction is completed and the facility is operational, based on differences in volume of traffic on roads or levels of human activity. Consequently, it is unclear how black bears in Vermont would respond to this Project; analysis and assessment of potential impacts includes substantial scientific uncertainty. Furthermore, biologists consulted during planning and analyses are not in agreement about the potential impacts of the proposed project.

In response to this uncertainty and lack of consensus, the Forest Service consulted with a number of biologists for guidance and advice in identifying and assessing potential impacts that the Deerfield Wind Project might have on black bears (see attachment 1). These biologists offered expertise in biology, ecology, and management of black bears and/or in forest wildlife and wildlife habitat in New England. After discussion with several specialists, the Forest Supervisor of the Green Mountain National Forest requested the assistance of a Review Panel having this expertise in order to more adequately characterize the specific areas of scientific certainty or uncertainty about possible Project impacts and risks. Forest Service biologists consulted with several biologists on possible candidates for the Review Panel. In April 2008, the Forest Service contacted a Review Panel of three prominent bear biologists and sought their comments and opinions on potential impacts from the proposed Deerfield Project.

The Forest Service Panel provided the review Panel with Project-related documents, including descriptions of the Proposed Action and alternatives; research and survey reports; testimony prepared for the Vermont Public Service Board; maps showing Project components, forest types, ecological features, and other pertinent information; and aerial photographs. The Forest Service also provided a list of questions to address specific aspects of potential direct, indirect, and cumulative impacts that the proposed Project might have on black bears (Attachment 2). These questions were designed to ask the review panel to assess risk to bear habitat and bears, based on their knowledge of available scientific literature and their knowledge and experience with black bears. The Forest Service specifically requested that Review Panel provide their best assessment of relative risk to black bears from the Project alternatives, and ideas on design measures, and ask that they not provide alternative preferences or make other management recommendations. Each Review Panel member responded independently to the questions.

In their responses, the Review Panel focused on several primary concerns about potential impacts to black bears:

1. Construction and Use of New Roads in Black Bear Habitat

- Disturbance from foot traffic, bicycles, ATVs, automobiles, and dogs
- Increased access to hunters, campers,
- Mortality from hunters, traffic

2. Direct Loss of Important Habitat - Beech Trees and Beech Mast

- Relative impact of beech forage lost, relative to beech and other forage available elsewhere within the project area

3. Indirect Loss of Important Habitat (Beech Trees) Because of Disturbance

- Caused by construction
- Caused by human activity during normal operation of the facility
- Caused by the presence of operating turbines and other structures
- Caused by the presence of humans unrelated to the Project (e.g., hunters, hikers)

4. Decreased Remoteness of Important Black Bear Habitat

5. Research and Monitoring to Assess Impacts and Reduce Uncertainty

Opinions and Comments from the Review Panel and Other Consulted Biologists

1. Construction and Use of New Roads in Black Bear Habitat

Without exception, the Review Panel and other consulted biologists expressed immediate concern over potential impacts of road construction, and the resulting increased access and increased levels of human activity in relatively remote bear habitat. Lack of easy access, particularly when terrain is steep, tends to keep such forest areas relatively undisturbed. In many regions of the U.S., new roads mean increased public access, with increasing human traffic on foot, on bicycles, on all-terrain vehicles (ATVs), and in motor vehicles. Dogs likely would accompany people into these areas during many of these activities. Human activity, particularly if dogs are present, can drive bears from suitable habitat or prevent them from taking advantage of available forage.

Much of the concern over increased access relates to providing easy access for hunters, and the impact that this access might have on bear harvest. Hunters are aware of the beech stands in the Project area, and they know that bears frequent the area when nuts are plentiful. The steep hike into these beech stands undoubtedly limits the number of hunters who venture there. If hunters could easily drive or walk along an access road to the center of the beech stand, their numbers would likely increase, as would the harvest of bears from the area. With increased numbers of hunters and dogs in the area, some bears likely would be displaced, forced to forage elsewhere.

The proposed Deerfield Wind Project includes two design and operational features intended to mitigate potential impacts of new roads and increased access into remote black bear habitat: gated roads that restrict motorized public access and administrative closures of the immediate Project area.

Gated Roads and Limited Motorized Public Access

One of the most important design and operational features is that access roads into the proposed facility would be gated. Motorized public access would not be allowed in the Project area. After completion of construction, vehicle activity at the facility would typically include no more than one or two trips per day for routine operation and maintenance, as well as occasional administrative uses for monitoring surveys, scheduled public tours, and so on. Additional design measures could be implemented to encourage scheduling maintenance during times of day that pose the least risk of disturbance to bears, and avoiding times when risk of disturbance is greatest (e.g., early morning or late afternoon).

The GMNF currently does not authorize use of all-terrain vehicles (ATVs) or other off-road vehicles (ORVs) on the Forest, except for administrative uses. The 2006 GMNF Forest Plan allows for future consideration of ATVs or ORVs only on connecting trails that link larger ATV-ORV trail systems that are contained primarily off National Forest System lands. Such connecting ATV trails would not be located in the proposed Project area.

Administrative Closure of Immediate Project Area

General public use would continue to be allowed over most of the Project area. The action alternatives currently include no plan to construct gates or fencing around the proposed wind facility, except for gates at the entrances of access roads. In the interest of public safety, safe facility operation, and mitigation of the effects of road development on bear habitat and use, the Forest Service would implement a closure order for the access roads, as well as areas underneath and immediately adjacent to turbines. The closure areas would not be fenced. Instead, signs would be posted to warn of the closure and potential hazards. Substations and other hazardous structures would be fenced for public safety and the safety of wildlife. Such a closure would include foot traffic, therefore hunters and hikers would have no more access to the Project area than under the No Action alternative. Hunters and hikers would have to walk through the woods like they always have, but would have to avoid the cleared areas along the turbine strings that would run along the ridgeline. Forest closures would be implemented with the cooperation of law enforcement officials. Patrol by law enforcement officials and the presence of maintenance personnel would deter illegal trespass. Remote sensing cameras (also useful for bear monitoring) could be used to help enforce closures.

In summary, the initial and considerable concern of the Review Panel and other consulted biologists over potential impacts of new roads and increased access was largely alleviated by gating of the access roads to exclude motorized public access. This opinion was based on the assumption that gates would be effectively located and that maintenance activity would remain at the low levels described in the Proposed Action.

Some biologists acknowledged that placing gates on roads would prevent dramatic increases in access to the public, but roads would still provide easier foot access than hiking through the woods. Consequently, hunting pressure and general levels of human activity likely would increase above the current condition. The turbines themselves might become a destination, with people hiking to the site to see them, thus increasing potential disturbance to bears. The possibility of a closure order for the immediate Project area was not developed in time to share with the Review Panel or other biologists. Assuming that the closure is respected and effectively enforced, this should alleviate these concerns.

Some biologists expressed concern that introduction of large-scale development would change the character of the area. This concern is addressed below.

2. Direct Loss of Important Habitat - Beech Trees and Beech Mast

Without exception, the Review Panel and other consulted biologists acknowledged the importance of beech mast for black bears in Vermont, and they agreed that loss of mature beech and BSB on a scale necessary to construct the proposed Deerfield Wind Project (as many as 530-540 for the proposed Action: Table 1) represented a substantial loss of important bear habitat and bear forage. However, the consensus was that the overall impact of the loss of beech within the footprint of the roads, turbine clearings, and other facility components likely would be minimal, relative to the amount of beech and beech mast available in other sections of the Project area and across the region. This would particularly be the case during good years of beechnut production, when beech mast would be abundant and available widely across the landscape. The direct impact of lost beech mast might be greater during

years of poor mast production, if that limited mast production were concentrated in a few locations, some of which would be removed for a development project. Given a catastrophic loss of beech region-wide, bear productivity (as measured by cubs/female/year and subsequent recruitment of cubs into the adult population) would be expected to decline, but the additive impact of BSB lost at the Deerfield Project site probably would be negligible. Black bears would remain present on the landscape.

Habitat change due to the proposed Project would result in some beneficial impacts for black bears. After completion of construction, margins of access roads and turbine clearings would revegetate, providing herbaceous and shrubby early-successional habitat. These habitats, including road margins, power line rights-of-way, and revegetating clearings, provide a wide variety of foods for bears: roots, berries, small mammals and birds, etc. These foods could not completely take the place of fats and other nutrients that are available from beech nuts, but they likely would be more reliably available, including during years of poor or non-existent beechnut production. In the long-term, clearing from the proposed Project could result in a neutral or slightly positive net response in bears based on diversification of food plants within the direct impact area. This long-term assessment would be dependent upon regular maintenance of revegetating lands to keep them in early-successional stages of vegetation.

Mitigative plantings on revegetating lands could enhance the beneficial impacts of habitat change for black bears. In particular, natural revegetation could be augmented with nut- or fruit-producing trees and shrubs, berries, and other plants that provide good bear forage. Any such plantings would be governed by Forest Service standards and guidelines that emphasize native species (USDA Forest Service 2006; Forest Service Handbook xxx).

3. Indirect Loss of Important Habitat (Beech Trees) Because of Disturbance

In the opinion of the Review Panel and other consulted biologists, activity associated with the construction of the project would likely displace most of the local bear population from the immediate impact area. The distance of displacement is uncertain, and dependent on a variety of factors, including the intensity of activity and noise, the season and weather, as well as site-specific factors such as topography or vegetation. Several biologists thought that displacement of about ¼ mile was a reasonable, general estimate. Assessment of the duration of the displacement effect was more uncertain, although most considered that black bears would quickly adjust to the absence of construction activity and return to the area within a few days, particularly if beechnuts or other forage were available. One opinion was that displacement might occur primarily during hours of construction, as solitary adult bears likely would use the immediate impact area during quiet hours (at night and during weekends).

The Review Panel and other consulted biologists predicted little measurable change in bear movements and behavior in response to operation and routine maintenance activities at the proposed facility. Bears would quickly adapt to the occasional presence of vehicles and maintenance personnel, moving away when they encounter human presence on site, and returning when that presence departed. Most local bears, regardless of their age, gender, or social status, typically avoid humans. In most instances, this avoidance behavior would be expected to involve short distances (yards, not miles) and be short-lived (hours, not days). These predictions were based on estimated levels of activity during normal operation,

as provided in the Project Description: human presence in the Project area limited to occasional maintenance and monitoring, with one or two vehicle passes per day.

As described above, early-successional habitats would quickly revegetate cleared areas that are not maintained for operation of the facility. Bear would be attracted to, and expected to forage along access roads and in turbine-related clearings within a few years of construction. However, human activity also can create situations that attract bears, notably feeding or improper handling of garbage. Such behavior or practice on the part of maintenance personnel would be strictly prohibited.

The Review Panel and other consulted biologists predicted little or no measurable reaction of bears to turbines, power lines, or other structures. Noise from operating turbines typically would be steady and modest in volume and tone, without sudden, sharp, unpredictable, or loud sounds that might be expected to alarm bears.

As noted above, in the discussion of roads and ease of access, biologists expressed concern that increased presence of humans unrelated to operation and maintenance of the Project could disturb bears and potentially displace them from the area. Biologists generally predicted that these kinds of human activities likely would not increase dramatically, assuming that gated entry is effective in limiting human activity in the area. The closure order for the immediate Project area, as described above, should help prevent increased activity at the site.

4. Decreased Remoteness of Important Black Bear Habitat

Several of the Review Panel and consulted biologists expressed a general level of concern over new development of any kind within an area that has been relatively remote. An important factor in the recent increases in bear populations in the East is the presence of public lands, along with maturing oak or beech forests, and refugia in large, relatively remote, roadless, un-developed tracts of lands. Experiences from various parts of the United States point to situations where use of roads and trails, back-country camping, and other human activities have increased dramatically during recent years, and are likely to continue increasing. As new terrain is opened, human activity will increase and radiate out from points of access. In addition, people will be drawn to these areas to see the wind facility, or the opportunity to observe bears feeding in the fall. Some biologists expressed the concern that, once a road is in place, there is invariably constant pressure to use it for other purposes. Little by little, the remote and wild character of the area can be eroded. The levels of activity associated with the described development can be addressed, but there is a degree of uncertainty about what the levels of activity, particularly those unrelated to facility operation and maintenance, that might develop over time.

This addresses a more general question about how the construction and operation of the proposed Deerfield Wind Project would change the character of the Project area and surrounding region over the long term. This certainly includes the welfare of black bears, as erosion of the remoteness of the landscape can diminish the ability for bears to thrive in them. However, this concern is rooted in a much larger overall question about management of public lands, what kinds of uses the American public wishes to see on public lands, and how such uses should be evaluated and administered.

5. Research and Monitoring to Assess Impacts and Reduce Uncertainty

The Review Panel and consulted biologists all agreed that the actual impacts to black bears of a development like the Deerfield Wind Project are uncertain. Public and industry interest in commercial scale wind projects likely will increase in coming years, as will potential conflicts with black bears, other wildlife, and other resources. Actual impacts to bears can be analyzed and understood only through continuing research and monitoring efforts. Several biologists noted that if the proposed Project proceeds, it would provide an excellent research opportunity to address many aspects of uncertainty about impacts to bears. Research focused on black bears would ideally establish baseline data prior to construction, then continue data collection during construction and several years of normal operation after all construction is completed. Specific elements of this research and monitoring program might include radio telemetry (tracking), installation of fences to collect hair for DNA analyses, monitoring scarring of beech trees or other indicators of bear activity in beech stands, and population modeling. A recent research and monitoring program in North Carolina, which was designed to assess impacts to black bears from construction of a major highway, might serve as a model for developing a program suitable for the Deerfield Wind Project (M. Vaughan, 2008; M. Pelton, 2008a, b).

Results from post-construction monitoring could be used adaptively to influence management at the Project site over time. Possible examples include determining specific times of day or times of the year that should be utilized or avoided for routine maintenance operations; administration of closures; locations and types of plantings that provide the greatest nutritional benefit and least disturbance to bears; and techniques to shield or muffle sounds and activities at the facility.

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Attachment 1. Biologists consulted by staff of the Green Mountain National Forest about the potential direct, indirect, and cumulative impacts of the Deerfield Wind Project on American black bears. The Forest Service also consulted these biologists about candidates for a Review Panel of experts on the biology, ecology, and behavior of black bears, and on questions to present to the review Panel. The Forest Service contacted the Review Panel of three prominent bear biologists and sought their comments and opinions on potential impacts from the proposed Deerfield Project.

John M. Austin, Wildlife Biologist, Vermont Fish and Wildlife Department, Agency of Natural Resources, Barre, Vermont

Dr. Robert T. Brooks, Research Wildlife Biologist, USDA Forest Service, Northern Research Station, Amherst, Massachusetts

Louis T. Berchielli, Wildlife Biologist, Bureau of Wildlife, New York State Department of Environmental Conservation, Albany, New York

Forrest M. Hammond, Wildlife Biologist, Vermont Fish and Wildlife Department, Agency of Natural Resources, Springfield, Vermont

John Hecklau, Wildlife Biologist, Environmental Design and Research, P.C., Syracuse, New York

Jeremy Hurst, Wildlife Biologist, Bureau of Wildlife, New York State Department of Environmental Conservation, Albany, New York

Jeffrey W. Parsons, Wildlife Biologist and Ecologist, Arrowwood Environmental LLC, Huntington, Vermont

Dr. Michael R. Vaughan, Assistant. Leader, Virginia Cooperative Fish and Wildlife Research Unit, Professor of Wildlife Science, Virginia Polytechnic Institute and State University in Blacksburg, Virginia

Jennifer H. Vashon, Wildlife Biologist, Bureau of Resource Management, Maine Department of Inland Fisheries and Wildlife, Bangor, Maine

Jeffrey A. Wallin, Wildlife Biologist and Ecologist, Multiple Resource Management, Inc., Brandon, Vermont

Dr. Mariko Yamasaki, Research Wildlife Biologist, USDA Forest Service, Northern Research Station, Durham, New Hampshire

Review Panel:

Dr. Craig R. McLaughlin, Wildlife Section Chief, Utah Division of Wildlife Resources, Salt Lake City, Utah

Eric Orff, Wildlife Biologist (retired), New Hampshire Fish and Game Department, Durham, New Hampshire

Dr. Michael R. Pelton, Emeritus Professor of Wildlife Science, Department of Forestry, Wildlife and Fisheries, University of Tennessee, Knoxville, Tennessee

Attachment 2. Questions and Sideboards presented by the Green Mountain National Forest to the Black Bear Review Panel for the Deerfield Wind Project. Questions were designed to insure that particular points were addressed by the Review Panel. Sideboards defined the limits for consideration and discussion.

Questions and Sideboards for Deerfield Wind Project
Black Bear Review Panel

Thank you for participating in the Green Mountain National Forest's review of potential impacts to black bears of a proposed commercial wind energy facility in southern Vermont. Meg Mitchell, the Forest Supervisor, will decide which of four alternatives should move forward. The alternatives are as follows:

- Proposed Action: 17 turbines – 10 on the Western Project site and 7 on the Eastern Project site
- Reduced Turbines in Western Project Site: 14 turbines – 7 on the Western Project site and 7 on the Eastern Project site
- Turbines in the Eastern Project Site Only: 7 turbines in the Eastern Project site only
- No Action – no construction of any turbines on either Project site

We ask that you review the provided information about the project proposal and overall project area and consider how this development might affect black bears. The following Questions each address individual aspects of the project and potential impacts. The Sideboards describe the limits of consideration.

Ultimately, Meg Mitchell asks each of you to answer the following question, **“What is your best assessment of the relative levels of risk to black bears from each of the alternatives relative to direct, indirect, or cumulative effects of construction and operation of the proposed wind energy facility?”**

Questions

A) Direct effects – loss of habitat

- The proposed project could result in the loss of ±500 bear-scarred beech (BSB) in the immediate impact area. What is the likely impact on bears residing in the affected area if the planned beech removal takes place?
- Given the information available, is the abundance and distribution of beech and BSB in the region but outside of the immediate impact area likely to be sufficient to support black bears, including those that might be displaced? Explain your answer.
- Might different segments of the local and regional black bear population likely to be affected differently by these direct effects? If so, which segments, and how might they be affected?
- How might the irregularity/unpredictability of beech mast production affect the regional black bear population, or the significance of the loss of BSB caused by this project?
- To what extent could the loss of beech and BSB be compensated through various mitigation actions: maintaining early-successional habitat along access/maintenance roads; planting alternative mast-producing plants and shrubs or other food plants; releasing and pruning feral apple trees to increase their production, etc.?

B) Indirect effects – displacement from habitat, changes in behavioral, habituation to the project sites

- To what extent is the activity associated with **construction** likely to affect or displace all or some portion of the local bear population from the immediate impact area? If so, how long would you expect these impacts to last?
- If so, do you think there is any way to predict how far bears are likely to be displaced during **construction**?

- Is the activity associated with **operation and routine maintenance** of the facility likely to affect or displace all or some portion of the local bear population from the immediate vicinity? If so, how, and for how long?
- Is the presence of **structures** (operating turbines, towers, power lines, access roads, operations buildings, etc.) likely to displace all or some portion of the local bear population from the immediate vicinity? If so, how and for how long?
- If the proposed facility is built and activities associated with routine operation and maintenance continue for many years, how likely is it that black bears in the region will become habituated to human activity? If so, what impacts might this habituation have on the black bear population in the region?
- Are different segments of the local and regional black bear population likely to be affected differently by these indirect effects? If so, which segments, and how might they be affected?

C) Cumulative effects – What are the likely impacts of the proposed wind energy facility when added to those of the existing Green Mountain Power company wind energy facility operating on adjacent private land?

- Effects related to construction?
- Effects related to operation and routine maintenance?
- Effects related to new roads?
- Are different segments of the local and regional black bear population likely to be affected differently by these cumulative effects?

D) Roads – Gravel roads would be built along the east and west ridges to provide access to turbine sites for construction, and later for operation and routine maintenance. These roads would be 30 feet wide for construction, but maintained at 16 feet wide after construction.

- Assuming roads are gated and not open to motorized public access, what are the potential impacts of these roads on black bears, including increased exposure to hunters or changes in behavior and movements of bears?
- When road width decreases to 16 feet, the remaining construction road could be encouraged to regenerate back to forest or could be maintained as early successional habitat. What would be the impact of either approach on black bears? Are there other approaches that should be considered?

E) Mitigation – What actions could be incorporated into the project construction and subsequent operation that could avoid or lessen potential impacts to black bears? Examples might be

- Plant and maintain apples or native food plants to supplement food resources for bears;
- Plant native nut-bearing shrubs and trees in the 14 feet of construction road that is not maintained for operation and maintenance access.
- Introduce other habitat enhancement activities adjacent to turbine strings? Would it be worthwhile to consider enhancements at locations removed from turbine strings?
- Other types of mitigation ?

F) Summary

- Are there questions, issues, or other aspects of the potential impacts of this development on black bears that we have omitted?
- What is your best assessment of the relative levels of risk to black bears from each of the alternatives relative to direct, indirect, or cumulative effects of construction or operation of the proposed wind generation facility?

Sideboards

- Analysis is limited to direct, indirect, and cumulative effects of the construction and operation of the proposed Deerfield Wind project to black bears and black bear habitat. Other potential effects, such as those to bats, birds, other wildlife, to soil and water conditions, visual impacts, socio-economic considerations, or appropriate uses of public lands will be addressed elsewhere.
- Not a critical assessment of management program of VFWD.
- Proposed development and effects to black bears and bear habitat are to be assessed relative to statutory and regulatory authority and guidelines for FS management – §219.20 (b)(2) [support viable populations].
- This review is not intended to launch planning and design of a long-term research program to investigate the effects of commercial wind power facilities on black bears. Should the project proceed, monitoring and other research will be incorporated into the project's design criteria.
- FS anticipates that there will be uncertainty about numerous aspects of potential impact on black bears due to various activities, structures, and habitat changes associated with construction and operation of the proposed facility. FS further anticipates that it is not realistic to delay the decision-making process until all or most uncertainties can be fully addressed or answered to the complete satisfaction of all parties concerned. At some point, this Science Review Team will be asked to make assessments based on the best available science and on what information is available about the local habitat conditions and bear use.