

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7250

Amended Petition of Deerfield Wind, LLC, for a)
certificate of public good authorizing it to construct and)
operate a 15-turbine, 30 MW wind generation facility,)
and associated transmission and interconnection)
facilities, on approximately 80 acres in the Green)
Mountain National Forest, located in Searsburg and)
Readsboro, Vermont, with 7 turbines to be placed on the)
east side of Route 8 on the same ridgeline as the existing)
GMP Searsburg wind facility (Eastern Project Area),)
and 8 turbines along the ridgeline to the west of Route)
8 in the northwesterly orientation (Western Project)
Area))

Technical Hearings
held at Montpelier, Vermont
December 1–5, 9–12, 2008

Order entered: 4/16/2009

PRESENT: James Volz, Chairman
David C. Coen, Board Member
John D. Burke, Board Member

APPEARANCES: *(See Attachment A)*

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I. INTRODUCTION

In this Order, the Vermont Public Service Board ("Board") grants, with significant conditions, Deerfield Wind, LLC's ("Deerfield") request for authorization, under 30 V.S.A. § 248, to construct and operate a 30 MW wind generation facility. The proposed Deerfield Wind Project ("Project") consists of 15 wind turbines and associated transmission and interconnection facilities. The turbines, each of which is expected to be approximately 400 feet tall, would be sited along two ridge lines in the Towns of Searsburg and Readsboro, Vermont. The Project would be adjacent to the existing Green Mountain Power Corporation ("GMP") wind facility in Searsburg, Vermont.

After careful consideration of the comments raised by parties and the public and the evidence in the record, we find that, subject to a number of conditions set out in this Order, the proposed Project will promote the general good of the State and Deerfield should be granted a Certificate of Public Good ("CPG") under Section 248 authorizing construction of the Project. The Project is expected to produce clean, renewable power — power that is needed in the New England energy market. The additional power will contribute to lowering the overall price for power on the wholesale market and meeting electrical demands of regional consumers.

Furthermore, the Project is a source of energy that does not produce greenhouse gases. As a non-emitting renewable resource, it will contribute to meeting the growing need for renewable energy in the region and aid in achieving the standards of the Regional Greenhouse Gas Initiative ("RGGI"). The new source will help meet the State's goals of increasing reliance upon renewable energy. These include the standards in the Sustainably Priced Energy Enterprise Development Program ("SPEED") requiring that, by 2012, at least 10% of the State's energy load (as of 2005) be served by new sources of renewable energy,¹ as well as the longer-term goal of providing 25% of the energy used in Vermont from renewable resources.²

We also find that the Project should provide an economic benefit to the State of Vermont, but only if Deerfield Wind can demonstrate that it has entered into arrangements to sell a substantial share of its power output to Vermont utilities.³ These economic benefits,

1. 30 V.S.A. § 8005(d).

2. 10 V.S.A. § 580(a).

3. As we explain below, this Order is conditioned upon further demonstration of financial benefits to Vermont ratepayers from power sales.

coupled with the fact that the addition of a renewable source of power in the region is beneficial to the State and its ratepayers, leads us to conclude that we should approve the Project.

In reaching this decision, we are fully aware of the potential impacts of the Project. A number of parties have expressed concerns over whether the Project will cause undue adverse effects on wildlife habitat, aesthetics, and noise, as well as questioning whether: (1) additional power sources are needed, (2) the wind farm would provide an economic benefit to the State, and (3) the Project may cause unacceptable interference with cable television signals. Many members of the public have also spoken at public hearings or submitted letters and emails, both opposing and supporting the Project. Certainly, a wind facility, like any other generating facility or development, has an effect upon the environment. We have taken these environmental impacts, and the issues raised by parties and the public, into account; where the potential exists for undue adverse impacts, this Order imposes conditions to address them.

The two primary conditions we adopt relate to securing sufficient economic benefit for the Project and protecting necessary wildlife habitat. Deerfield presented evidence that the Project would provide incremental tax revenue and employment, both temporary jobs during the construction period and full-time jobs during operation. These two components alone are not, however, sufficient to support a finding that the construction of the wind farm will promote the general good of the State. The Project will have direct impacts upon aesthetics and the environment, particularly the bear habitat in the area. Such environmental effects have an economic cost to the State of Vermont. We cannot conclude that the project should be approved unless the economic benefits clearly outweigh these costs.

Deerfield could provide sufficient economic value to outweigh these costs; this could be best achieved if Deerfield sold a substantial portion of its output to Vermont utilities through stably-priced contracts that are favorable relative to expected market values. At present, Deerfield Wind has entered into a Letter of Intent to sell 10 MW of its output to GMP for fifteen years. This sale could be a useful addition to GMP's power supply, but at present the Letter of Intent is insufficient to meet Deerfield's burden of demonstrating that the Project provides enough benefit for us to find that it promotes the general good; Deerfield has not shown that the price provides any benefit relative to the expected market prices and the portion of the Project's output that would be sold to Vermont utilities is too small. Our approval and our finding that the Project promotes the general good, therefore, are conditioned on Deerfield remedying these

problems. It must submit power contracts for sale of a significant portion of the wind farm's output to Vermont utilities at prices that are favorable relative to market purchases.⁴

Our second significant area of concern is the potential effect of the wind generation facility on the bear habitat in the area. Although the parties disagreed on whether the construction of the Project would destroy or significantly imperil necessary bear habitat, it is undisputed that the proposed wind farm will require the clearing of approximately 36 acres along the two ridgelines, including the removal of 366 bear-scarred beech trees.⁵ This higher-altitude bear habitat is significant; removal of these trees and general impairment of the habitat would represent an undue adverse effect upon the environment, if not mitigated through appropriate conditions. Deerfield has proposed to mitigate these impacts by conserving comparable bear habitat in the southern Vermont region (on a 4-to-1 ratio) through conservation easements.⁶ This would offset the direct effects of the Project on 36 acres of bear habitat. In this Order, we accept Deerfield's proposal and specifically require that Deerfield develop and file for our review and approval a plan for off-site mitigation, consistent with the practice that the Vermont Agency of Natural Resources ("ANR") has used in Act 250 proceedings. This plan must encompass terrain with similar characteristics to the area affected by the Project — namely higher elevation and suitable for bears. In addition, we require Deerfield to engage in studies of the effects of the Project on the bear population; this will help address some of the uncertainty among the witnesses as to the degree to which the population would be disrupted and displaced.

In addition to requirements that Deerfield address these two significant concerns, this Order adopts conditions to address other potential impacts of the Project. The Project could increase noise for residents in the area. The modeling suggests that the increase in noise arising from the turbines will not be significant at any of the residences. Nonetheless, we will require Deerfield to meet specific standards limiting noise at nearby residences. This should ensure that

4. We do not specifically delineate how much of the power output must be sold to Vermont utilities nor do we specify the price at which the power must be sold. We also do not specifically require that the power be sold at a fixed price (although we have previously noted the benefits of such arrangements. *See* Docket 7156, Order of 8/8/07 at 40–41.). This will preserve some flexibility for Deerfield Wind in negotiating arrangements with those utilities.

5. For perspective, Deerfield examined an eight-square-mile study area surrounding the proposed Project site. In this area, Deerfield estimated approximately 28,000 bear-scarred beech trees. Thus, the 366 trees to be removed represented about 1.3% of the estimated number in the study area. Similarly, the 36 acres to be removed is a small percentage of the total acreage within the study area. We note that the forest extends beyond the study area.

6. Tr. 12/12/08 at 206–209 (Goland); Deerfield Brief at 172, 196.

any noise is at levels consistent with World Health Organization and Environmental Protection Agency guidelines. Deerfield bears the risk associated with complying with these noise levels, including the possible need to adjust operations.

Similarly, this Order contains conditions to address potential interference of the wind turbines with the ability of Duncan Cable Television to receive signals that it needs to provide quality service to its customers. At this time, signal impairment appears unlikely. However, we have adopted conditions that will require investigation if it appears that impairment has occurred and that require Deerfield Wind to redress any signal problems the turbines cause. Similar remediation obligations apply to any interference the Project may cause for individual residents receiving broadcast television.

Finally, we want to stress that we share the concerns raised by the dissent. The Project will undoubtedly have an effect upon the existing bear habitat, although neither we nor any of the expert witnesses can determine the severity of this impact. Because of these impacts, some mitigation is essential. Further, we conclude that the current arrangements for the sale of power from the Project do not provide adequate economic benefit. Nonetheless, we reach a different conclusion from the dissent. We are persuaded that it is possible for Deerfield Wind to propose both effective mitigation of the Project's effects on bear habitat as well as arrangements to provide Vermont ratepayers direct benefits from power sales. For these reasons, we find that, as conditioned, construction of the Project offers positive benefits for Vermonters and will promote the general good.

II. PROCEDURAL HISTORY

On August 11, 2005, Deerfield sent advance notice to the Towns of Searsburg and Readsboro and the Windham and Bennington County Regional Commissions, pursuant to 30 V.S.A. § 248(f), of its intention to file a section 248 petition requesting approval of a wind electrical generation project with a capacity up to 45 MW to be located in the Towns of Searsburg and Readsboro, Vermont. Copies of the notice were also provided to all towns within a ten-mile radius and to adjoining landowners.

On January 8, 2007, Deerfield filed with the Board a petition for a certificate of public good ("Petition"), pursuant to 30 V.S.A. § 248 and Board Rule 5.400, requesting approval to construct and operate the 45 MW project and associated transmission and interconnection facilities. The Petition and supporting materials were served on the statutory parties pursuant to

30 V.S.A. § 248(a)(4)(C). A copy of the Petition was sent to all towns within a ten-mile radius of the Project. Notice of the filing of the application was sent to adjoining landowners.

On March 9, 2007, the Board issued an Order directing Deerfield to file an amended proposal containing additional detail to allow for review. The Board determined that the proposal that Deerfield had submitted was not sufficiently concrete for parties or the Board to review, whether under conceptual approval or as a final design. In particular, the Board stated that the applicant had not specified the number or location of turbines or decided on the location of a substation (if it was needed).

On July 30, 2007, Deerfield filed with the Board supplemental testimony and exhibits requesting approval of a modification to the Project, specifying the construction of 17 turbines which resulted in a reduction in capacity from 45 MW to 34–35.7 MW.

On August 15, 2007, Deerfield filed its Amended Petition with the Board to include the changes detailed in the July 30, 2007, supplemental testimony.

The Board convened a prehearing conference on September 6, 2007, to establish a schedule for this Docket, identify potential parties, and explore preliminary issues.

On October 2, 2007, the Board conducted a site visit and held a public hearing in this matter. The public hearing was held in Readsboro, Vermont, and attended by ten members of the public.

On January 10, 2008, the Board issued an Order revising and extending the schedule for the docket in response to several requests for extension from the other parties in the case. The deadline for filing of prefiled testimony for parties other than Deerfield was extended from December 21, 2007, to April 28, 2008.

On July 3, 2008, Deerfield filed its prefiled rebuttal testimony and exhibits. At this time, it further revised the Project, reducing the total number of turbines from 17 to 15 and the Project's capacity from 34–35.7 MW to 30 MW.

On September 22, 2008, the Board began technical hearings. Just prior to the start of hearings, Deerfield had provided supplemental discovery responses in files containing a large amount of data. Industrial Wind Action Group ("IWAG"), Thomas Shea, Save Vermont Ridgelines ("SVR"), Duncan Cable Television ("DCTV"), and Clifford and Diana Duncan filed a Joint Motion to Suspend Hearings, asserting that they needed time to review what they characterized as voluminous material. At the hearing, the Board granted the motion and the Board ordered a short postponement in order to allow the parties additional time to more fully

review the new information. Due to scheduling constraints, Deerfield and the other parties proposed moving the hearings to December.

On December 1–5, and December 9–12, 2008, the Board conducted technical hearings at the Board Hearing Room in Montpelier, Vermont.

The Board required parties to file post-hearing briefs by January 22, 2009, with reply briefs due by February 20, 2009. On March 26, 2009, Deerfield filed a response to ANR's reply brief, commenting on certain portions of ANR's reply brief that Deerfield said relied upon new evidence.

III. COMMENTS OF THE PUBLIC

Vermont law requires the Board to base its decision on the evidence presented by the parties during the evidentiary hearings. Even though we cannot rely upon them as evidence, public comments provide a crucial role in offering fresh perspectives and bringing up new issues that the Board should take under consideration. In particular, they assisted us in formulating questions that we were then able to pose to the parties and witnesses during the technical hearings.

The Board has provided opportunities for public comments in this Docket through a public hearing and the submission of written communications. We convened a public hearing on October 2, 2007 in Readsboro. Notice of a public hearing was published in the Bennington Banner, Brattleboro Reformer, Deerfield Valley News and North Adams Transcript. Of the nine people who spoke at the public hearing, seven were opposed to the Project. Additionally, the Board received hundreds of written comments in the form of post-cards, letters and e-mails. A large majority of these written comments expressed support for the Project, although a substantial number of these were submitted as essentially form letters.

The Board reviewed the hundreds of comments and appreciates the many sincere concerns expressed. While we are unable to address each individual concern, we provide a summary of the primary issues raised by the comments below.

Numerous comments focused on the aesthetic impacts of the Project on the adjacent areas. Local homeowners, part-time residents, and real-estate agents expressed their concerns over what they viewed as the potentially negative impacts on property values and quality of life. The comments ranged from concerns over the Project diminishing views of the ridgeline to the

effect on future property development of new homes to the ability of residents to have quiet enjoyment of their properties.

Other members of the public voiced concerns about noise and light pollution. Adjacent property owners were concerned over the potential noise and vibrations from the wind turbines which they thought could possibly result in health problems. Many opponents of the Project addressed the possible light pollution from the lights attached to the tops of the wind turbines.

Other commenters argued that the economic and environmental benefits of wind power outweigh these aesthetic concerns.

Members of the public also noted that the Project offered the towns one of the few options to expand their tax bases. One commenter cited a non-binding Readsboro town vote on March 7, 2006, in which 41% of eligible voters participated and supported the Project 191 to 31. Other members of the public questioned the tax benefits of a project located within the Green Mountain National Forest ("GMNF").

Some comments centered on the impact the Project would have on wildlife in the area. Members of the public argued that the Project will negatively impact local wildlife. Their comments expressed concerns with the Project's impact on birds and bats as well as on bear habitat. Other commenters noted concerns over placement of the Project within the GMNF.

The Board received a large number of comments about the Project's renewable energy potential. Some questioned the intermittent nature of wind power and its impact on the State's total energy output. Many other commenters supported the Project because it focuses on developing renewable energy alternatives. Members of the public noted that Vermont is a leading state on environmental issues and that this project reflected this ethos. They asserted that the Project would help diversify Vermont's energy portfolio. Commenters also cited national security issues and global warming concerns as reasons to support the Project. While many supporters wanted the Project to be subject to rigorous review related to environmental issues, they considered the renewal energy potential as trumping other concerns.

Throughout this Order, the Board addresses the concerns raised during this proceeding, including those expressed in the public comments and discussed during hearings.

IV. PROJECT DESCRIPTION

Findings

1. Deerfield Wind, LLC, is a Delaware limited liability company registered in Vermont, with its principal offices in Portland, Oregon. Deerfield is a subsidiary of Iberdrola Renewables, which itself is owned by Iberdrola, a large Spanish utility company. Zimmerman pf. at 2; Zimmerman supplemental pf. at 5–6.

2. Deerfield filed with the Federal Energy Regulatory Commission ("FERC") a Notice of Self-Certification of Qualifying Facility Status For A Small Power Production Facility, pursuant to 18 C.F.R. § 292.207(a). FERC acknowledged receipt of the notice, with no further action required. Zimmerman pf. at 30–31; exh. DFLD-JZ-11.

3. The Project consists of the construction and operation of a wind generation project with a nameplate capacity of 30 MW, to be located in the Towns of Searsburg and Readsboro in Bennington County, Vermont. The Project will utilize fifteen (15) 2.0 MW turbines. The turbine array will be situated on two ridges that generally trend in a north-south orientation and that lie, respectively, to the east and west of State Route 8. The ridges where the wind turbines are to be installed are entirely within the GMNF and range in elevation between 2,700 feet and 3,120 feet. Habig, Goland & Cherian ("Habig Panel") reb. pf. at 3–4; Zimmerman pf. at 6; exh. DFLD-JZ-30a-b.

4. The existing Searsburg Wind Power Facility ("Searsburg facility"), owned by GMP, is adjacent to the proposed eastern project area to its north. Existing access roads and other infrastructure associated with GMP's plant extend to the base of the hill. The Project will upgrade and share the use of some of GMP's privately-owned facilities. Zimmerman pf. at 6–7.

5. Lands that the Project plans to use are currently used for wind power generation in the eastern project area and for timber harvesting in the western project area. Zimmerman pf. at 6–7.

6. Deerfield selected this site as being highly favorable for the development of a wind electric generation facility within the region based on a number of factors: a) the site's superior and well-documented wind resources; b) the amount of land area available; c) the compatibility of wind development with existing uses of this land; d) the site's low potential for significant environmental impacts; e) the presence of existing access roads, transmission lines, and the existing Searsburg facility nearby; and f) adequate electrical capacity on existing transmission lines. Zimmerman pf. at 8.

7. Deerfield evaluated a number of sites, but determined that other sites were less favorable based upon environmental and land use impacts or uncertainty that the wind resource

provided sufficient value. Deerfield also considered upgrading the existing Searsburg facility but determined that the site could only accommodate three new 2.0 MW turbines. Zimmerman pf. at 9–11; tr. 12/11/08 at 27–29 (Zimmerman); tr. 12/1/08 at 275–277.

8. Deerfield projects that the annual net energy production of the Project will average 92,500 MWh, or a net capacity factor of 35.2%. This is the equivalent of the energy demands of over 12,500 homes. Habig Panel sur-surreb. pf. at 2; tr. 12/9/08 at 9–10 (Kavet).

Project Elements

9. The proposed turbines are three-blade, horizontal axis, upwind wind turbines. Each wind turbine is comprised of three components: the tower, the nacelle, and the rotor blades. Zimmerman pf. at 12–15; exhs. DFLD-JZ-Rev5a and DFLD-JZ-27.

10. The turbines will be supported by a conical tubular steel tower, which at its widest dimension is approximately 16 feet in diameter and will taper to just below the nacelle. All of the turbines will use the same tower, which is 76.2 meters (250 feet) in height, with a hub height of approximately 78 meters (256 feet). The turbine towers will be painted a neutral color. The towers will be brought to the site in sections, then mounted on a reinforced concrete foundation. Zimmerman pf. at 12–15; exhs. DFLD-JZ-Rev5a and DFLD-JZ-27.

11. The tower is topped by a nacelle, which houses the main mechanical components of the turbine. The interior of the towers can be accessed in order to maintain turbine components in the nacelle via an interior ladder. Zimmerman pf. at 12–15; exhs. DFLD-JZ-Rev5a and DFLD-JZ-27.

12. The rotor blades are made of fiberglass reinforced with epoxy resin. The two rotor diameters now specified are either 80 meters (262 feet) or 87 meters (285 feet), depending on whether the turbine is a Gamesa G80 or G87. Total height of the G80s and G87s (to tip of blade in vertical position) is 389 feet and 401 feet, respectively. The individual rotor blades are capable of being "pitched" (rotated along their longitudinal axis) to enable them to operate efficiently at varying wind speeds. In addition, the rotors' variable speed transmissions allow the turbines to operate more efficiently over a wider range of wind speeds. Zimmerman pf. at 12–15; Habig Panel 4–5; exhs. DFLD-JZ-Rev5a and DFLD-JZ-27; tr. 12/11/08 at 165–66 (Vissering/Buscher).

13. Deerfield has proposed that six of the 15 turbines would be lit at night with red strobe lights. The Federal Aviation Administration ("FAA") has not yet made a determination on the revised plan. Habig Panel reb. pf. at 6; Zimmerman sup. pf. at 6; exh. DFLD-HGC-4.

14. Deerfield also plans to construct a permanent measurement tower at the hub-height of the wind turbines. This would be placed near the middle of the turbines in the western project area and would replace two existing meteorological towers. It may include lighting if recommended by the FAA. Zimmerman pf. at 29.

15. Each turbine will have an associated step-up transformer to increase the nominal generated voltage of 690V to 34.5 kV. For the turbines Deerfield plans to use, the transformer is housed within the nacelle, not on the ground. Zimmerman pf. at 15; Estey pf. at 4; exhs. DFLD-JZ-Rev5a at 5 and DFLD-JZ-27 at 5.

16. Deerfield plans to construct a 34.5 kV electrical gathering system in each project area to deliver the energy from the turbine arrays to a substation to be built adjacent to the existing 69 kV line. The collector circuit and turbine communication cables will run underground along each ridgeline in a trench approximately one meter deep, installed during construction beside or underneath the new access and service roads. The above-ground electrical lines between the substation and existing transmission line, and across Route 8 connecting the western project area to the eastern project area, will be installed as overhead lines on poles approximately 35 to 45 feet high, running alongside the access roads. The existing overhead line between the Searsburg facility and the Sleepy Hollow Substation will be rebuilt to accommodate both the existing and the new collector system lines. Zimmerman pf. at 15–16; Estey pf. at 4–5; exh. DFLD-DE-Rev4.

17. Deerfield plans to construct a substation to transform the electrical energy collected at 34.5 kV to 69 kV. The substation will connect to an existing National Grid/VELCO 69 kV transmission line through a three-ring bus. Zimmerman sup. pf. at 2-3; exhs. DFLD-JZ-30a, DFLD-JK-11.

18. Additional maintenance equipment, storage space, and operations functions will be located in a roughly 4,000 square foot, metal-framed building. Zimmerman pf. at 20–21; Zimmerman 2nd sup. pf. at 3; exh. DFLD-JK-11 (Revised).

Construction and Roads

19. Deerfield Wind plans to clear a total of 79.5 acres on public land during construction. Tr. 12/1/2008 at 54–55 (Habig).

20. The Project will include a total of 4.9 miles of new roads and modified existing roads. Ridge roads are planned to be twenty-two (22) feet wide and access roads sixteen (16) feet wide. All roads are planned to be thirty-six (36) feet wide on curves. Tr. 12/2/08 at 206 (Krzanowski); *see also*, Krzanowski reb. pf. at 1–4; exhs. DFLD-JK-11 (Revised) and DFLD-JZ-30a.

21. Roads will be all-weather and will be designed in accordance with United States Forest Service ("USFS") standards, applicable Vermont standards, and relevant engineering principles including standards for slope, materials, erosion control and safety pullouts relative to the weight and size of equipment that must be transported over them. Where possible, the graveled riding surface after construction will be reduced to approximately 16 feet wide for routine maintenance over the long-term. Zimmerman pf. at 19–20; Krzanowski pf. at 6, 10–13; Krzanowski reb. pf. at 28–29; Habig Panel reb. pf. at 28–29.

22. The Searsburg facility's access road, with some modifications, will be used to gain access to the ridgeline and the new ridge road to be constructed in the eastern project area. Zimmerman pf. at 18; Krzanowski pf. at 20; exh. DFLD-JK-11 (Revised).

23. A new ridge road will be constructed through the eastern project area, leading from the existing access road. Zimmerman pf. at 18; Krzanowski reb. pf. at 1; exh. DFLD-JK-11 (Revised).

24. Deerfield plans to construct a new access road and ridge road. This road will connect to State Route 8 at Putnam Road. Deerfield Wind plans to widen and regrade this intersection. Zimmerman pf. at 19; Krzanowski pf. at 19–20; Krzanowski reb. pf. at 3; exh. DFLD-JK-11 (Revised).

25. Deerfield Wind intends to propose adjustments to the now-planned locations for turbines, roads, and other infrastructure to the extent possible during construction to further avoid impacts to bear-scarred beech trees where possible. Habig Panel reb. pf. at 11; tr. 12/2/08 at 26–28, 40–41 (Habig); exh. DFLD-JK-11 (Revised).

26. During construction, the Project will generate up to an average of 37 vehicular round trips per day. Approximately eight trips, the bulk in specialized vehicles, will be required to deliver the components of each turbine, including one trip for each of the four tower sections. During operations, the Project will generate approximately five trips per day on public roads. Exh. DFLD-HGC-5 at 3–4; Zimmerman pf. at 61.

27. The preferred transport route starts at the Interstate 91 exit at Route 9 in Brattleboro, proceeds west along Route 9 for 25.5 miles through Brattleboro/West Brattleboro, Marlboro, Wilmington, and Searsburg, then south along Route 8 to the Project access roads. The route is on the Vermont Truck Network for 25.5 miles; only the 2.5-mile segment on Route 8 is off the Truck Network. Exh. DFLD-HGC-5 at 5–6, Appendix A.

28. Deerfield Wind plans to construct the Project in a phased manner over a nine-month period during a single construction season. Deerfield Wind projects that constructing the Project in one season will have fewer environmental impacts. Nelson/Reinhart reb. pf. at 5; Zimmerman pf. at 32; tr. 12/2/08 at 253 (Kerlinger).

Other Project Attributes

29. Public access to the turbine sites will be limited in accordance with the conditions established in the Special Use Authorization issued by the USFS and any CPG requirements. The Project's access roads will be gated so that only service vehicles and authorized personnel may drive to the turbine sites. Tr. 12/2/08 at 156 (Goland); tr. 12/12/08 at 205–206 (Goland); Zimmerman pf. at 34.

30. The DEIS recommends imposing an "administrative closure order" to close the proposed wind facility roads and surrounding ridge-top areas adjacent to and underneath the turbines to all public uses, including foot traffic, unless specifically authorized. DEIS at 277.

31. Deerfield Wind plans to employ 2.5 permanent staff people to operate and maintain the plant. Exh. DFLD-TK-2 at 3; tr. 12/9/08 at 41 (Kavet).

32. A centralized Supervisory Control and Data Acquisition (SCADA) system will monitor the condition of Project equipment, alert service technicians to any fault or alarm conditions, record and sort data, and allow remote control of the turbines. Zimmerman pf. at 33.

33. Deerfield Wind entered into an agreement with the Town of Searsburg dated April 8, 2008, and an agreement with the Town of Readsboro dated August 20, 2008, each concerning the Project. The agreements each address tax and supplemental payments, communication protocols, remediation of construction impacts, potential impacts to private property, decommissioning, noise monitoring, fire protection services, and other contractual terms. Exh. Searsburg-SF-1; exh. DFLD-HGC-6.

34. The parties to these agreements request that the Board include the full terms of the agreements as conditions of this Order and CPG. Exh. DFLD-HGC-6 at 13; exh. Searsburg-SF-1 at 13.

35. The Project described above reflects modifications since the original proposal. The most significant changes are as follows:

- The number of turbines was reduced from as many as 24 down to 15, reducing the Project's capacity from a maximum of 45 MW to 30MW;
- The three southern-most turbines in the western project area were eliminated and an additional turbine added on the northern end of the western project area;
- The Project footprint was made more compact;
- Deerfield Wind now proposes to use Gamesa G80 and G87 2.0 MW turbines; and
- The amount of new roads, including ridgeline roads, was reduced.

The changes were principally designed to reduce the potential for impacts to black bear habitat.

Zimmerman pf. at 12; Zimmerman 2nd sup. pf. at 1–4; Habig Panel reb. pf. at 3–7; exhs. DFLD-JZ-4a-b, DFLD-JK-2, DFLD-JK-Rev 2, DFLD-JK-11 (Revised), and DFLD-JZ-30a-b.

V. SUBSTANTIVE CRITERIA OF SECTION 248(b)

Pursuant to statute, the Board is required to make positive findings related to criteria set out in 30 V.S.A. § 248(b) before we may issue a certificate of public good to a Project. Below, we address each of these criteria.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

Findings

36. The proposed Project will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. This finding is supported by Findings 37–54 below.

37. The Project will be located in the Towns of Readsboro and Searsburg, Vermont, which is in the Windham region of the state. Other towns within a ten-mile radius include Bennington, Dover, Halifax, Marlboro, Pownal, Shaftsbury, Stamford, Stratton, Whittenham, Wilmington, and Woodford. Zimmerman pf. at 46.

38. Deerfield provided forty-five day notice of the Project to the Readsboro and Searsburg Selectboards, as well as to the Windham and Bennington Regional Planning Commissions. All towns within a ten-mile radius of the Project were also provided notice. Zimmerman pf. at 43.

39. On March 3, 2008, residents of the Town of Searsburg voted 29-16 in favor of the proposed Project. Florence pf. (adopted by Kenney) at 5.

40. On April 8, 2008, the Town of Searsburg entered into an agreement with Deerfield that will provide the Town with annual mitigation and property tax payments based on fair market value and capacity of the Project. Florence pf. (adopted by Kenney) at 5–7.

41. On August 20, 2008, the Town of Readsboro entered into an agreement with Deerfield that will provide the Town with mitigation and property tax payments. Exh. DFLD-HGC-6.

42. On December 12, 2007, following a special town meeting, the selectboard of the Town of Wilmington voted to oppose the proposed Project. Streeter pf. at 4; exh. Wilmington-1.

43. The Wilmington Town Plan includes objectives which encourage the identification of scenic views and the siting of buildings so that views will not be obstructed. Exh. Wilmington-10 at 20.

44. The Wilmington Town Plan also includes objectives to encourage the development of renewable energy and specifically encouraging the implementation of wind and solar energy. Exh. Wilmington-10 at 22.

45. The existing Searsburg wind facility is a noted feature on the Route 9/Molly Stark Scenic Byway roadside markers. Vissering pf. reb. at 28–29.

46. The Windham region consists of 23 towns in Windham County; the neighboring towns of Readsboro, Searsburg, and Winhall in Bennington County; and Weston in Windsor County. DFLD-JV/MB-7 at 6.

47. The Windham Regional Plan ("WRP") identifies a set of regional goals that includes the development of renewable energy resources, and the availability of a reliable and sufficient energy supply. DFLD-JV/MB-7 at 4.

48. The "Land Use Policies" section of the WRP recommends the region avoid the extension of energy transmission or distribution facilities through undeveloped areas. This section also includes a policy to:

Construct corridors for new energy transmission or distribution facilities only when needed, and then only within or adjacent to existing operational energy transmission facility corridors to the maximum extent possible. Minimize their visual impact on ridgeline, slopes and open areas, and avoid important natural and historic resources.

DFLD-JV/MB-7 at 32.

49. The "Energy" section of the WRP encourages greater diversification of energy sources, reduction of air quality impacts and increased energy conservation and local self-sufficiency. The WRP describes energy conservation as including fostering the development of local sources and renewable energy sources and supporting more local electricity generation. DFLD-JV/MB-7 at 34-35.

50. The "Energy and Natural Resources" section of the WRP states that:

Wind is newly viewed as a natural resource as wind-powered electric generation is poised to expand across much of New England, but it carries with it potential impacts on wildlife, soils and groundwater, and on scenic resources.

DFLD-JV/MB-7 at 70.

51. The Natural Resource Policies section of the WRP includes policies to protect scenic landscapes and to illuminate structures only at levels necessary to ensure safety and security. DFLD-JV/MB-7 at 73.

52. The Project will be largely located in the GMNF. Zimmerman pf. at 6.

53. The GMNF Plan, adopted in 2006, includes standards related to visual quality objectives in the "Diverse Forest Use" area of the forest where the Project would be located. Exh. DPS-MK-1 at 15.

54. Operation of commercial wind farms is consistent with the Diverse Forest Use designation. Exh. DPS-MK-1 at 15-16.

Discussion

Section 248(b)(1) provides that, before the Board may issue a CPG for an in-state facility, the Board shall find that the facility:

will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality.⁷

The Town of Wilmington argues that the Project, because of its size and visibility, is not consistent with the Town Plan's objective of encouraging scenic views. The Town of Wilmington contends that locating lighted commercial scale wind turbines in this "bucolic Vermont landscape" will have a negative impact on tourism in the region.⁸ The Town of Wilmington also argues that the Project is not consistent with the public use and investment in the GMNF.

Deerfield argues that the Project will not unduly interfere with the orderly development of the Town of Wilmington or the surrounding towns in the region. Deerfield contends that while "strict conformance" with the WRP and neighboring town plans is not required for Board approval of the Project, the Project, nonetheless, is consistent with these plans. Deerfield points out that the Project is not located in the Town of Wilmington and that, "as the Town concedes,

7. Section 248(b)(1) contains additional provisions that only apply to natural gas transmission lines.

8. Town of Wilmington Brief at 6.

the Town Plan only applies to development activities within its borders."⁹ Deerfield also argues that the provisions of the WRP applicable to the Project are "general guidelines and recommendations for assessing development proposals" and, as such, do not "compel a particular outcome in this case."¹⁰ Deerfield argues that the Project must necessarily be located at high elevation to be commercially viable. Deerfield also contends that the Project will utilize the minimum amount of lighting required by Federal Aviation Administration guidelines to minimize visibility at night.

The Windham Regional Commission ("Commission") argues that the Project "does, in fact, conflict with certain specific policies in the Windhan Regional Plan, which is inevitable in the case of any development in sensitive areas, such as high elevation ridgelines."¹¹ However, the Commission argues, the Board in making a determination on the Project "must balance any such conflicts with the overall public good, including values such as production of renewable energy." The Commission also contends that the Project should be approved "if the Board otherwise finds the project to be economically viable" despite conflicts with the WRP.¹²

The Vermont Department of Public Service ("Department") argues that the Project will not interfere with the orderly development of the region or affect the activities on the land surrounding the Project.¹³ The Department notes that the Towns of Searsburg and Readsboro, where the Project is proposed to be located, have voted in favor of the Project. The Department argues that the WRP "does not constitute a clear, written policy on which to evaluate the Project for compliance."¹⁴ The Department also argues that the Green Mountain National Forest Plan "is not an appropriate community standard for the Board to rely upon in this proceeding."¹⁵

We conclude that the proposed Project will not unduly interfere with the orderly development of the region, and thus complies with Section 248(b)(1). We also find that the Project will not negatively impact activities that currently take place on the lands surrounding

9. Deerfield Brief at 41.

10. *Id.* at 42.

11. Windham Regional Commission Reply Brief at 1.

12. *Id.* at 2.

13. Department Brief at 15.

14. *Id.* at 15-16.

15. *Id.* at 16.

the Project. In particular, the two towns that will host the Project, and will be most directly affected, both support the construction of the wind generation facility. They have entered into agreements with Deerfield reflecting that support.¹⁶

Beyond the boundaries of Readsboro and Searsburg, the Project will have no direct impacts (except for traffic during construction); the only effect of the Project will arise from aesthetics. The Town of Wilmington argues that this visual impact will unduly interfere with the orderly development of the region because it may adversely affect tourism in the area. However, the Town has presented no evidence to support this assertion. To the contrary, the evidence suggests that the existing Searsburg wind facility has been a scenic attraction from nearby vantage points in surrounding towns; Deerfield's Project could draw visitors to the area.¹⁷

The Wilmington Town Plan encourages the protection of scenic views within the Town, but also encourages the development of renewable wind energy. It is true that the Project will be visible in the Town of Wilmington. However, the intrusion into the scenic landscape will not rise to the level of interfering with the orderly development of the neighboring towns or the region. The turbines will be located exclusively in the Towns of Searsburg and Readsboro and the majority of the aesthetic impact of the Project will be borne by these host towns. Views from Wilmington (and other neighboring towns) are only at a distance of greater than five miles. Moreover, while the statements in the town plans of neighboring towns are useful in defining the concerns of those towns regarding development within those towns, they are not controlling of development within the region or, particularly, in other towns.

We also conclude that the Project is consistent with the land use, energy and natural resource objectives identified in the WRP. The WRP encourages the development of locally produced renewable energy to meet some of the region's energy needs. The Plan also recognizes that there are "potential impacts on wildlife, soils and groundwater, and on scenic resources" associated with wind energy development.¹⁸ In order to mitigate the potential impacts of these facilities, the Board will impose conditions on the Project to minimize the impacts on the

16. Exhs. DFLD-HGC-6 and Searsburg-SF-1.

17. However, unlike the Searsburg facility where limited tourist access to the site is permitted, there will not be no tourist access to the Project site.

18. DFLD-JV/MB-7 at 70

surrounding region. We also note that the Project will need to comply with the standards related to visual quality objectives set forth in the GMNF Plan. Therefore, we conclude that the Project will not unduly interfere with the orderly development of the region.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

Findings

55. The Project is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy-efficiency and load-management measures, including, but not limited to, those developed pursuant to the provisions of Sections 209(d), 218c, and 218(b) of Title 30. This finding is supported by Findings 56–71, below.

56. The power produced by the Project is required to meet the demand for present and future service. Lamont pf. at 2.

57. Vermont currently relies on major contracts with Hydro-Quebec and Vermont Yankee for approximately two-thirds of its electricity. These contracts are due to expire within the next decade. Hausman pf. at 3; exh DFLD-EH-2 at 1–2.

58. As a result of these expiring contracts, Vermont utilities need to obtain new stably priced, long-term contracts to support a reasonably diversified supply portfolio in the future. In addition, the expiration of the Hydro-Quebec and Vermont Yankee contracts may expose Vermont ratepayers to increased fuel price risk unless they are replaced by stably-priced contracts. Hausman pf. at 3; exh. DFLD-EH-2 at 2; Smith pf. at 6.

59. The 2005 Vermont Electric Plan lists "ensur[ing] that Vermont's overall energy portfolio is sufficiently diverse" among the state's major energy priorities. Exh. DFLD-TK-2 at 20.

60. The Project could serve as a stably-priced source of power, because it will not be subject to fuel or emissions price volatility. Hausman reb. pf. at 6.

61. GMP and Deerfield have executed a Letter of Intent ("LOI") to negotiate a power purchase agreement (PPA) for 10 MW of the Project at a fixed price (identified in the LOI) for a 15-year term. Exhs. DFLD-HGC-9 and 10.

62. Act 61 established the goal of meeting statewide incremental load growth between January 1, 2005, and January 1, 2012, with renewable resources, and established a renewable portfolio standard that would take effect in 2013. Act 61 also created the Sustainably Priced Energy Enterprise Development ("SPEED") program to encourage renewable development. Under SPEED, the RPS would not take effect if all load growth between 2005 and January 1, 2012, was met by renewable resources (with a minimum of 10% of Vermont's 2005 load). The Project would contribute to meeting the SPEED requirement. Hausman pf. at 3–4; 30 V.S.A. §§ 8004 and 8005; exh. DFLD-2 at 5; Smith pf. at 4.

63. Vermont is located within a single, centrally-dispatched wholesale electricity market operated by ISO New England ("ISO-NE"). The availability of power anywhere in the region affects electricity prices throughout the region. Hausman pf. at 4.

64. According to the ISO-NE 2007 Regional System Plan, regional peak demand for electricity through 2016 is expected to grow at a compound annual rate of 1.7% per year, or about 500 MW per year. Exh. DFLD-TK-2 at 22.

65. The revised 15-turbine project is expected to produce an average of 92,500 MWh per year, which could meet the power demand of more than 12,500 Vermont homes. Exh. DFLD-TK-2 at 2; tr. 12/9/08 at 9–10 (Kavet).

66. Renewable portfolio standards now implemented in many New England states drive a strong demand for Renewable Energy Credits ("REC"). Hausman pf. at 3; Thomas/Lamont pf. at 2–3;¹⁹ tr. 12/9/08 at 91–92 (Hausman); exh. DFLD-2 at 3–4.

67. Currently proposed renewable generation projects are expected to be insufficient to meet the present regional renewable portfolio standards in future years. Tr. 12/9/08 at 265 (Lamont); exh. DFLD-TK-2 at 23.

68. The RECs produced by the Project would qualify to satisfy renewable portfolio standards in any state in the New England region. Hausman pf. at 4.

69. The Project may also contribute to achieving compliance with the Regional Greenhouse Gas Initiative ("RGGI"), by displacing fossil fuel generation. Under RGGI, CO₂ emissions from the electric power plants are capped. Thomas/Lamont pf. at 4.

19. The testimony was originally filed by Douglas Thomas on behalf of the Department. David Lamont subsequently adopted the testimony and sponsored it during the hearing. Lamont pf. reb. at 1. It is referred to herein as Thomas/Lamont pf.

70. Deerfield is not an electric distribution utility and is not required to implement energy efficiency or energy conservation programs. Zimmerman pf. at 50.

71. Because Deerfield does not sell electricity directly to retail customers, it is not required to implement load-management programs. Zimmerman pf. at 50.

Discussion

Section 248(b)(2) of Title 30 requires that the Board find that the proposed project:

is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy-efficiency and load management measures, including but not limited to those developed pursuant to the provisions of sections 209(d), 218c, and 218(b) of this title.

The Petitioner contends that the Project meets this criterion. Deerfield maintains that it is a merchant plant which will help meet regional needs for both energy and renewable power. According to Deerfield, the Project also may meet Vermont needs, citing to the letter of intent to sell a portion of the power to GMP. The Department echoes these arguments and adds that, because Deerfield is under no obligation to implement energy efficiency, energy conservation, or load-management programs, the need for the Project cannot be met by such means.

SVR and IWAG contend that the Petitioners have not demonstrated compliance with the need criteria. In particular, SVR and IWAG assert that it would be more cost-effective for Vermont to invest in energy efficiency measures and that, therefore, the Project is not needed. These parties also observe that Vermont is now experiencing flat or reduced load growth.

The proposed Project is not owned by a Vermont utility and will not provide retail service, but is rather a merchant plant offering power on the wholesale market. In several Orders, the Board has addressed the applicability of the Need criterion to merchant power plants, concluding that:

"the general good of the state" standard includes a recognition of the value to Vermont of the benefits to the entire New England Power Pool, from which Vermont purchases much of its power and upon which Vermont depends for reliability.²⁰

20. Docket 6545, Order of 6/13/02 at 106; Docket 6812, Order of 3/15/04 at 21; Docket 7156, Order of 8/8/07 at 29.

The Board found that, due to the regional nature of the power pool, a project that addresses regional need for power would comply with the statutory standard.²¹ This standard recognized the fact that the developer of a merchant plant had no obligation to provide energy efficiency and load-management services.

Here, we find that the Project would provide power that is needed by the region. The Project will add to the pooled resources that serve the region and should thereby contribute to lowering the wholesale price of power, which should, in turn, lead to lower retail costs for Vermont consumers. Thus, although there may not be a specific need in the short term for power in Vermont, the Project ultimately serves Vermont needs even without purchases by Vermont utilities.

As a renewable energy facility, the Project will also contribute to meeting the regional and state needs for renewable power. The RECs produced by the Project are available for sale in New England. The addition of the wind facility would also help the State meet the SPEED requirements under 30 V.S.A. § 8005. Additionally, Deerfield has entered into a Letter of Intent with GMP to sell a portion of the power directly to it; this would provide additional power to GMP and assist it in meeting its renewable energy requirements under 30 V.S.A. § 8004. Further, the Project will help the region to attain the goals of the RGGI program.

These factors lead us to conclude that the Project would contribute to both Vermont and the region's need for power generally and renewable power specifically, needs that cannot be met through energy efficiency, conservation, or load-management measures.

21. Docket 6812, Order of 3/15/04 at 21–22.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

Findings

72. The Project will not adversely affect system stability and reliability. This finding is supported by Findings 73–80, below.

73. The Project will utilize a number of systems to isolate itself from the power grid in the event of equipment failure. These systems include the ability to disconnect from the transmission line in the event of ground faults, phase faults, over-current faults, under- and over-voltage faults, under- and over-frequency, and system imbalance. Zimmerman pf. at 51.

74. The proposed turbines will have power electronics which provide soft-start capabilities to reduce starting surges, to ride through short-term voltage dips, and provide or consume reactive power to improve voltage regulation on the 69 kV transmission system. Zimmerman pf. at 51.

75. The Project will be interconnected to the Vermont 69 kV transmission system via a three-breaker ring bus configuration, which will improve reliability of the transmission line. Control and protection systems for the wind facility will be designed and installed consistent with the transmission line owners' recommendation after consultation with Deerfield. Estey pf. at 10.

76. The project interconnection alternatives have been reviewed and a Feasibility Study (January, 2006) conducted by National Grid and ISO-NE with cooperation from GMP, VELCO, and ISO-NE based on the original 45 MW project. The results of the study concluded that the 69 kV lines were generally adequate to accommodate the 45 MW project. Estey pf. at 7–8, Zimmerman pf. at 51, exh. DFLD-DE-9.

77. A System Impact Study ("SIS")(January, 2008) was conducted for ISO-NE in accordance with the NEPOOL Minimum Interconnection Standards and NEPOOL Reliability Standards. This study was based on the original 45 MW project size. Exh. DFLD-DE-11.

78. Typically, reliability and stability impacts resulting from a generation addition are significantly influenced by project size. The current reduced project size should not affect system stability or reliability any more than the original proposal. Estey supp. pf. at 3.

79. The final SIS for the revised project is expected in April of 2009. Tr.12/1/08 at 51 (Habig).

80. ISO-NE will require Deerfield to be responsible for the cost of any transmission modifications to accommodate the load generated by the project should the final SIS conclude that such modifications are needed. Zimmerman pf. at 50–51, Habig Panel reb. pf. at 25.

Discussion

Deerfield has stated that the Project will not adversely impact system stability and reliability. It has also represented that ISO-NE will not allow Deerfield to interconnect with the 69 kV transmission system until Deerfield has implemented any required modifications to ensure that the Project would not adversely impact system stability and reliability.

The evidence supports Deerfield's contention that the Project will not have an adverse impact upon system stability or reliability, provided that Deerfield performs all of the system upgrades required by ISO-NE and VELCO. As these upgrades are necessary to our finding, this Order requires Deerfield to submit the final SIS study along with any interconnection and substation plans to the Board and parties prior to any construction activities. Parties will have two weeks to file comments on the SIS study. We also require Deerfield to implement any changes determined necessary by ISO-NE or VELCO to ensure system stability and reliability and to pay any costs associated with measures designed to ensure that the project does not adversely affect system stability and reliability.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

Findings

81. The revised Project will result in an economic benefit to the State and its residents. This finding is supported by Findings 82–123, below.

82. The Project will result in the creation of new jobs, increased tax revenue, Federal land lease payments and other direct and indirect benefits (including, for example, reduced carbon emissions). Hausman pf. at 6; exh. DFLD-TK-2 at 3.

83. Deerfield performed an analysis using a regional input/output and econometric model (REDYN). Based on this analysis, the Project is projected to result in the following economic gains:

- \$15 million in State economic output during the construction/development phase;

- \$850,000 in ongoing annual disposable income gains;
- More than \$750,000 in State General and Transportation Funds during the construction/development phase, and \$4 million over the 20-year life of the Project;
- Direct State and local property tax payments of approximately \$700,000 per year, including Education Fund property taxes pursuant to 32 V.S.A. § 5402c – Wind-powered electric generating facilities tax;
- Federal land lease payments of about \$210,000 per year;
- Employment gains in the State of approximately 250 jobs during construction – about half of these in Bennington and Windham counties; and
- 9 in-state jobs during the operational phase – at least 5 of these expected to be in Bennington and Windham counties.²²

Exh. DFLD-TK-2 at 4.

84. Deerfield entered into an agreement with the Town of Searsburg whereby Deerfield will make guaranteed annual payments to the Town of \$240,000 (local taxes and mitigation payments combined). Exh. Searsburg-SF-1. This sum represents a payment of more than \$2,500 per resident per year, based on the estimated 2006 Town population, roughly equal to the Town's entire current annual budget. Florence (adopted by Kenney) pf. at 6–7; exh. DFLD-TK-2 at 4.

85. Deerfield entered into an agreement with the Town of Readsboro whereby Deerfield will make guaranteed annual payments to the Town of \$154,000 (local taxes and mitigation payments combined), and higher payments in any year in which the calculation of property taxes exceeds \$154,000 during the life of the Project. Exh. DFLD-HGC-6.

86. Deerfield's economic analysis finds that both income and related economic metrics for both Readsboro and Searsburg are below State and County averages. Consequently, the projected economic benefits of the Project will likely provide enhanced fiscal, economic, and social value for those communities. Exh. DFLD-TK-2 at 4,10-11.

Purchase Power Agreements

87. Currently, Deerfield does not have an executed purchase power contract with any electric distribution utility. Deerfield and GMP have executed a Letter of Intent ("LOI") to negotiate a power purchase agreement ("PPA"). The LOI specifies the material terms to be

22. Out of the 5 jobs projected for Bennington County, 2.5 positions are expected to be permanent direct hires resulting from the Project, and 2.5 indirect positions. Tr. 12/09/08, vol. I at 41-42 (Kavet).

negotiated, including duration, price, and quantity. Annually for 15 years, GMP would buy 10MW representing one-third of the Project's anticipated output. The price would be fixed at a rate specified in the LOI. Tr. 12/01/08, vol. I at 277—278 (Habig); exh. DFLD-HGC-9; exh. DFLD-HGC-10 (conf.); tr. 12/09/08, vol. I at 132–136 (Smith).

88. Long-term, stably-priced contracts for the sale of a portion of the Project's output to Vermont's electric utilities would result in an economic benefit to the State by providing a degree of certainty and stability in the electric rates paid by Vermont ratepayers, supply a hedge against volatile fossil fuel prices and air emission costs, and assist Vermont utilities in meeting their SPEED requirements under 30 V.S.A. § 8005. Thomas/Lamont pf. at 7–9; Lamont reb. pf. at 3.

89. A stably-priced power contract with a Vermont electric distribution utility would be consistent with both prudent procurement practice and Vermont's statutory renewable energy goals, which favor "affordable, long-term, stably-priced renewable energy contracts that mitigate market price fluctuations for Vermonters." 30 V.S.A. § 8001; exh. DFLD-EH-2 at 3.

90. GMP has acquired power from several renewable energy resources – the Moretown landfill gas facility, the McNeil Generating Station emissions reduction program, and several farm methane projects. These projects do not yet meet the 5% renewable threshold established by State statute and GMP is actively engaged in procuring additional sources. Tr. 12/9/08, vol. I at 134–135 (Smith).

91. By creating more discrete segmentation of one of southern Vermont's transmission lines, the interconnection of the Project will create a reliability benefit to GMP. Tr. 12/9/08, vol. I at 138 (Smith).

Avoided Emissions

92. Vermont has ratified an agreement among the New England states called the Regional Greenhouse Gas Initiative ("RGGI"). Under RGGI, CO₂ emissions from the electric sector are capped at a specified level. In order to emit CO₂, a fuel burning facility will have to purchase a certificate allowing it to do so. Thomas/ Lamont pf. at 4.

93. One of the economic benefits of a non-emitting source under RGGI is that it will contribute toward lowering the price for emissions certificates, which will make it easier to meet targets and may result, over the long run, in policymakers reacting more favorably to lowering

the emissions cap and reducing the number of certificates issued within the region. Thomas/Lamont pf. at 4–5; Hausman reb. pf. at 3–5.

94. Because CO2 emissions under RGGI are capped, assigning a monetary value to emissions reductions for a specific project may not be appropriate. Reduced CO2 emissions occur as a result of policymakers making adjustments to the cap and not as a result of any given non-emitting project. Thomas/Lamont pf. at 4–5.

95. If renewable generation facilities are not constructed, meeting the RGGI cap will be more difficult and more expensive. Renewables, particularly wind, represent one of the lowest-cost approaches to meeting the cap. Tr. 12/9/08, vol. I at 161 (High).

96. Both demand-side management and wind generation are part of a strategy to reduce air emissions and greenhouse gases. To drastically reduce greenhouse gas emissions, both demand-side efficiency and renewable, non-emitting energy generation are essential; a choice between one approach or the other is insufficient. Tr. 12/9/08, vol. I at 152–153 (High).

Property Values and Tourism

97. There is no empirical basis to assume that the revised 15-turbine project will have any negative impacts to aggregate town, county-wide, or regional real property values. Kavet reb. pf. at 11–16; tr. 12/9/08, vol. I at 30–34 (Kavet).

98. For tax purposes, the Town of Wilmington does not reduce the appraised value of properties that have views of the Searsburg turbines; it does not maintain records of which properties have such views. No Wilmington taxpayer has appealed his property tax assessment based on visibility of the Searsburg turbines. Exh. Wilmington-12 at 2.

99. There is no empirical basis upon which to expect a significant adjustment – positive or negative – to likely tourism visitation or expenditures at the town, county, or regional levels as a result of the Revised 15 Turbine Project. Kavet reb. pf. at 6–11.

100. There is some evidence that a number of wind farms in the U.S. and abroad, including the Searsburg facility, have become tourist attractions. In the absence of formal plans to promote the proposed Deerfield Project as a tourist destination, however, there is no indication that it will have any measurable impact on aggregate tourism visitation or expenditures in the region. Kavet reb. pf. at 7–8.

Broadcast Interference – Duncan Cable TV Service

101. Duncan Cable TV Services ("DCTV") provides service to approximately 2,800 customers in the Towns of Wilmington, Dover and Stratton. Duncan pf. at 1.

102. DCTV's headend facility is located in the Town of Wilmington, approximately 8 miles away from the closest Project turbine. Exh. DFLD-LP-2 at 2.

103. Deerfield evaluated the likelihood that the Project would cause material interference to reception at the DCTV headend. A wind generation facility could theoretically cause three types of interference: electro-static interference, electro-magnetic interference, and electro-mechanical interference. Polisky reb. pf. at 3–5.

104. Electro-static interference is caused only when extremely high voltages, normally greater than 100,000 Volts, are in very close proximity (within less than 1,000 feet) to the affected device. The Project wind turbines will be located more than eight miles from the DCTV headend, and produce voltages of less than 1,000 Volts, converted by the transformer in the turbine nacelle to 34,500 Volts. At that distance and voltage, the Project is not likely to cause electro-static interference at the DCTV headend. Polisky reb. pf. at 3.

105. Devices that can cause electromagnetic interference are regulated by the Federal Communications Commission ("FCC"). FCC regulations mandate emission limits stated at a distance of 3 meters or approximately 10 feet. The Project's wind turbine generators are not likely to cause electromagnetic interference if they comply with these FCC rules. Even if electromagnetic emissions from all Project wind turbine generators reach the FCC rule limits, the emission levels at the DCTV headend earth station antennas more than eight miles away would be several orders of magnitude below the sensitivity of the earth station receivers. Polisky reb. pf. at 5; tr. 12/3/08, vol. I at 77 (Polisky).

106. Electro-mechanical interference is caused by the physical obstruction of the broadcast signal. Given the location of the Project relative to the DCTV headend, Project turbines could physically obstruct broadcast signals received at the headend only in one 18.5 degree sector from relative azimuths of 262.5° - 281°. Polisky reb. pf at 4, 7; exh. DFLD-LP-2 at 5.

107. None of the satellites from which the DCTV headend receives signals transmit in the 18.5 degree sector in which physical obstruction of signals could occur. The Project therefore is not likely to cause electro-mechanical interference with reception at the headend of any signals from satellites. Polisky reb. pf. at 8–9; exh. DFLD-LP-3; Chase pf. at 6.

108. DCTV receives off-air transmissions from the Boston, Massachusetts, and Albany, New York, areas. Off-air transmissions from Albany may be within the 18.5 degree sector in which physical obstruction of signals could occur, as Albany is located at approximately 263 degrees relative azimuth from the DCTV facility. Duncan pf. at 2; Chase pf. at 4.

109. Physical obstruction of TV signals by turbines in this 18.5 degree sector could cause a maximum signal attenuation of 2.5 dB. This figure was based on pre-build and post-build measurements at multiple wind generation facility sites. Polisky reb. pf. at 4, 9; exh. DFLD-LP-2 at 5.

110. Deerfield calculated the "signal margin" at the DCTV headend, meaning the amount by which signal levels received at the headend exceed the minimum level required to provide quality rebroadcast service. DCTV's signal margins are estimated at 30 dB for UHF service, 32 dB for high-VHF service, and 31 dB for low-VHF service. Tr. 12/3/08, vol. I at 121 (Polisky); exh. DFLD-LP-2 at 4–5.

111. Deerfield did not take field measurements of signal levels at the DCTV headend. DCTV's signal levels were calculated based on assumptions regarding the likely configuration of the DCTV system. Tr. 12/3/08, vol. I at 121 (Polisky); tr. 12/3/08, vol. I at 66 (Polisky).

112. Deerfield calculated DCTV signal levels using methods that have been accepted and proven accurate in the telecommunications industry. Field measurements at multiple wind generation facilities further support the accuracy of Deerfield's methods. Tr. 12/3/08, vol. I at 93–94, 122 (Polisky).

113. Deerfield's estimates of DCTV signal levels are also consistent with the fact that TV cable systems are typically configured with at least a 20 dB margin. Tr. 12/3/08, vol. I at 68–69 (Polisky).

114. Given DCTV's current signal margins, the potential 2.5 dB attenuation of signals transmitted over-the-air from the Albany, New York, area will likely have no measurable effect on the quality of these signals as received at the DCTV headend. Polisky reb. pf. at 7–8; Chase pf. at 5.

115. The impact of any electromechanical interference that may be caused by the revised 15-turbine project will be reduced in June, 2009, when all off-air TV broadcast signals are converted to digital modulation as required by federal law. Analog modulated TV signals are

more sensitive to electromechanical interference than digital modulated TV signals, which are more robust. Polisky reb. pf. at 4; tr. 12/3/08, vol. I at 70–71 (Polisky).

116. During the transition to digital, some stations may temporarily operate at reduced power levels, but will revert to operation at full licensed power after the transition is complete. Tr. 12/3/08, vol. I at 96, 123 (Polisky); exh. DFLD-LP-4.

117. If the revised 15-turbine project does cause material interference to reception at the DCTV headend, remediation is possible by commercially practicable means, and could be accomplished within a few days to a few weeks. Means of remediation include installation of larger antennas, more sensitive receivers, or new facilities to receive services from satellite broadcasts; the installation of a signal repeater outside the 18.5 degree zone of potential interference; or the use of an independent microwave or fiber private channel. Deerfield is willing and intends to perform remediation as necessary. Chase pf. at 7; tr. 12/3/08, vol. I at 111 (Polisky); tr. 12/12/08, vol. I at 195–197 (Goland).

118. Pre-construction measurements of DCTV signal levels would be useful to establish a baseline that Deerfield and DCTV could reference post-construction to determine whether any reported reception problems at the headend are caused by the Project. Deerfield is willing to perform such a preconstruction baseline study and would accept a permit condition requiring it to do so. Tr. 12/3/08, vol. I at 58, 116 (Polisky); tr. 12/12/08, vol. I at 196 (Goland).

TV Interference - Residential

119. Deerfield also assessed whether the revised 15-turbine project will cause interference with off-air, i.e. broadcast, television reception at residences in the vicinity of the Project. Polisky reb. pf. at 3–5.

120. All residences are located at least one-half mile from the proposed Project, outside the range of electro-static and electro-magnetic interference, thus the Project is not likely to produce noticeable interference for off-air, broadcast services. Polisky reb. pf. at 3–5; Chase pf. at 6.

121. It is possible that some residences in close proximity to the revised 15-turbine project (within 1–2 miles) will experience electro-mechanical interference with off-air television reception of one or two channels. Polisky reb. pf. at 4; tr. 12/3/08, vol. I at 108–109 (Polisky).

122. Typical residential reception equipment is different from and less powerful than that used at a cable headend. Residential equipment also may be more difficult to configure so that

signals may be weaker. A residence would typically receive a lower signal level than a cable TV headend in the same location. Tr. 12/3/08, vol. I at 62, 68, 80, 106–108 (Polisky).

123. Any interference to residential reception that does occur can be mitigated by, for instance, repositioning antennas, or upgrading antennas and cables. Deerfield is willing and intends to perform such remediation as necessary. Polisky reb. pf. at 7; tr. 12/3/08, vol. I at 109 (Polisky); tr. 12/3/08, vol. I at 162, 171 (Chase); tr. 12/12/08, vol. I at 195–197 (Goland).

Discussion — Economic Benefit

Under this criterion of Section 248, the Board is required to find that the Project would result in an economic benefit to the State of Vermont. Section 248 does not require us to quantify exactly how much economic benefit the State would receive from the Project but only determine that there will be some economic benefit.²³ However, Section 248 also requires the Board to make an overall determination as to whether the Project promotes the general good of the State. In making this determination, we must weigh the impacts and benefits of the Project and find that the benefits outweigh the impacts. Some of the parties opposed to the Project presented essentially four arguments to show that any economic benefits of the Project, as proposed, do not outweigh the impacts.

First, both IWAG/SVR and the Town of Wilmington argue that the Project poses an undue adverse impact on real property values and tourism visitation at the town and county level. Both parties contend that Deerfield relied heavily on limited and faulty statistical data, and that Deerfield drew inaccurate conclusions and comparisons from that information concerning properties which were part of the study and properties located near the Project. As described below, we conclude that there is no empirical evidence to indicate that the Project would result in such impacts and, to the extent that such impacts arise, we have adopted a condition that would require Deerfield to mitigate them.

Second, IWAG/SVR and Wilmington also contend that certain economic benefits asserted by Deerfield Wind in the form of new job creation and increased tax revenues are overstated and unsubstantiated. For the reasons described below, we conclude that the Project will

23. Docket 6812, Order of 3/5/04 at 45.

result in economic benefits in the form of jobs created and increased fiscal revenues for the State and the Towns of Searsburg and Readsboro.

Third, DCTV contends that the Project will cause undue interference with television signal reception at its headend facility in Wilmington causing financial harm to both DCTV and its customers. As we outline below, there is no evidence to indicate that the Project will generate undue levels of interference sufficient to adversely affect signal reception at DCTV's headend; however, in the event that interference does occur the conditions we adopt will require Deerfield to remediate it.

Lastly, the Department argues that a positive determination under this criterion should not be made in the absence of a stably-priced power contract between Deerfield and Vermont's distribution utilities. Such a contract(s), the Department argues, should be for a substantial portion (at least 75%) of the power generated by the Project.²⁴ For the reasons described below, we conclude that long-term, stably-priced contracts for the sale of a substantial portion of the Project's output to Vermont's electric utilities will be necessary in order for the Project to result in an economic benefit to the State.

Property Values and Tourism

There is no indication that the Project will cause a negative impact to real property values or to tourism. Concerns expressed by IWAG/SVR, the Town of Wilmington, and individuals who participated in this case were not supported by rigorous analysis or empirical evidence. Indeed, Wilmington concedes that it was unable to produce or rely upon any data or studies on the impacts of existing wind generation facilities on tourism or property values.²⁵ To the contrary, the most recent and significant research appears to indicate that wind projects have not negatively impacted property values.²⁶ Because we find no basis to conclude that property values may be affected, we reject IWAG/SVR's proposed condition that Deerfield be required to provide property value guarantees to property owners located within one mile of the Project.

24. Department Reply Brief at 3, 5.

25. Exh. Wilmington-12 at 2.

26. Exh. DFLD-TK-2, exh. DFLD-TK-3.

Likewise, there is no empirical evidence that wind projects reduce tourism visitation or expenditure. The experience of the Searsburg facility over the past 10 years is informative on this issue – that facility has served as a tourist draw and there has been no documented decline in property values resulting from the project.²⁷

Jobs and Tax Revenue

The Project will provide tax revenues, jobs, and other direct and indirect economic benefits during construction and operation. These benefits have the potential of amounting to millions of dollars in State economic output, disposable income gains, State and local tax revenues, and other payments.²⁸ In particular, the Project will produce a significant number of jobs during construction and several permanent jobs after operations begin. The direct employment will, in turn, lead to additional economic activity and further secondary employment.

The Towns of Readsboro and Searsburg also stand to gain substantially from annual guaranteed payments from Deerfield in the amounts of \$154,000 and \$240,000 respectively, when compared against the Towns' annual property tax revenues.²⁹ Although some Vermont towns would consider such amounts relatively small in comparison to their annual budgets, the amount to be paid to Searsburg, for example, is roughly equal to that town's current annual budget of approximately \$251,000.³⁰ As an additional comparison, Readsboro has recently considered the sale of its municipal electric utility for approximately \$217,050,³¹ whereas the annual guaranteed payment from Deerfield is nearly two-thirds of that amount. In addition, Deerfield's economic analysis indicates that both income and related economic metrics for both Readsboro and Searsburg are below State and County averages. Based on these facts, we agree

27. *Id.* at 6–11; exh. DFLD-TK-2 at 30–33.

28. Hausman pf. at 6; Florence (adopted by Kenney) pf. at 6–7; exh. DFLD-TK-2 at 2–4.

29. Exh. DFLD-TK-2 at 4; Readsboro Brief at 1–2; Searsburg Brief at 2–3.

30. Florence pf. at 6.

31. Docket No. 7480, Order of 01/08/09 at 4.

that the Project will likely provide enhanced fiscal, economic, and social value for those communities.³²

Television Interference – Duncan Cable TV Service

There is no indication that the Project will interfere with television signal reception at the DCTV headend facility in Wilmington or interfere with residential off-air, broadcast television reception. Although wind turbines have the potential for interfering with television signals, the studies performed for the Project suggest that the Project will not cause interference at the DCTV headend.³³ Moreover, to the extent that the Project may cause interference at the DCTV headend or with off-air broadcast reception at residences in close proximity to the Project, such interference can be remediated quickly by commercially practicable means.³⁴

To ensure that the Project does not interfere with DCTV's reception, the Department and Deerfield jointly recommend that we include the following conditions in granting a CPG for the Project:

Prior to commencement of construction, Deerfield Wind will conduct a study of reception quality at the Duncan Cable TV Service ("DCTV") headend facility in Wilmington, Vermont, and provide a copy of this study to the Board, the Department of Public Service, and DCTV.

The study will measure and document the signal strength and video quality received off-air at the DCTV headend of analog and digital television stations of sufficient quality for commercial distribution (defined as having at least 20 dB carrier to noise ratio), and the signal strength received at the DCTV headend of each FM radio station DCTV distributes to its subscribers as of the date of the study.

Signal levels will be measured using a commercially available test antenna with a known gain figure.

The study will include a one-minute recording of each measured television channel and radio station.

Measurements and recording will be conducted no more than 45 days prior to commencement of construction.

32. Kavet reb. pf. at 4–5; exh. DFLD-TK-2 at 4, 10–11.

33. Polisky reb. pf. at 3–9.

34. Chase pf. at 7; tr. 12/3/08, vol. I at 111 (Polisky).

DCTV shall allow Deerfield Wind access to the DCTV headend facility as necessary to conduct the baseline study with at least 7 days advance notice. DCTV personnel shall be permitted to observe all measurements and recordings taken at the DCTV headend facility.

Deerfield Wind will provide at least seven days notice to DCTV prior to commencement of commercial operation of the turbines. Deerfield Wind will remediate any material interference at the DCTV headend facility that is caused by operation of the Project. Within two weeks of receipt of a complaint, Deerfield Wind will complete an interference measurement study for the DCTV headend facility, and provide a copy of this study to DCTV, the Department of Public Service and the Board. Deerfield Wind may seek an extension of this time frame for good cause. If the interference measurement study demonstrates that the Project is causing material interference at the DCTV headend facility, Deerfield will at the same time submit a plan and schedule to remediate any material interference to DCTV, the Department of Public Service and the Board. Deerfield Wind shall complete remediation within two weeks of the date it submits any such remediation plan, and shall submit to DCTV, the Department of Public Service and the Board a report demonstrating the elimination of the interference upon completion of the remediation work. Deerfield Wind may seek an extension of this timeframe for good cause.

Deerfield Wind and DCTV shall make good faith efforts to resolve amongst themselves any disputes concerning the methodology for investigating or remediating a complaint, or the time frame for completion of remediation. Unresolved disputes may be taken to the Board for resolution, and will be processed by the Board in an expedited manner.

During operation of the Project, Deerfield Wind shall investigate complaints of Project-related interference with television broadcast signals received at any residence. Deerfield Wind will use commercially practicable efforts to remediate material interference experienced at any residence affected by the Project. Deerfield Wind and the affected homeowner(s) shall make good faith efforts to resolve amongst themselves any disputes concerning the methodology for investigation or remediating a complaint, or the time frame for completion of remediation. Unresolved disputes may be taken to the Board for resolution.³⁵

This condition will establish baseline measurements of the current cable television reception. In the event that a question arises as to whether the Project has interfered with DCTV's signal, the proposed condition would require Deerfield to investigate the interference and remediate it. The same investigation and remediation duty also applies to complaints from individuals about

35. Department Reply Brief at 5–6.

interference with television broadcast signals. We find this condition to be reasonable and adopt it.

Power Purchase Contracts

One of the primary economic benefits that generation facilities can provide to Vermont and its ratepayers is favorably priced electric power. Obviously such contracts are not necessary for a finding that a project has an economic benefit. However, where the generation facility has impacts on the State, a beneficial contract for the sale of power becomes an important element in our determination not only of economic benefit, but also of whether the project's benefits outweigh its other impacts and thus promotes the general good of the State. In the UPC Vermont Wind case, the fact that UPC Vermont Wind had entered into a power purchase agreement with Washington Electric Cooperative, Inc., and an agreement in principal with Vermont Electric Cooperative, Inc., made it substantially easier for us to determine that the project would promote the general good.³⁶

Here, Deerfield proposes to sell the renewable power produced from the Project to Vermont utilities; however, Deerfield has yet to enter into any such agreements with any utilities. This has made it more difficult for us to determine that the Project promotes the general good since the Project clearly has adverse environmental impacts. While the Project has tax and employment benefits, we do not find these to be adequate to outweigh the environmental impacts. Our determination that the Project will have sufficient economic benefits is greatly dependent upon the terms of those power contracts.

The Department contends that the Project will not promote the public good without power contracts that have rates, terms and conditions that result in price stability for the purchasing utilities and recommends that we condition any approval of the Project on the requirement that "Deerfield sell a certain percentage of the output from the Project to Vermont's utilities" ³⁷ The Department further contends that in order to ensure that Vermonters are properly compensated for bearing the burden of hosting the facility, Deerfield must be required

36. Docket No. 7156, Order of 08/08/07 at 35–36.

37. *Id.*

to try and commit to contracts with Vermont's utilities for at least 75% of the Project's output.³⁸ The Department and Deerfield are in agreement on the proposed CPG condition to require the sale of a portion of the Project's output to Vermont utilities, but disagree on the amount of power to be sold to those utilities.³⁹

IWAG/SVR opposes issuance of a CPG conditioned on post-certification execution and Board review of power purchase agreements with Vermont utilities based in part on whether or not Deerfield is able to show that such contracts will comply with § 248 (b)(2). IWAG/SVR argues that the Board should either deny the CPG or keep the Docket open until such time as Deerfield is able to produce an executed power purchase agreement or verify compliance with § 248 (b)(2).⁴⁰

Deerfield recognizes that in order to promote the public good and meet the statutory renewable energy goals, some portion of the Project's power output should be sold in-state at stable prices.⁴¹ However, Deerfield disagrees with the Department's proposed CPG condition to sell at least 75% of the Project's capacity to Vermont utilities under long-term stably-priced contracts. Deerfield contends that the Department's recommendation seeks to extract additional economic benefits from the Project beyond what is sufficient to satisfy § 248 (b)(4).⁴² Deerfield argues that there is no evidence or testimony before the Board to support the imposition of a 75% in-state requirement.⁴³ In the alternative, Deerfield proposes two CPG conditions requiring in-state sale of 30% of Project power under stably-priced contracts with the further requirement that Deerfield make good-faith efforts to negotiate for the sale of additional power in-state above the 30% level.⁴⁴

Deerfield Wind shall enter into long-term, stably priced power contracts with Vermont utilities for at least 30% of the Project's power output. In addition,

38. Department Reply Brief at 3.

39. *Id.*

40. *Id.*

41. Deerfield Reply Brief at 9.

42. *Id.*

43. *Id.*

44. *Id.*

Deerfield Wind shall make good faith efforts to enter into such contracts for project output above the 30% level, including but not limited to offering Vermont utilities the right of first refusal on such power contracts. Deerfield Wind shall provide an update of any negotiations with Vermont utilities 90 days after the date of this Order.

Prior to commencement of construction, Deerfield Wind shall file any such contracts entered into with Vermont utilities for Board review to determine if the contracts contain appropriate terms and conditions, including price stability, to promote the general good of the State of Vermont. Along with the contracts, Deerfield Wind must also file an explanation as to how the contracts promote the general good of the State. If, after good-faith efforts on the part of Deerfield Wind and the utilities, Deerfield Wind cannot obtain in-state power contracts as specified above for Project output above the 30% level, it shall file a statement explaining why an agreement cannot be reached and why the Board should modify or remove this requirement.⁴⁵

Deerfield asserts that such conditions are consistent with the condition imposed by the Board in UPC Vermont Wind, and strikes an appropriate balance between securing in-state benefits for Vermont ratepayers and the recognition that power contracts are a matter of arms-length negotiations.⁴⁶ In addition, Deerfield argues that regardless of whether or not it contracts with Vermont utilities, the power generated by the Project will remain within the ISO-NE system providing benefits of renewable generation to all residents of the New England region including Vermont.⁴⁷ Deerfield also argues that IWAG/SVR's opposition to a CPG conditioned on post-certification and Board review of the power purchase agreements should be rejected by the Board since this approach was recently upheld by the Vermont Supreme Court in *In re Amended Petition of UPC Vermont Wind, LLC*, 2009 VT 19, – A.2d –, 2009 WL 279971 (Vt.).⁴⁸

Finally, Deerfield contends that it has reached essentially the same point in its power sale negotiations as had UPC Vermont Wind at the time it was issued a CPG for the construction of that project.⁴⁹ In that case, UPC Vermont Wind had reached a Memorandum of Understanding

45. *Id.* at Appendix A.

46. *Id.*

47. *Id.*

48. *Id.*

49. *Id.* at 8.

with Vermont Electric Cooperative, Inc., which stated the intent of the parties to negotiate a purchase power agreement.⁵⁰ Similarly, Deerfield points out that it is currently engaged in contract negotiations with GMP under the LOI.⁵¹ Deerfield argues that under the terms of the LOI, "the Project would provide power to GMP at a long term fixed price, hedging GMP's portfolio against fossil fuel price volatility, and thereby capturing what the Board has termed 'a primary [economic] benefit of wind generation facilities - price stability.' If fossil fuel prices increase over the term of the contract, the contract may reduce GMP's cost of service. Any savings to GMP should be passed on to its ratepayers."⁵² Therefore, Deerfield argues that the Project advances Vermont's statutory renewable energy goals under 30 V.S.A. § 8001, including "affordable, long-term, stably priced renewable energy contracts that mitigate market price fluctuations for Vermonters."⁵³

The Vermont General Assembly has set out certain policy goals to be achieved by renewable energy in 30 V.S.A. § 8001:⁵⁴

- (a) The general assembly finds that it is in the interest of the people of the State to promote the State energy policy established in section 202a of this title by:
 - (1) Balancing the benefits, lifetime costs, and rates of the State's overall energy portfolio to ensure that to the greatest extent possible the economic benefits of renewable energy in the state flow to the Vermont economy in general, and to the rate paying citizens of the state in particular.
 - (2) Supporting development of renewable energy and related planned energy industries in Vermont, in particular, while retaining and supporting existing renewable energy infrastructure.
 - (3) Providing an incentive for the State's retail electricity providers to enter into affordable, long-term, stably priced renewable energy contracts that mitigate market price fluctuations for Vermonters.
 - (4) Developing viable markets for renewable energy and energy efficiency projects.

50. *Id.*

51. Tr. 12/01/08, vol. I at 277-278 (Habig).

52. Deerfield Brief at 66.

53. *Id.*

54. Docket No. 7156, Order of 08/08/07 at 37.

(5) Protecting and promoting air and water quality by means of renewable energy programs.

(6) Contributing to reductions in global climate change and anticipating the impacts on the State's economy that might be caused by federal regulations designed to attain those reductions.⁵⁵

Section 8001 lists several benefits resulting from the development of renewable energy. The Project will contribute towards diversifying the State's energy portfolio, help to reduce global climate change caused by CO₂ emissions, protect air quality, and result in long-term stably-priced power contracts for Vermont's electric distribution utilities.⁵⁶ The Department emphasizes one of these benefits that the Project now does not provide — long-term stably-priced power contracts — and recommends that we condition approval of the Project on Deerfield entering into such contracts with Vermont utilities. Deerfield does not object to such a condition in principle and points out that the Project also provides several other benefits to the State that are cited in Section 8001.

At the present time, we find that the Project does not provide any economic benefit from power contracts. As noted, Deerfield has not entered into any agreements to sell power to Vermont utilities. In reaching this conclusion, we agree with the Department's assertion that the LOI between Deerfield and GMP does not constitute a definitive agreement.⁵⁷ For that reason, we reject Deerfield's argument that it is essentially at the same stage of its power contract negotiations as was UPC Vermont Wind at the time we issued a CPG for that project. In that docket, we found that UPC had entered into at least two purchase power agreements with Vermont utilities, namely Washington Electric Cooperative, Inc., and Vermont Electric Cooperative, Inc., unlike the present case where the parties have yet to finalize any contract terms.⁵⁸ In addition, no party presented any evidence that even the terms to which GMP and Deerfield have preliminarily agreed provide any economic benefit. We have no basis to

55. 30 V.S.A. § 8001.

56. Docket No. 7156, Order of 08/08/07 at 38.

57. Department Brief at 49.

58. Docket No. 7156, Order of 08/08/07 at 35. Ultimately, Deerfield's comparison to UPC Vermont Wind is not particularly relevant. In this case, we consider the economic benefit that Deerfield has presented and how that relates to the potential impacts of the Project.

conclude that those terms are favorable relative to other opportunities that Vermont utilities may have to purchase power on the wholesale market.

In this Order, we make positive findings under each of the criteria of Section 248 while at the same time recognizing the potential impacts of the Project, not the least of which are the impacts on the natural environment. This includes an affirmative finding that the Project provides economic benefits through employment and tax revenues. But we must also make a determination as to whether the Project promotes the general good of the State under § 248. Here, we agree with the Department's assertion that if Vermont is going to allow a merchant generation facility to utilize one of the State's valuable resources, its natural environment, then the State should receive comparable value in return in order to promote the public good.

To ensure sufficient benefit, this Order conditions our approval of the Project on Deerfield entering into contracts with Vermont utilities. We would expect these contracts to have three basic features; they should be stably priced, have prices favorable relative to market purchases, and collectively, comprise a substantial portion of the output of the facility.

One of the primary benefits of wind power is that the fuel source is free resulting in output costs that are immune to rising and fluctuating fuel prices. As a result, most of the costs of the Project are related to capital and maintenance costs which are largely predictable. In contrast, fossil-fueled generation units experience volatile fuel costs, in addition to capital and maintenance costs. Thus the benefits of renewable power generation provided by the Project can best be realized by Vermont ratepayers through stably-priced power contracts with Vermont utilities. Stably-priced contracts, at reasonable price terms, are particularly beneficial given the volatility of the regional power market. Because Deerfield has been unable to secure such a contract with a Vermont utility(s), the potential economic benefits of an agreement can not be determined. Therefore, given the significant impacts from the construction and operation of the Project, we conclude that the general good will not be promoted, nor are sufficient economic benefits obtained, unless we condition our approval of the Project on the requirement that Deerfield enter into stably-priced power contracts with Vermont utilities.

A finding of economic benefit also depends upon our conclusion that the power purchases by Vermont utilities actually provide benefits to ratepayers. Contracts that are stably priced, but well above market prices may not help ratepayers if the alternative is lower-priced market purchases (even factoring in the environmental costs of fossil fuel generation). Even if

we considered the LOI with GMP as a contract, we cannot find that it provides such benefits since there is no evidence of the relationship of the price in that LOI to alternatives.

The Department also proposes that in order to ensure that Vermonters are properly compensated for bearing the burden of hosting the facility, Deerfield must be required to try and commit to contracts with Vermont's utilities for at least 75% of the Project's output. As we noted above, while we agree that the State should receive sufficient benefit in return for the potential impacts caused by the Project, we also believe that Deerfield must have the flexibility to negotiate power contracts with Vermont's utilities. Thus, although we agree with the Department's basic point that Deerfield must sell a significant portion of the power to Vermont utilities to provide sufficient benefit, the Department's condition, by specifying a percentage, may unfairly burden Deerfield and place Deerfield at a disadvantage when negotiating such contracts. Therefore, we will not specifically delineate how much power output must be sold to Vermont utilities according to the requirements proposed by the Department, nor will we adopt Deerfield's proposed condition of power sales of at least 30%. Although we may consider the sale of at least 75% of the Project's output to be reasonable, we also find that the sale of at least 30% does not meet our requirement that a "substantial portion" of the power output be sold to Vermont utilities.

We recognize that in adopting any conditions relative to specific percentages of sales, or a range of sales, Deerfield will still be in a different negotiating status than if no such conditions were imposed. As a result, Vermont utilities that wish to negotiate with Deerfield for a portion of the Project's renewable power should remain aware that the Board has the authority to investigate any unwillingness to enter into reasonable power contracts. Indeed, it is in the interest of Vermont utilities to enter into such contracts to meet the Legislature's SPEED requirement that Vermont meet incremental load growth, and a minimum of 10% of the load, through renewable energy.⁵⁹ Under the proposed conditions, if an agreement between Deerfield and the utilities can not be reached after conducting negotiations in good faith, Deerfield may file a statement with the Board explaining why it cannot reach an agreement and why the Board should modify or remove this requirement. In the event that this does occur, the Board will examine the issues and weigh its options at that time. In any case, we will require that Deerfield

59. 30 V.S.A. § 8005.

provide us with an update of negotiations with Vermont utilities 90 days after the date of this Order.

As a further incentive to Deerfield to enter into stably-priced power contracts with Vermont utilities, and as we provided for in our decision in UPC Vermont Wind, we link this issue with the issue of the decommissioning fund for the Project by requiring a trigger for decommissioning review. That is, in the event that the actual output of the Project falls below 65% of the project output over a two-year period, the Board will initiate a decommissioning review. However, if Deerfield can demonstrate that it has entered into such contracts, in compliance with the aforementioned conditions of this Order, the Board may find that the benefit to the State from the Project is sufficient enough to allow for a reduction in the decommissioning trigger to as low as 50% if a substantial amount of power is sold at stable prices.

Aesthetics, Historic Sites, Air and Water Purity,
the Natural Environment and Public Health and Safety

[30 V.S.A. § 248(b)(5)]

124. The Project will not have an undue adverse impact on aesthetics, historic sites, air and water purity, the natural environment, and public health and safety. This finding is supported by Findings 126 through 318, below.

Public Health and Safety

125. The Project will not have an undue adverse impact on public health and safety. This finding is supported by Findings 126 through 129, below; Zimmerman pf. at 53–54.

126. The likelihood of a fire in a turbine is very low. Turbines and electrical equipment will be inspected under commissioning procedures prior to being brought online. Once commissioned, the turbines will be routinely inspected and repaired, as necessary, by qualified personnel pursuant to preventive maintenance schedules. Built-in safety and design systems further minimize the possibility of a fire in the turbines or substation. Habig Panel pf. reb. at 32.

127. Iberdrola Renewables currently has approximately 2,000 turbines installed. Over the past ten years there has been only one electrical fire in a turbine; the fire did not result in structural damage. Tr. 12/2/08 at 51 (Goland).

128. If a fire were to occur in the nacelle of a turbine it would be detected by the SCADA system and reported to the Project control center. The turbine would automatically be shut down and Project personnel would notify local officials and respond pursuant to detailed emergency procedures. Power to the section of the Project with the turbine fire would be disconnected. Habig Panel pf. reb. at 32.

129. A fire in the nacelle would be allowed to burn itself out; consequently, no specialized fire trucks would be required. Fire control and suppression would occur at ground level if required. Habig Panel pf. reb. at 33.

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

130. The Project is not located near any outstanding resource waters. Zimmerman pf. at 56; exh. DFLD-MLS-3 at 20.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

Air Pollution

131. The Project will not result in undue air pollution. This finding is supported by Findings 132–134, below.

132. The wind turbines will not generate any air pollutants and the Project will not require an air pollution control permit from ANR. Zimmerman pf. at 56.

133. The Project will most likely displace generation at high-operating-cost fossil-fueled units, and avoid emissions from such units. The Project is unlikely to displace power from hydroelectric, nuclear, or renewable facilities as these units generally have low operating costs. Exh. CLF-CH-3 at 2, 8.

134. The Project will avoid the emission of nitrous oxides, sulfur dioxide, carbon dioxide, fine particulate matter, volatile organic compounds, and other air pollutants. Exh. CLF-CH-3 at 8–9.

Water Pollution

135. The Project will not result in undue water pollution, provided that Deerfield receives the necessary stormwater permits. This finding is supported by Findings 136–142, below.

136. Deerfield has prepared a Spill Prevention Control and Countermeasure Plan ("SPCC"). The SPCC Plan covers all fluid storage vessels within the Project area, including the turbine nacelles, transformers at the base of the turbines and the substation, and the vehicles and temporary containers associated with construction. Nelson/Reinhart reb. pf. at 16–17; exh. DFLD-HGC-3.

137. If soils were impacted by a spill, the spill would be remediated by qualified and properly-licensed contractors. Nelson/Reinhart reb. pf. at 17.

138. The Gamesa turbines utilize dry-type generator step-up transformers. The transformer at the substation will have secondary containment in the event of an oil leak or spill. Exh. DFLD-HGC-3 at 2-3, 3-2.

139. Construction and operation of the Project will require federal and State stormwater permits. These permits will be applied for during the final design state of the Project. Deerfield has prepared preliminary plans and risk evaluation to demonstrate that the Project is capable of meeting all technical standards required to obtain the stormwater permits. Nelson/Reinhart reb. pf. at 14.

140. For the federal stormwater permit, Deerfield will seek an individual discharge permit, rather than coverage under the National Pollutant Discharge Elimination System ("NPDES") General Permit. Nelson/Reinhart reb. pf. at 14.

141. Under Deerfield's design, the stormwater basins have been sized and sited to meet applicable criteria and have been designed to maintain existing drainage areas as closely as possible. Nelson/Reinhart reb. pf. at 12–13; exh. DFLD-JN/KR-2.

142. Based upon hydrologic modeling, there will be no increase in the peak discharge rate at any of the receiving waters for a one-year, ten-year, or one-hundred-year storm event. Nelson/Reinhart reb. pf. at 12; exh. DFLD-JN/KR-2.

Discussion

Deerfield proposes the following conditions related to stormwater:

Deerfield Wind shall submit to the Board its NPDES Stormwater Permit for Construction Sites for the Project prior to the commencement of earth-disturbing construction activities.

Deerfield Wind shall submit to the Board its Vermont operational phase stormwater permit prior to the creation of any impervious surfaces at the site.

No further action shall be required by the Board with respect to any of these permits, unless the activities approved in those permits represent a substantial change from the plans and material representations previously made by Deerfield Wind to the Board.

Deerfield has proposed measures and designs that are intended to prevent undue water pollution. These are primarily directed at addressing erosion and stormwater runoff from the Project, particularly during construction. However, Deerfield is relying, at least in part, on the issuance of necessary permits, such as an NPDES Stormwater Permit, to demonstrate compliance with the criteria of Section 248(b). Accordingly, we require Deerfield to file such permits with the Board; however, we do not accept Deerfield's proposed standard for further action once the permits are filed with the Board. Parties will be given the opportunity to review the permits to determine if the necessary standards are met. However, we will not allow parties to relitigate issues that have already been decided.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

143. The Project will not have an undue adverse impact on headwaters, if Deerfield obtains the necessary stormwater permits. This finding is supported by Findings 144–145, below.

144. The Project is located in a headwaters area:

- Most of the soil types present within the study area are mapped as steep slopes;
- The Project is located within a drainage area less than 20 square miles; and
- The entire Project area is above 1500 feet in elevation.

Exh. DFLD-MLS-3 at 3–4.

145. The Project will not adversely impact headwaters resources if appropriate erosion control measures are undertaken during construction and the overall layout of the Project minimizes the detachment and transport of sediment to sensitive water resource areas. A detailed Erosion Prevention and Sediment Control Plan will be developed in conjunction with the Stormwater Construction Permit. Exh. DFLD-MLS-3 at 4.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

146. The Project will meet applicable health and environmental conservation department regulations regarding the disposal of wastes. This finding is supported by Findings 147–149, below.

147. Waste disposal will be handled through private haulers, and will not create a burden on local government. Zimmerman pf. at 57.

148. A septic disposal system will be designed and constructed to service the sanitary facilities at the Operation and Maintenance building. Zimmerman pf. at 57.

149. Any hazardous materials needed at the facility will be stored and disposed of in accordance with local and State hazardous waste laws. Any wastes generated at the Project will be hauled off-site for disposal under an EPA Small Quantity Hazardous Waste License. Zimmerman pf. at 57.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

150. The Project has been designed to consider water conservation. This finding is supported by Findings 46 and 49, below.

151. Water for construction and dust control will be provided by the contractor, most likely from a nearby existing well or the Operations and Maintenance building's well. Approximately two trucks per day, each carrying 3,000 gallons of water, will be required. Boring equipment for foundation construction may require water; however, if the work is done during the winter, the boring may use air instead of water to purge soils. Zimmerman pf. at 57; Krzanowski pf. at 62–64.

152. No running water is needed to maintain the wind turbines and other equipment during operations. A water supply well will be installed at the Operations and Maintenance building, or will be provided by an existing supply secured by Deerfield. This well will only be used for domestic consumption and sanitary facilities at the Operations and Maintenance building. Zimmerman pf. at 57–58.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

153. The Project is not within a floodway or floodway fringe. Zimmerman pf. at 58; DFLD-MLS-3 at 5.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

154. The Project will not have an undue adverse impact on streams in the Project area. This finding is supported by Findings 155–159, below.

155. There are eleven streams within the Project area: four are ephemeral, six are intermittent, and one is perennial. Lew-Smith pf. at 8.

156. Four stream crossings are planned for the Project. The stream crossings will be "minor culverts" and will be designed to be consistent with Forest Service and State stream crossing guidelines. Krzanowski pf. at 3, 17.

157. The Project includes eighteen stormwater discharge points at streams. Ten of the stream discharge points are above 2,500 feet in elevation and are designated as Class A(1) waters. The remaining eight stream discharges occur in waters designated Class B. Nelson/Reinhart reb. pf. at 8-9; exh. DFLD-JN/KR-2 at 1.

158. The Project has been designed to avoid surface waters to the extent practicable. In locations where streams are crossed or are in close proximity to land disturbance activities, the streams will be protected through appropriate engineering and construction of roads, stormwater systems, other infrastructure, and implementation of erosion prevention and sediment control systems required under stormwater permits. Zimmerman pf. at 58; Lew-Smith pf. at 8.; exh. DFLD-MLS-3 at 7.

159. The Project will maintain the natural condition of streams to the extent feasible, will comply with Vermont water quality standards and will not result in a significant impact to streams. Nelson/Reinhart reb. pf. at 19; Lew-Smith pf. at 9.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

160. The Project is not located on or adjacent to a shoreline. Zimmerman pf. at 58; exh. DFLD-MLS-3 at 6.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

161. The Project will not have an undue adverse impact on wetlands. This finding is supported by Findings 162–164, below.

162. For the original project layout, no Class One or Class Two wetlands were identified. Eleven Class Three wetlands were identified; five in the eastern project area, three along the Putnam Road access route, and three along the southern access route. Based on the July, 2008, layout, five additional Class Three wetlands were identified, none of which lie within the areas of proposed impact. Exh. DFLD-MLS-3 at 8; Lew-Smith pf. at reb. at 3–4.

163. The total area of wetland impacts, based on the July, 2008, layout, is expected to be 402 square feet of impact to Wetland F located at the base of the access road to the western Project area and 545 square feet of impact to Wetland AA at the base of the access road to the eastern Project area. The two wetlands are both Class Three wetlands and are not regulated under the Vermont Wetlands Rules. Exh. DFLD-MLS-3 at 7–8; Lew-Smith reb. pf. at 3; exh. DFLD-MLS-6a-c.

164. The Project will not have an undue adverse impact on wetland resources, including Wetlands AA and F. Lew-Smith reb. pf. at 3; exh. DFLD-MLS-3 at 10-11; Metz sur. pf. at 2–3.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

165. The Project will not cause an unreasonable burden on existing water supplies. This finding is supported by Findings 166–169, below.

166. Water will be used during construction for dust control. This water will be dispensed from a water truck that could be filled from a nearby dwelling's water supply, most likely at the operations and maintenance building's well. Krzanowski pf. at 62.

167. If water were used for boring equipment, the amount would be on the order of several hundred gallons at a time, spread out over the construction period. Krzanowski pf. at 64.

168. Deerfield anticipates that employees would need approximately 60 gallons per day of water during operations over the life of the Project. These needs can be met with a typical house well; it is likely that such a well could be drilled on-site. The demand of such a well would not impact nearby wells. Krzanowski pf. at 64.

169. Thomas Shea's spring-fed water supply is located approximately 2,400 feet from any earth disturbance related to construction of the nearest turbine under the 17-turbine layout. The distance from the turbine to that water source, combined with the SPCC plan, would prevent any measurable impact on the water quantity or quality of the water source. Under the revised 15-turbine layout, no turbines are proposed upslope from Mr. Shea's water source. Nelson/Reinhart reb. pf. at 16–17.

Discussion

Mr. Shea contends that the danger of contaminating homeowners' water supply is present because the turbines are upslope from several dwellings.⁶⁰ Although Mr. Shea is correct that there are several residences downslope from the Project, the distance between these residences and the Project,⁶¹ combined with the protections contained in the SPCC plan, lead us to conclude that the Project will not have an adverse impact on the water supply for nearby residences. In the unlikely event that the water supply of residences are impacted, we require Deerfield to mitigate the impact.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

170. The Project will not cause unreasonable soil erosion or a reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result, provided that Deerfield receives the necessary stormwater permits. This finding is supported by Findings 171–173, below.

60. Shea Reply Brief at 1.

61. The nearest residence to any turbine is approximately a half mile. Exh. DFLD-KK-4 at 29.

171. Deerfield will develop an Erosion Prevention and Sediment Control ("EPSC") Plan and associated narrative in conformance with the most recent edition of the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control*. Nelson/Reinhart reb. pf. at 14.

172. Deerfield wind has prepared a conceptual ESPC plan for the Project which involves implementing a phased approach for construction that limits the extent of exposed soil at any one time. The approach involves temporary or permanent stabilization of exposed areas as early as possible. Specific ESPC measures which are intended to be implemented include, but are not limited to:

- a) Up-slope diversion of run-off;
- b) Limits of disturbance barrier fence and flagging;
- c) Silt fence, with and without reinforcement;
- d) Grass- and stone-lined swales;
- e) Stone check dams;
- f) Temporary and permanent stream crossings (e.g., log crossings and culverts);
- g) Rock sandwiches;
- h) Temporary sediment basins;
- i) Temporary and permanent stabilization with seed, mulch/matting, and wood chips;
- and
- j) Use of vegetative buffers.

Additionally, a Preliminary ESPC Plan narrative includes descriptions of the major construction activities and associated ESPC measures proposed to be implemented at the site through the course of construction activities. Nelson/Reinhart reb. pf. at 5–6; exh. DFLD-JN/KR-3.

173. On-going stormwater control will utilize stormwater basins and other features as required by the Stormwater Management Rule. Nelson/Reinhart reb. pf. at 4–6, 12, 14; exh.s DFLD-JN/KR-2 and 3.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

174. The Project will not cause unreasonable congestion or unsafe conditions with respect to transportation. This finding is supported by Findings 175–188, below.

175. During the peak construction period, the Project will generate an average of 37 vehicular round trips per day. This level of activity can be absorbed by the existing local road system. Exh. DFLD-HGC-5 at 3.

176. Adequate space for worker parking and construction vehicles will be available near the Operations and Maintenance building at the end of Putnam Road. Zimmerman pf. at 59.

177. Operational traffic is expected to be five trips per day. Zimmerman pf. at 61.

178. In order to construct each turbine, approximately eight trips will be required to deliver the components. The bulk of these trips will be via specialized vehicles. Deerfield will obtain all required Vermont Agency of Transportation ("VTrans") permits for oversized vehicles in advance. All contractors used for construction and transportation will be fully licensed and bonded. Exh. DFLD-HGC-5 at 3–4, 16; Habig Panel reb. pf. at 28.

179. To access the site, Deerfield's preferred access route is from Interstate 91 to Route 9 to Route 8 to the Project site. This provides the most direct route to the Project. Exh. DFLD-HGC-5 at 6–7, 16.

180. Deerfield will review routes, turning movements, and vehicle configurations with VTrans and local officials, including first responders, to minimize disruption to municipal services, local businesses, and travelers. Habig Panel reb. pf. at 28; exh. DFLD-HGC-5 at 16.

181. Deerfield will address potential traffic issues in Wilmington's commercial center and in West Brattleboro during construction by working with VTrans and local officials to schedule loads so as to minimize disruption. In addition, Deerfield will pay for police details as necessary to assist traffic control. Habig Panel reb. pf. at 28; exh. DFLD-HGC-5 at 16.

182. Deerfield will employ flagmen during peak periods to direct traffic safely in and out of the Putnam Road and Sleepy Hollow Road intersections with Route 8, if necessary. Exh. DFLD-HGC-5 at 16.

183. Deerfield can arrange for police escort of all specialty transport vehicles passing in front of Marlboro Elementary School on Route 9 when the school is in session, if necessary. Exh. DFLD-HGC-5 at 16.

184. Roadway modifications within the Route 9 and Route 8 rights-of-way to accommodate turning movements of special transport vehicles will be designed to Vermont highway standards by a Vermont-licensed professional engineer. All roadway modifications at the intersections will be removed and the areas returned to their prior condition following the installation of the

wind turbines if requested by Town and/or State officials. All intersections will be photo-documented before and after construction of the proposed modifications, and if so requested, upon their removal. Exh. DFLD-HGC-5 at 16.

185. Deerfield will pay to repair any damage to town roads caused by construction or other oversized vehicles. Habig Panel reb. pf. at 28; exh. DFLD-HGC-6 at 4; exh. Searsburg SF-1 at 4.

186. Because the turbines are greater than 200 feet in height, FAA guidelines call for lighting the structures. Zimmerman pf. at 59.

187. Deerfield submitted an updated lighting plan to the FAA for the revised 15-turbine project, proposing that six of the fifteen turbines be lit. The FAA has not made a determination yet. Habig Panel reb. pf. at 6; exh. DFLD-HGC-4.

188. The FAA's lighting determinations are advisory, not mandatory. However, not following the FAA's recommendations could expose Deerfield to significant liability, and project lenders will require that the FAA recommendations be followed. Tr. 12/12/08 at 197–198 (Goland).

Discussion

Deerfield has indicated the measures that it will take to ensure that disruptions to traffic flows are minimized and appropriate safety measures are taken. We explicitly condition approval of the Project on Deerfield fulfilling these obligations and receiving the necessary permits from VTrans for oversized vehicles.

Educational Services

[10 V.S.A. § 6086(a)(6)]

189. The Project will not cause an unreasonable burden on the ability of a municipality to provide educational services. Zimmerman pf. at 59.

190. The construction phase of the Project will occur over a nine-month period. It is unlikely that temporary construction workers and their families will move to the area due to the Project. Three workers would be required once the Project is operational; these workers may be hired from the existing local workforce. Zimmerman pf. at 60; exh. DFLD-TK-2 at 3.

191. Deerfield has notified the Towns of Readsboro and Searsburg, and the Windham Southwest Supervisory Union School District of the Project. The Superintendent of Schools

responded that the Project should not create any unreasonable burdens. Zimmerman pf. at 60; exh. DFLD-JZ-20.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

192. The Project will not impact the ability of the municipalities to provide services. This finding is supported by Findings 193–203, below.

193. All project roads will be of sufficient size to handle emergency vehicles. Zimmerman pf. at 61.

194. The Deerfield Valley Rescue, Inc., Whitingham Ambulance Service, Inc., and the Vermont State Police, Shaftsbury barracks, provided written responses that the Project would not pose an undue burden. In addition, the Readsboro and Wilmington Fire Departments and the Bennington County Sheriff provided verbal responses that the Project would not pose an undue burden. Zimmerman pf. at 61; exhs. DFLD-JZ-21–23.

195. All technicians at projects owned by Iberdrola Renewables are trained for emergencies, including tower rescue, first aid, and CPR. Crews are equipped with rescue equipment, first aid kits and automatic external defibrillators; in addition, fire extinguishers are on company vehicles. Habig Panel reb. pf. at 26–27.

196. Deerfield will work with local fire and police departments to provide tower rescue training, conduct site reviews of project safety programs and emergency response procedures. Habig Panel reb. pf. at 27, 32.

197. Wilmington provides fire protection services to the Town of Searsburg, for which Wilmington receives compensation from Searsburg. Deerfield has agreed to compensate Searsburg and Readsboro for any incremental costs associated with fire protection services for the Project, should any be incurred. Habig Panel reb. pf. at 31; Duncan pf. at 4; Kenney pf. at 10; exhs. Searsburg SF-1 at 8 and DFLD-HGC-6 at 8.

198. If Wilmington were to exclude the Project from the fire protection services agreement with Searsburg, Readsboro could provide such services and is a comparable distance from the Project. Habig Panel reb. pf. at 31.

199. Private roads accessing the Project site will not require municipal expenditures for maintenance. Town roads may require minor alterations during the construction phase, which would be accomplished at Deerfield's expense. Zimmerman pf. at 60.

200. The Project will generate local property taxes for the host towns but will not require much in the way of municipal services. Zimmerman pf. at 61.

201. The agreements between Deerfield and the host towns provide the towns with prior review of plans related to town roads, reasonable access to the construction site, and other similar accommodations that will aid the towns in planning for construction impacts. Exhs. DFLD-HGC-6 and Searsburg SF-1.

202. Traffic on public roads associated with project operations will be minimal and should not cause the towns to incur additional expenses associated with road maintenance. Zimmerman pf. at 61.

203. Waste disposal will be handled by private haulers and will not create a burden on local government. Zimmerman pf. at 61.

Aesthetics

[10 V.S.A. § 6086(a)(8)]

204. The proposed Project will not have an undue adverse impact on the scenic or natural beauty of the area or on aesthetics. This finding is supported by Findings 205–233, below.

205. The Project is located in the foothills of the southern Green Mountains. This is a topographically diverse and rugged area with numerous small mountains and hills. Vissering/Buscher pf. at 5; exh. DPS-MK-1 at 16.

206. The area within 10 miles of the proposed Project generally consists of mixed woodlands on an undulating terrain with a few private residences along Vermont Routes 8 and 100 (which bisect the project area). There are 13 towns within this radius, nearly all of which have significant lands within the GMNF. These include Wilmington, Whitingham, Readsboro, Searsburg, Stamford, West Dover, and Woodford. Vissering/Buscher pf. at 5; Kane pf. at 5.

207. The existing Searsburg facility is a major visual element in the region and is visible from many locations. Exh. DPS-MK-1 at 8, 11; Vissering/Buscher pf. at 5–6.

208. The Project is located along the same ridge as the Searsburg facility and along a second similar unnamed horizontal ridge to the west. These ridges are horizontal in form and visually indistinct. Vissering/Buscher pf. at 5–6, 16.

209. Under Deerfield Wind's lighting plan for the Project, six of the fifteen turbines (three on each ridge) will be lit at night. The turbine lights would be oriented upwards with cut-off shielding at -1° of horizontal. These navigational aids will consist of small, slowly pulsing red lights. The lights themselves would not be visible from most locations and there would be no perceptible beam of light emitted from these bulbs. They are intended to be seen, but not to light the surrounding area, and thus do not contribute significantly to light pollution or sky glow. Vissering/Buscher reb. pf. at 22; tr. 12/11/08 at 196–197 (Vissering/Buscher).

210. There would be no other permanent lighting associated with the Project with the exception for a motion-activated light at the substation. Vissering/Buscher pf. at 7.

211. The proposed wind turbines will be the same in form as the existing turbines, although the new turbines will be taller than the existing turbines. Vissering/Buscher pf. at 15.

212. The number of direct views of the proposed site are limited due to the topography and forest cover. Components of the Project other than the turbines would be largely unseen. Kane pf. at 7; Vissering/Buscher pf. at 8, 16.

213. Within a 2.5 mile radius, 93% of the area is forested. Eighty-eight percent is forested within 5 miles. Exh. DPS-MK-1 at 5.

214. The Project would be visible from a small percentage of the area within a ten-mile radius of the proposed site, due to topography and vegetative screening. It is estimated that a maximum of only 2.5% to 3% of the area in the 10-mile viewshed is likely to have year-round views of the Project, and in most cases these views include only portions of the Project. Vissering/Buscher reb. pf. at 15; exh. DFLD-JV/MB-8a; exh. DPS-MK-2 at Figure 5b.

215. In general, the views of the Project will be relatively short duration and will tend to be either in the background or mid-ground. Exh. DPS-MK-1 at 12–13.

216. Few of the homes and camps within a three-mile radius would have actual visibility of the proposed Project. There is some visibility from homes beyond that radius, particularly from locations in Wilmington and Whitingham. Many of these views would also include the existing Searsburg facility. Vissering/Buscher pf. at 12–13.

217. There will also be limited views from some areas near villages in the area. The main views would be from Heartwellville, which would be limited to the eastern turbine. Limited views of the Project are also anticipated from Stamford village, Wilmington village, and parts of Whitingham. Vissering/Buscher reb. pf. at 17.

218. There are limited views of the Project from some roads in the Project area. In general these views are short duration. See Findings 219–222 below.

219. The most significant views of the Project are from Route 9, Route 8, and Route 100. Vissering/Buscher pf. at 9.

220. From Route 9, there are brief views of the existing and proposed projects near the entrance to Molly Stark State Park, and just west of Wilmington village. Heading east there are views of longer duration beginning west of Woodford State Park and intermittently to Bishop Road. Vissering/Buscher pf. at 9; exh. DFLD-JV/MB-9 (Simulation #3).

221. On Routes 100 and 8, the Project can be seen from the area around Heartwellville. Vissering/Buscher pf. at 9; exh. DFLD-JV/MB-9 (Simulation #2).

222. The Northern sections of Route 8 in Searsburg also would have close range views of the Project, primarily the eastern project area turbines. Vissering/Buscher pf. at 9; exh. DFLD-JV/MB-9 (Simulation #4).

223. The closest recreation area with some view of the Project will be Harriman Reservoir. From much of the reservoir, visibility would be minimal or non-existent. Exh. DFLD-JV/MB-9; Vissering/Buscher reb. pf. at 9.

224. The Project would be visible at a distance (greater than 5 miles) from other recreation areas, including Molly Stark State Park, Whitingham Park and the Brigham Young Monument, Sadawga Pond, Somerset Reservoir, Mount Snow, and the Long/Appalachian Trail. At such a distance the Project is only a minor part of the overall landscape. Vissering/Buscher pf. at 10–11; Vissering/Buscher reb. pf. at 9.

225. There are no open views within either foreground or middleground areas in the GMNF. Views from trails within the GMNF are limited to about a quarter mile of trail within the Lamb Brook Area and any views would be seen through numerous foreground trees during the winter months only. Vissering/Buscher reb. pf. at 12; DEIS at 108–114.

Quechee Analysis

226. The Project will result in an adverse impact on aesthetics. A commercial windfarm is generally incompatible with the relatively isolated natural environment in the region. This impact is not unduly adverse. Vissering/Buscher pf. at 17–23; Vissering/Buscher reb. pf. at 3–4; Kane pf. at 8; Kane sur. pf. at 3.

227. The Project will not violate any clear written community standards intended to preserve the aesthetics or scenic beauty of the area. Vissering/Buscher pf. at 17–19; Vissering/Buscher reb. pf. at 24–29; Kane pf. at 9–11; Kane sur. pf. at 6–9.

228. Regional and local planning documents do not contain any specific language associated with a wind farm project or any specific standard that the proposed project would violate. Similarly, federal documents do not contain such a standard. Kane pf. at 10; Kane reb. pf. at 7–8; Vissering/Buscher pf. at 17–18; Vissering/Buscher reb. pf. at 27–28, 45.

229. The Project will not shock or offend the average person. It is likely that views of less than six miles will be of short duration. For views exceeding six miles, the size and scale of the project is reduced. Vissering/Buscher pf. at 19. Vissering/Buscher reb. pf. at 30–32; Kane pf. at 9; Kane sur. pf. at 5–6.

230. Deerfield Wind has taken steps to mitigate the Project's visual impacts. Deerfield Wind has reduced the size of the Project, from an original proposal of 24 turbines to 15 turbines. The reductions in the size of the Project have reduced the Project's visibility, and have helped mitigate the impact of the Project. Vissering/Buscher reb. pf. at 33.

231. The configuration of the turbines also is expected to reduce their visual impact. Kane sur. pf. at 8.

232. The presence of the existing Searsburg facility helps integrate the proposed turbines into the landscape. Exh. DPS-MK-1 at 13.

233. The split of the Project into two arrays on separate ridgelines limits the overall magnitude of the project that can be seen. From many vantage points the two project ridges would appear to be a single, horizontal ridgeline, and the turbines would appear to be a cluster of repeated white forms. Vissering/Buscher pf. at 15; exh. DPS-MK-1 at 13.

Discussion on Aesthetics (Visual)

Section 248(b)(5) requires the Board to find that a project "will not have an undue adverse effect on aesthetics," after giving due consideration to Act 250 criterion 8. In evaluating the aesthetics criteria, the Board has consistently evaluated projects using the so-called Quechee analysis, which arose from Environmental Board decisions. The Board has previously summarized this test as follows:

Pursuant to this procedure, first a determination must be made as to whether a project will have an adverse impact on aesthetics and the scenic and natural beauty. In order to find that it will have an adverse impact, a project must be out of character with its surroundings. Specific factors used in making this evaluation include the nature of the project's surroundings, the compatibility of the project's design with those surroundings, the suitability of the project's colors and materials with the immediate environment, the visibility of the project, and the impact of the project on open space.

The next step in the two-part test, once a conclusion as to the adverse effect of the project has been reached, is to determine whether the adverse effect of the project is "undue." The adverse effect is considered undue when a positive finding is reached regarding any one of the following factors:

1. Does the project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?
2. Have the applicants failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings?
3. Does the project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?⁶²

In reaching a conclusion under Section (b)(5), we have also made clear that our ultimate decision will also be "significantly informed by overall societal benefits of the project."⁶³ Moreover, in approving wind generation facilities in particular, we balance the significant societal benefits of wind power against its aesthetic impacts.⁶⁴

62. In re Petition of Tom Halnon, CPG NM-25, Order of 3/15/01 at 10–11 ("Halnon"); UPC, Order of 8/8/07 at 64–65.

63. Petitions of VELCO and GMP, Docket 6860, Order of 1/28/05 at 79–80 (quoting In re Northern Loop Project, Docket 6792, Order of 7/17/03 at 28).

64. Searsburg, Docket 5823, Order of 5/16/96 at 28.

We conclude that the impact of the project is adverse under the first part of Quechee. A project has an adverse impact on aesthetics when it is generally incompatible with its surroundings.⁶⁵ The Petitioner seeks to install commercial wind turbines with a height of approximately 400 feet (to the tip of the rotor blades) on ridgelines that are presently wooded. Although a portion of one ridgeline now has 200-foot wind turbines that are part of the Searsburg project, the area in which the new turbines are being placed is undeveloped. This new development is out of character with the surroundings and incompatible with the existing landscape.⁶⁶

While the Project's aesthetic impacts will be adverse, we do not find that, under the second step of the Quechee test, it is unduly adverse. The Project does not violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area because such standards do not exist. Searsburg does not have local zoning or other community ordinance relating to the Project.⁶⁷ Readsboro, the other town in which the Project will reside, has a town plan and local zoning, but the town plan does not contain any specific language that would restrict the proposed Project.⁶⁸ The Windham Regional Plan's goals and policies also do not constitute a clear written policy. Federal documents related to the GMNF also do not contain such a standard; instead they are focused on processes for applicants to seek a determination of whether a Project conforms with the GMNF Plan.⁶⁹

The Project also will not shock or offend the average viewer. The Project will be constructed adjacent to the existing Searsburg facility which is already visible from many of the viewpoints from which the Project will be visible. This proximity to a similar facility reduces the likelihood that the Project would be viewed as shocking or offensive at any distance. In addition, the majority of the views of the Project are either limited or from a distance such that the size would not be overwhelming. Viewed from such distances, the average person would not

65. Kane pf. at 8.

66. Kane pf. at 8.

67. Exh. DPS-MK-1 at 13.

68. Exh. DPS-MK-1 at 13, 15.

69. Kane pf. at 10.

find the scale of the Project shocking or offensive. The opportunities for close-up views (within 2.5 miles) are limited, and will generally be of short duration and thus will not be shocking or offensive. The turbines will certainly change the view from some locations. We acknowledge that some people will greatly dislike the changed views and find this offensive. However, the standard under the Quechee test is not whether some viewers would find a development offensive, but whether the average viewer does. We find that it will not.

Finally, Deerfield Wind has taken "generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings." Deerfield Wind's original proposal included as many as 24 turbines along the two ridges. Over the course of this proceeding, Deerfield has scaled down the number of turbines to the present 15-turbine configuration. It has also changed other aspects of the proposal, including the location of turbines and other facilities (such as the access roads, collector lines and the substation). As a result, there would be minimal visibility of the Project, except for the turbines themselves.⁷⁰ Deerfield Wind also plans to paint the turbines in colors that are expected to increase the potential for the turbines and blades to blend with the sky.

ANR suggested during hearings that Deerfield Wind could further reduce the impacts of the Project by constructing only the eastern array. No party, however, argued that such a further mitigation step was needed to address aesthetic concerns or that the impact would be undue without such mitigation; parties also did not present any evidence suggesting that such a revision to the Project would still leave an economically feasible project. As a result, we cannot find that further mitigation by reducing the Project to encompass only the eastern array would represent a generally available mitigation step.⁷¹

The Department recommended that we adopt three conditions related to aesthetics:

- All turbine towers shall be painted white or off white.
- Deerfield shall obtain and submit the final FAA determination prior to the construction of the turbine towers. No further Board action is necessary unless the contents of the determination are materially different from Deerfield's prior

70. Vissering/Buscher pf. at 20; Vissering/Buscher reb. pf. at 33, 42.

71. We address other aspects of the "eastern-array-only" option below. In the context of the potential for mitigating affects on bear habitat.

representations to the Board or would materially impact any of the substantive criteria under 30 V.S.A. § 248(b).

- Deerfield shall submit a re-vegetation and landscape plan for disturbed areas created by the access road, substation, and transmission line infrastructure.

We find these conditions reasonable, except that, consistent with our determination in Docket 7156, we will provide an opportunity for comment on the FAA's determination rather than having it be presumed to be approved as the Department recommends.

Noise

Findings

234. Noise generated by the Project will be audible at some locations, including homes, in the area surrounding the Project site, but is expected to be within commonly accepted noise standards. Kaliski reb. pf. at 4; Exhs. DFLD-KK-5 and DPS-MK-1 at 23.

235. In order to evaluate the effect of noise on the surrounding area, Deerfield's noise consultant, RSG, Inc. ("RSG"), conducted background noise measurements at seven receptor locations within 0.5 to 2 miles of the proposed Project location over a period of two different four-to-five day intervals in late November and early December, 2006. Kaliski pf. at 7–8; exh. DPS-MK-1 at 18.

236. RSG conducted sound modeling using the standards related to the attenuation of sound propagation outdoors as specified by the International Organization for Standardization ("ISO") ISO-9613-2 as implemented in the Cadna-A software program. The ISO standard sets forth a methodology for predicting sound levels at distant receivers under meteorological conditions favorable to sound propagation. Kaliski pf. at 7; exhs. DFLD-KK-5 at 25 and DPS-MK-1 at 18.

237. RSG also conducted a frequency analysis of actual meteorological conditions by obtaining one year of hourly wind speed and wind direction data from meteorological towers located in Searsburg. DPS-MK-1 at 22–23; Kaliski pf. at 9.

238. The results of the modeling analysis indicate that, even when combined with the sound from the existing Searsburg turbines, the Project is expected to meet a noise standard of 45 dBA (night) at all nearby homes. Exhs. DFLD-KK-5 at 25 and DPS-MK-1 at 22–23.

239. The highest modeled sound level, from both the existing and proposed turbines, at a nearby residence is 43 dBA. Exhs DFLD-KK-5 at 25–26.

240. The probability that for any hour the combined sound level from both the existing and proposed turbines would be at or below 45 dBA is 99%. DPS-MK-1 at 23.

241. The modeled sound level at one of the closest residences, Mr. Shea's, from the Project alone is 38 dBA. The modeled sound level from the existing Searsburg facility at the Thomas Shea residence is 40 dBA. The combined modeled sound level from both the existing and proposed turbines at Mr. Shea's residence is 42 dBA. Kaliski reb. pf. at 7; exh. DFLD-KKK-5 at 26–29.

242. At the closest residence, sound modeling indicates that the level of low frequency noise produced by the Project will not cause health-related effects and structural vibrations. Kaliski pf. at 10; exh. DPS-MK-1 at 23.

243. Noise associated with Project construction activities may include the use of various types of excavation equipment, truck traffic, wood chippers, and rock ripping, drilling, and blasting. Kaliski pf. at 10–11; Krzanowski pf. at 26–27.

244. A survey coordinated between landowners, the blasting firm's geotechnical engineering firm and the insurer, will be conducted prior to any required rock blasting. Abutting landowners would be notified in advance of any rock blasting. The blasting company will secure all licenses, bonding and local permitting required prior to any rock blasting. Krzanowski pf. at 27.

245. The transmission lines associated with the Project will not generate significant noise and will likely be inaudible. The substation transformer installed for the Project will be designed to limit its sound level to no more than 45 dBA at the nearest residence. Kaliski pf. at 11.

Discussion

Deerfield is the only party that has conducted noise analysis in this case. Deerfield argues, that based on their acoustic analysis of the sound produced by the turbines and the background noise levels at receptors in the surrounding area, the noise produced from the Project in the surrounding area will be consistent with widely accepted guidelines for protection of human health, such as the Environmental Protection Agency and World Health Organization guidelines. Deerfield points out that a year of actual wind data gathered at the Project site was used to test the analysis. Deerfield contends that the results of the sound modeling demonstrate the Project's compliance with the noise standards the Board recently established for the UPC First Wind facility in Docket No. 7156. Deerfield also agrees to certain CPG conditions establishing maximum sound levels at surrounding residences.

Mr Shea and IWAG/SVR have raised questions regarding the noise modeling methodology, the audibility of the turbines, and the standards used to evaluate noise impacts, employed by Deerfield's experts. IWAG/SVA argue that the Department's noise expert, Mr. Kane, is unqualified as an expert witness and his support of Deerfield's sound level analysis should be disregarded. Mr. Shea and IWAG/SVR assert that the results of Deerfield's sound modeling analysis cannot be verified and, therefore, the Board should adopt more stringent noise level limits than those imposed in Docket No. 7156.

The Department argues that the noise analysis conducted by Deerfield and reviewed by the Department's noise expert "was rigorous, met industry standards, and exceeded the level of studies previously submitted in wind projects to the Board."⁷² The Department contends that its noise expert is a professional planner and qualified to review noise analyses. The Department also argues that the imposition of standards to ensure that the nearest receptor locations are not exposed to undue noise impacts from the Project is a reasonable precaution. The Department recommends that the Board impose a series of conditions, and a monitoring plan regarding noise from construction and operation of the turbines to ensure that residences near the Project are protected from undue noise impacts.

The potential for adverse noise impacts from the turbines is one of the principal concerns raised by the parties in this case. The opponents of the Project dispute the sound measurement methodology and conclusions of Deerfield's analysis with regard to the noise impacts of the turbines. All parties, however, agree that the imposition of absolute standards with regard to noise levels at the nearest receptor locations are an appropriate means to ensure these areas is not adversely impacted. We agree that noise level standards are a necessary and appropriate means of ensuring that the public is not subject to adverse noise impacts from the construction or operation of the Project. Therefore, we adopt the following conditions with respect to noise from the Project:

Blasting associated with construction of the Project shall be minimized to the extent practicable and performed only during the hours of 9:00 AM-5:00 PM Monday-Friday, with the exception of State holidays.

All blasting shall be carried out by licensed and certified blasting technicians. All blasting will be performed in accordance with any and all applicable laws and

72. Department Initial Brief at 28.

regulations, including, but not limited to, U.S. Department of Interior Rules 816.61-68 and 817.61-68 and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior to limit peak particle velocity and ground vibration to safe levels. Noise and air blast effects shall be limited through application of proper techniques and blasting mats will be used where needed to limit the occurrence of flyrock.

Prior to performing any blasting for the Project, Deerfield will develop a blasting plan that includes pre-blast surveys of wells and structures in the surrounding area and will arrange for a public information session with surrounding landowners to address concerns related to blasting.

In the event surrounding landowners express concern regarding the impacts of blasting on wells or other structures on their property, Deerfield shall perform evaluations to determine if any damage has occurred as a result of blasting activities and, if so, remediate any such damage.

Deerfield shall construct and operate the Project so that the turbines emit no prominent discrete tones pursuant to ANSI standards at the receptor locations; and Project-related sound levels at any existing surrounding residences do not exceed 45 dBA(exterior)(Leq)(1 hr) or 30 dBA (interior bedrooms)(Leq)(1 hr).

In the event noise from operation of the Project exceeds the maximum allowable levels, Deerfield shall take all remedial steps necessary to bring the sound levels produced by the turbine(s) into compliance with allowable levels, including modification or cessation of turbine(s) operation.

Deerfield shall submit to the Board for review and approval a noise monitoring plan to be implemented during the first full year of operation. The Plan shall establish a monitoring program to confirm under a variety of seasonal and climactic conditions compliance with the maximum allowable sound levels described above.

Historic Sites

[10 V.S.A. § 6086(a)(8)]

246. The Project will not have an undue adverse impact on historic or archaeological resources. This finding is supported by Findings 247–249, below.

247. There are no direct impacts to any historic structures in the Project's footprint. The only potential impacts are indirect visual impacts from historic resources in the viewshed of the Project. Luhman pf. at 9–11; Luhman reb. pf. at 7; exh. DFLD-HL-2.

248. There are limited views of the Project from listed and eligible historic properties, due to vegetation, topography, and the direction the resources face. The Division of Historic

Preservation agrees that the Project will not have an undue adverse impact on historic buildings and structures. Luhman reb. pf. at 7–8; exh. DFLD-HL-6; exh. DFLD-HGC-8.

249. No prehistoric or historical archaeological resources were identified in the Project area. The Division of Historic Preservation agrees that the Project will not have an undue adverse impact on archaeological resources. Luhman reb. pf. at 8–9; exh. DFLD-HGC-8.

Rare and Irreplaceable Natural Areas

[10 V.S.A. § 6086(a)(8)]

250. There are no rare and irreplaceable natural areas within the Project area. Lew-Smith pf. at 6.

Wildlife, Including Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

251. The Project will not have an undue adverse effect on wildlife, with the mitigation discussed in this section. This finding is supported by Findings 252–314, below.

Black Bears

One of the most contentious issues in this Docket involved the impact of the Project on black bear habitat. Project opponents contend that the western array of the Project would destroy a significant amount of necessary wildlife habitat, in the form of concentrated areas of bear-scarred beech trees. As discussed further below, we find that the Project will have an undue adverse impact on bears, unless there is significant mitigation, as described below.

Habitat

252. Black bears require large areas of forest habitat with a variety of food resources to serve as core habitat that allows for successful reproduction and avoidance of human disturbance. Hammond pf. at 8.

253. Hard mast constitutes nuts such as acorns and beech nuts, and are the predominant fall food for bears in Vermont, along with apples and cherries. Soft mast constitutes berries and other fruit, and, in addition to herbaceous vegetation and jack-in-the-pulpit bulbs, are the predominant food for bears in Vermont. Exh. Wilmington WK-5 at 24.

254. Black bears rely on concentrated stands of American beech trees as an essential source of high nutrition food. The availability of hard mast in the fall affects the minimum reproductive age of bears, productivity rates, and cub survival. Acorns and beech nuts provide the fat and high carbohydrate diet that bears require for putting on fat reserves, which improve the chances of reproductive success and cub survival. Beech nuts, unlike acorns, are available to bears in the spring months. Hammond pf. at 8–9.

255. Beech nut production is cyclical, and during years when beech nuts are in short supply bears travel widely in search of alternative foods. The result of this increased travel is increased mortality. Hammond pf. at 9.

256. Alternative mast sources are available for bears, but generally occur at lower elevations and the alternative mast is available for shorter periods of time. Accessing the alternative mast involves greater risk to the bears and a greater presence at lower elevations where there are residences and backyard bird feeders. Hammond pf. surr. at 8; tr. 12/12/08 at 148 (Hammond).

257. There tends to be more concentrated scarring of beech trees on ridge tops and in areas of rough topography. Displacement of bears at the Project site would lead to bears traveling from more remote, high elevation areas to lower elevation areas, and consequently, more interaction with humans. Tr. 12/12/08 at 147–148 (Hammond).

258. Beech nuts are more likely to be found at high elevations than other hard mast that bears heavily utilize in the fall. Other sources of hard mast are available for shorter periods of time and generally occur at lower elevations and closer to concentrations of people. Hammond surr. pf. at 8, 16–17.

259. The bear-scarred beech stands in the Project area are some of the most extensive and important in the State. The fact that there are so many bear-scarred beech in the area is evidence of the regional importance of the area to bear populations in southern Vermont. Hammond pf. at 11, 14.

260. The proposed location of the Project is along two remote ridgetops. The concentration of bear-scarred beech and the remoteness of the area creates a unique setting that generations of bears have utilized to feed undisturbed on beech nuts. Hammond sur. pf. at 2–3.

261. The number of beech in the area of the western array is such that, even in years of poor beechnut production, there are still trees within the area that produce beech nuts that bears can utilize. Tr. 12/12/08 at 188 (Hammond).

Direct Impacts

262. The Project would remove 366 bear-scarred beech trees. The Project would remove less than 1.3% of the total amount of bear-scarred beech available on Forest Service land in the eight-square mile area around the Project. Wallin reb. pf. at 5.

263. Approximately 25 acres of bear-scarred beech within the western array would be directly impacted, and approximately 10 acres of bear-scarred beech within the eastern array would be directly impacted by the Project. Wallin reb. pf. at 5; tr. 12/4/08 at 14–15 (Wallin).

264. In the approximately eight square miles (roughly 5,000 acres)⁷³ of National Forest surrounding the Project there are approximately 28,000 bear-scarred beech. Walling pf. at 7.

265. The cutting associated with the Project will result in increased production of soft mast, thereby increasing the diversity and availability of alternative food resources, although bear-scarred beech is a preferable food source to soft mast. Wallin pf. at 10; tr. 12/10/08 at 213–214 (Kilpatrick); tr. 12/12/08 at 117 (Hammond).

Indirect Impacts

266. Indirect impacts involve disturbance and displacement of bears from habitat based on the Project's proximity to that habitat. Hammond pf. at 18.

267. There is considerable uncertainty regarding the indirect impact of the Project on black bears. Tr. 12/10/08 at 210 (Kilpatrick).

268. The loss of 366 bear-scarred beech would not be as detrimental to the bears if it were to occur in the context of a timber harvest because such action would be a one time event that would not introduce a continuous human presence to the area. Tr. 12/10/08 at 208–209 (Kilpatrick).

269. Remote camera studies conducted at the Searsburg facility demonstrate that there was some use of the area adjacent to the turbines by bears during the time that the turbines were operating. In addition, the existence of approximately 185 bear-scarred beech trees within a quarter mile of the Searsburg facility demonstrate use by bears since construction of the facility. However, the extent to which the area surrounding the existing Searsburg site is used by bears is

73. One square mile is equal to approximately 640 acres.

not known. Wallin pf. at 9–10; Wallin reb. pf. at 32; exhs. DFLD-JW-5, 7, 10a; tr. 2/10/08 at 209–210 (Kilpatrick).

270. There was not a sufficient pre-construction study at the existing Searsburg facility to determine the extent of bear use in that area. Consequently, the impact of the Searsburg facility on bears cannot be known. Tr. 12/10/08 at 210–211 (Kilpatrick).

271. Some bears will be displaced from the area for a distance of one-quarter to one-half mile beyond the footprint of the Project; however, the number of bears that will be displaced is unknown. Displacement of bears from such an area could effectively reduce utilization of a significant number of beech by bears. Hammond pf. at 13–14, 18; tr. 12/12/08 at 33 (Hammond).

272. Increased contact and habitation to humans results in decreased survivorship of bears. Tr. 12/10/08 at 48 (Kilpatrick).

273. The access roads would not have a significant impact on bears, if the level of traffic is less than ten vehicle trips per day. Tr. 12/10/08 at 130-132 (Kilpatrick).

274. Gating the access roads, some patrolling of the roads by law enforcement, and use of publicly advertised remote cameras are reasonable measures to mitigate illegal use of the road by hunters and ATVs. Tr. 12/10/08 at 134-135 (Kilpatrick).

Mitigation

275. Deerfield has agreed to mitigate direct impacts on a 4-to-1 ratio by conserving comparable bear habitat in the southern Vermont area through conservation easements. The amount of acreage determined to have a direct impact from the Project is approximately 36 acres; this number was derived by using ANR's methodology. Tr. 12/12/08 at 206–209 (Goland); exhs. DFLD-JW-9a and 9b.

276. Deerfield proposed an extensive pre- and post-construction study to evaluate the impact of the Project on bears. The study would include one to two years of pre-construction monitoring, followed by post-construction monitoring. Tr. 12/12/08 at 207 (Goland).

277. A multi-year pre- and post-construction study should be a priority when examining mitigation options. Tr. 12/10/08 at 214 (Kilpatrick).

278. Deerfield has requested that the Forest Service consider specific management changes for the four management compartments surrounding the Project area. These potential measures

include protection of other areas of bear-scarred beech; encouraging growth of food sources, including apple trees, oak, beech, Jack-in-the-pulpit, and berries; and preservation of bear crossing corridors. It is not clear whether the Forest Service will require these measures. Habig Panel reb. pf. at 13–14; tr. 12/12/08 at 205 (Goland).

279. Deerfield will use narrow track cranes to reduce the necessary clearing width associated with the access roads. In addition, Deerfield has committed to micro-siting the turbines and roads to minimize the number of bear-scarred beech that will be impacted. Habig Panel reb. at 6, 10-11; Wallin reb. at 46; tr. 12/12/08 at 206–207 (Goland).

280. Deerfield has proposed specific controls to minimize the impact of the Project, including:

Access roads will be gated and access to facility roads will be limited to authorized personnel only. The east-side access road will be double-gated with the existing gate at the end of the current GMP access road (at the beginning of the Deerfield access road). The west-side access road will be gated at the beginning of the Deerfield access road and again after the transmission corridor. Deerfield will include measures to prohibit and deter illegal ATV access and other unauthorized access.

Deerfield will prohibit major scheduled repairs and maintenance activities during fall periods when bears may be using beech trees.

Deerfield personnel will be restricted from the site during the nighttime hours and during the crepuscular periods that have been shown to be important periods for bear activity (one hour before and after sunrise and sunset), except in emergency situations and during wildlife study periods.

On the ground lighting at the facility will be limited to motion sensor lights at the substation.

Deerfield will evaluate each access road after construction to determine whether there are any specific bear crossings, and if identified, will take actions to preserve those crossing areas.

Wallin reb. pf. at 46; Habig Panel reb. pf. at 11; tr. 12/12/08 at 206–207 (Goland).

Discussion

The impact of the Project on bears was the most heavily litigated aspect of this case, with the Board devoting several days of evidentiary hearings to testimony from wildlife experts. After carefully weighing the evidence presented, we determine that the Project will have an undue adverse impact on the bear population absent significant mitigation.

Statutory Framework

Section 248(b)(5) requires that the Board find that the Project will not have an undue adverse effect on the natural environment, with due consideration given to several criteria included in Act 250. In practice, we examine the Act 250 criteria specifically and utilize them to guide us in assessing whether the effect on the natural environment is unduly adverse. But our evaluation under the Act 250 criteria is not dispositive, as we must, in the end, apply Section 248(b)(5) and determine whether the Project will have an undue adverse effect on the natural environment.⁷⁴ Among the Act 250 criteria that are incorporated into Section 248(b)(5) is Criterion 8(A) of 10 V.S.A. § 6086:

A permit will not be granted if it is demonstrated by any party opposing the applicant that a development or subdivision will destroy or significantly imperil necessary wildlife habitat or any endangered species, and

(i) the economic, social, cultural, recreational, or other benefit to the public from the development or subdivision will not outweigh the economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat or species; or

(ii) all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the habitat or species have not been or will not continue to be applied; or

(iii) a reasonably acceptable alternative site is owned or controlled by the applicant which would allow the development or subdivision to fulfill its intended purpose.

Necessary Wildlife Habitat

The first step in the analysis under Criteria 8(A) is to assess whether the Project will destroy or significantly imperil necessary wildlife habitat. Necessary wildlife habitat is defined in Act 250 as "concentrated habitat which is identifiable and is demonstrated as being decisive to the survival of a species of wildlife at any period in its life including breeding and migratory periods."⁷⁵

There was no dispute that the Project would be located in bear habitat; the Project area contains an extensive number of bear-scarred beech trees — estimates are that there are more

74. See *City of South Burlington v. Vermont Electric Power Co.*, 133 Vt. 438 (1975).

75. 10 V.S.A. s. 6001(12).

than 28,000 in the eight square mile area around the Project. In addition, the Project would be located in a remote, high elevation area. The Project involves the construction of access roads and turbine pads, actions that result in clearing 36 acres of high quality habitat and 366 bear-scarred beech trees. Opponents of the Project have cited to the substantial body of precedent that has consistently held that concentrated areas of bear-scarred beech are indeed necessary wildlife habitat.⁷⁶ They have also produced voluminous testimony regarding the importance of beech and the unique characteristics which make the Project area ideal for bears.

In addition to the direct impacts on bear habitat, opponents argued that the Project will cause significant displacement of bears from the habitat. The access roads increase the human presence in this remote area through Project personnel engaging in operations. In addition, the roads increase the possibility that hunters and hikers will utilize the area in greater numbers. The encroachment on remote, high quality habitat has the potential to displace bears from the area. Opponents contended that the Project would displace bears from an area within a quarter to a half mile of the Project site. They assert that, when bears are displaced from the Project area due to construction and operation of the Project, the bears may be forced to rely on food in lower elevation areas, in closer proximity to human development.

Deerfield argues that the Project will impact only a small portion of the total number of bear-scarred beech in the area and the direct impacts to bear habitat will not be unduly adverse. In addition, Deerfield contends that the concentrated stands of bear-scarred beech in the Project area do not represent necessary wildlife habitat, as defined in Act 250. Deerfield contends that beech nuts can be scarce for several years and, during the scarce periods, bears are finding alternative foods successfully. Deerfield makes the case that, at least in some areas of Vermont where alternative food sources are available, including the Project area, concentrated stands of bear-scarred beech are not "decisive to the survival" of bears.

With respect to the indirect impacts of the Project, Deerfield argued that the Project might displace some bears from the area, but the majority would become acclimated to the Project, since there would not be a substantial amount of human activity at the site. Additionally, while the Project might force some bears from the ridge line, given the size of the National Forest, it is also possible that the bears may be displaced to lower quality habitat, but

76. These include *In re Kilington, LTD*, 159 Vt. 206 (1992); Docket 7156, Order of 8/8/07.

not to areas of human habitation. Consequently, while the displacement of bears could result in increased interaction between bears and humans, and therefore death of such "nuisance" bears, the number of displaced bears that would end up in developed areas, as opposed to other portions of the National Forest, is unknown.

The Project will involve construction of an access road and wind turbines in the middle of a remote, high elevation, area with a significant concentration of bear-scarred beech. Following construction the Project will necessitate routine use of these roads for maintenance and operational purposes. These features are significant because, in the Project area as it exists today, bears have an area where they are mostly undisturbed and where they can find food without generally encountering humans.

Such remote, undisturbed habitat is important for a healthy bear population, particularly where there is a significant concentration of bear-scarred beech. Beech trees may not be *per se* necessary habitat, but it is clear they represent a highly valuable food source for bears. What is less clear, however, is whether the Project's impacts are significant enough that we should conclude that the Project will destroy or imperil necessary wildlife habitat. Section 248(b)(5) does not require that we make a determination as to whether the Project will destroy or imperil necessary wildlife habitat; we are required to give due consideration to the Act 250 criteria when determining whether the Project will have an undue adverse impact on the natural environment, including wildlife. The fact that the Project will disrupt the remote bear habitat and remove beech stands leads us to conclude that, whether or not the habitat in the Project area is critical to the survival of bears as narrowly defined by Act 250 and case law applying it, the habitat is clearly extremely important. Consequently, we find that the Project's impacts on bear habitat would have an undue adverse impact on the natural environment pursuant to Section 248(b)(5) unless it is adequately mitigated. Nonetheless, in evaluating whether this impact can be mitigated or whether the Project's benefits outweigh the impacts, it is appropriate to consider the other components of the 8(a) criteria. These factors specifically consider whether the Project's benefits outweigh the impacts, whether the impacts can be mitigated, and whether the Project could be built on alternative locations under the control of the Petitioner.

Balancing the Benefits and Impacts of the Project

Under the Act 250 analysis, we must evaluate whether the benefits of the Project outweigh the impact to the habitat. Vermont policy supports the development of renewable power for economic and environmental reasons, including the contribution that renewable energy makes toward reductions in emissions leading to climate change.⁷⁷ Alternatively, Vermont has a strong tradition of environmental protection, as evidenced by Act 250. Complicating matters is the fact that the most important wind resource in Vermont is located in higher elevation areas, often where bears are located.

Elsewhere in this Order we discuss the economic benefits of the Project and state that the benefits of the Project are dependent on the ability of Deerfield to secure long-term, stably-priced power contracts. If such contracts are entered into, the Project can provide significant economic benefit to Vermont.

Even with the power contract requirement described above, the uncertainty regarding the direct and indirect impacts on bears, combined with the significance of the Project area to bears, leads us to conclude that substantial mitigation is required to ensure that the benefits of the Project outweigh the impacts on the bears. Only if the power contract condition is fulfilled, and the habitat mitigation requirements we discuss below are met can we find that the benefits of the Project outweigh the impacts to bear habitat.

Mitigation

The second criterion under which a Project that imperils necessary habitat may be allowed is if the effects are adequately mitigated. Deerfield has stated that it will be willing to mitigate the direct impacts of the project on a 4-to-1 basis, resulting in the protection of 144 acres through conservation easements.⁷⁸ We find that this would be sufficient mitigation if Deerfield is able to conserve habitat comparable to that being destroyed. There are certain characteristics of this area that make the ridgeline directly affected by the Project high quality habitat; in particular, the remote nature of the habitat, the high elevation, and the concentration of bear-scarred beech. This ability to stay in remote, high elevation areas contributes

77. 30 V.S.A. s. 8001.

78. Tr. 12/12/08 at 206-209 (Goland); Deerfield Brief at 196.

significantly to the health of the bear population in the area and leads to fewer "nuisance" bears. Deerfield must conserve habitat that supplies these essential characteristics in order to provide sufficient mitigation. Deerfield must file a proposal, for approval by the Board, of the land which it proposes to conserve, along with an analysis of how the habitat on that land is comparable to the remote, high elevation area of concentrated beech stands that will be impacted by the Project.

In addition to the conservation of comparable habitat, Deerfield has offered to conduct a multi-year study of the Project's impact on bears. The testimony made clear that there is not a lot of information regarding the bear population in the area or the impact that the Project will have on that population. Wind projects have very different characteristics than ski areas and residential developments, and the effect that these characteristics will have on bear behavior is not known. A properly designed and conducted study will provide valuable information regarding the indirect impacts that wind projects will have on bears, information that is currently lacking. We condition issuance of a CPG on the requirement that Deerfield conduct such a study. Deerfield must file a proposed study protocol for approval by the Board.

In addition to the habitat conservation and bear study, Deerfield has proposed taking a number of steps to further mitigate the impact on bears. These include gating the access road, utilizing remote cameras to deter illegal entry, patrolling by law enforcement, limiting activity at the Project during certain time periods, and preserving bear crossing areas along the access roads. We require Deerfield to file a detailed description of how it intends to undertake these activities for Board approval.

Finally, ANR asserts that as a mitigation measure we should authorize Deerfield to build only the eastern portion of the Project. ANR contends that the impacts of the western array of the Project are too substantial to be mitigated, but that the eastern array could be developed with sufficient mitigation strategies.⁷⁹ Deerfield responded that the Project is not economically viable without construction of the western array.⁸⁰ No party rebutted Deerfield's statement regarding the economic viability of constructing the Project without the western array. Based on the absence of evidence in the record that an eastern array-only option is viable, we can only

79. Hammond pf. surr. at 18-19.

80. Tr. 12/1/08 at 171, 178 (Habig).

conclude that requiring that the western array not be built is not a reasonable mitigation measure and we are satisfied that the mitigation measures we require are sufficient.

SVR and IWAG contend that there is insufficient information to determine whether the substation should be moved as a mitigation measure. However, the substation will be located adjacent to an existing, cleared right-of-way and no party presented testimony that the substation will have an undue adverse impact. Accordingly, we do not require there to be an examination of whether relocating the substation is a reasonable mitigation measure.

Alternative Sites

Vermont Natural Resources Council questioned whether the Project could be developed on other portions of Forest Service land. Criteria 8(a) states that a permit will not be granted if the project will destroy necessary wildlife habitat and "a reasonably acceptable alternative site is owned or controlled by the applicant which would allow the development or subdivision to fulfill its intended purpose." The Project is proposed to be built on Forest Service land and, under the plain language of this subcriteria, there is no indication that Deerfield controls the land. In addition, Deerfield provided testimony that it evaluated alternative locations within the National Forest and determined that such locations were not economically feasible from the perspective of wind resources, proximity to transmission lines, constructability, and other factors.⁸¹

Summary of Bear Habitat Impacts

The Project will have an impact on bear habitat; however, with sufficient mitigation, the impacts to the bear population will not outweigh the benefits of clean, renewable energy that this Project will provide. The uncertainty regarding the indirect impacts of the Project on bears will be mitigated by our requirement that Deerfield study these impacts, thereby providing valuable data for wildlife managers.

81. Tr. 12/1/08 at 190-193 (Habig).

Birds

281. The Project will not have an undue adverse impact on birds due to collision with turbines, habitat loss, habitat fragmentation, or habitat avoidance. Kerlinger pf. at 4–6, 18.

282. There are no known federal or Vermont-listed threatened or endangered avian species at the Project site, and the habitat does not appear to be suitable for any listed threatened or endangered bird species. Kerlinger pf. at 4–6; Roy/Erickson pf. at 25.

283. The Project does not appear to be in a major flyway, as birds have been observed migrating in a broad front within the Project area. The number of collisions is expected to be small. Roy/Erickson pf. at 20–21.

284. Certain factors can lead to increased collisions, including birds migrating at night that encounter low cloud cover, fog, or precipitation and consequently fly at lower altitudes. As there are few wind turbines in the northeastern United States, there is little information regarding the risk to nocturnal migrating birds. Hammond pf. at 27–28.

285. Species observed during the spring and fall survey periods included Coopers hawk, northern harrier, American kestrel, and osprey, which are considered "species of greatest conservation need" in the Vermont Wildlife Action Plan. A species of greatest conservation need is a species whose populations may be experiencing pressures that merit attention. Hammond pf. at 24.

286. Raptor fatalities from wind turbines in the northeast have been limited. This is due in part to the fact that raptors migrate during the day and are able to see and potentially avoid collisions. Hammond pf. at 24–25

287. Nesting birds are not likely to be impacted by the turbines; although construction of the Project and presence of new infrastructure will affect resident birds, the impacts are not likely to be significant. There will be some impact to interior nesting birds due to forest fragmentation. Kerlinger pf. at 18; tr. 12/2/08 at 228 (Kerlinger).

288. To reduce impacts on breeding birds in the Project area, construction should not be allowed during the primary breeding season in May and June. In addition, areas surrounding turbines, meteorological towers, roads, and other infrastructure should be allowed to naturally reforest once construction is complete. Tr. 12/2/08 at 250–251 (Kerlinger); Kerlinger pf. at 19.

289. Some construction activities are likely to occur during nesting; however, Deerfield will avoid tree cutting and bulldozing during those time periods. Tr. 12/02/08 at 252–253 (Kerlinger).

290. To reduce construction impacts, it would be better to have construction occur within one season rather than occur over two seasons. Tr. 12/2/08 at 253 (Kerlinger).

Discussion

SVR and IWAG assert that there is insufficient information for the Board to determine whether the Project will have an undue adverse impact on nocturnal migratory birds. SVR and IWAG rely on the testimony of an ANR witness for this assertion. SVR and IWAG's argument fails to recognize that Deerfield filed testimony asserting that the Project would not have an undue adverse impact on birds due to collision. Despite the testimony of ANR's witness, there is sufficient evidence for the Board to find, as we do in this Order, that the Project will not have an undue adverse impact on birds, including nocturnal migratory birds.

Bats

291. There are nine species of bats in Vermont. Six of the species hibernate in caves and mines during the winter and migrate to their summer range in the spring. The migrations of these species vary from a mile to a few hundred miles. The remaining three species are long-distance migrants that migrate out of the northeast in late summer and early fall, spend the winter months further south, and return to Vermont in late spring. Darling pf. at 6.

292. There is considerable uncertainty regarding Vermont's bat populations, particularly the long-distance migrant species that are most vulnerable to collisions with wind turbines. Darling pf. at 7.

293. There have been significant bat mortality levels at sites in New York (25 bats/turbine), West Virginia (38 bats/turbine), and Tennessee (64 bats/turbine). The long-distance migrant species (red bat, silver-haired bat, and hoary bat) comprise the majority of the mortality at these sites. Darling pf. at 8–9.

294. Acoustic surveys in the Project area documented the presence of the silver-haired bat, the hoary bat, red bat/eastern pipistrelle, big brown bat, and *Myotis* species. Big brown bats and *myotis* were the most commonly recorded bats during the surveys. Roy/Erickson pf. at 24–27; Darling pf. at 12.

295. The level of bat activity detected in pre-construction surveys does not necessarily reflect the level of bat mortality once the Project is operational. Darling pf. at 21–22; tr. 12/2/08 at 266 (Darling).

296. The level of bat activity in the Project area is sufficiently low that the Project does not necessarily present an undue adverse risk to bats. Darling pf. at 15

Post-Construction Monitoring

297. At least two years of post-construction mortality studies should be conducted to ensure that bat fatalities are not higher than expected. To determine whether a third year of study is required, it would be important to examine the data from the first two years of study. Tr. 12/2/08 at 275–277 (Darling); Pelletier reb. pf. at 13–14.

298. The intensity and duration of post-construction bat fatality studies needed to properly estimate fatality levels may introduce human activity at the Project site that could impact bear use of habitat. Darling pf. at 21.

299. Bird and bat mortality studies will be designed to minimize impacts to bears⁸² in the following ways:

- a) Conducting the fatality searches for birds and bats at the same time;
- b) Using the same field researchers during both studies;
- c) If possible, the studies will use the same search design;
- d) If possible, searches will be timed to avoid the crepuscular period;
- e) If necessary, the studies will not use dogs for searcher efficiency tests; and
- f) If possible, studies will be focused in years or seasons where expected bear use is at a minimum.

Tr. 12/5/08 at 135–136 (Hammond); tr. 12/5/08 at 144 (Parsons).

Mitigation Strategies for Bird and Bat Fatalities

300. Mitigation measures in the form of adaptive management should be implemented if the results of post-construction monitoring show that bird or bat fatalities are occurring at unacceptable levels. Adaptive management would consist of some form of operational

82. Because bears favor remote areas without humans, the presence of researchers conducting the mortality studies in such areas has the potential to impact bears.

adjustments to reduce fatalities. Proper adaptive management would also require some level of monitoring to document its effectiveness. Darling pf. at 22.

301. Curtailment of Project operations during certain times can significantly reduce bat mortality. Depending on the impact of the Project to bat populations, operational adjustments may vary from date-specific shutdown periods to limiting operation during specific wind and temperature regimes that pose the greatest threat of bat fatality events. Proper adaptive management would also require some level of monitoring to document its efficacy. Tr. 12/2/08 at 266–267 (Darling); Darling pf. at 22.

302. Efforts should be made to develop threshold fatality numbers that trigger adaptive management; however, there is insufficient information on existing regional or local bat populations to develop a meaningful threshold number at this time. The mortality thresholds proposed by ANR for common and migratory bats are likely to be exceeded at the Project, although this may not be indicative of population impacts. Pelletier reb. pf. at 18–19; tr. 12/3/08 at 22–23 (Pelletier).

303. Adaptive management techniques can limit risk. Currently, valuable information is being gained from ongoing post-construction studies which provides information regarding the time periods when bats and birds are more likely to be impacted by turbines, on a seasonal, nightly, and hourly basis, and in accordance with weather conditions. Such information could offer viable means for protecting populations while minimizing unnecessary operational constraints. Pelletier reb. pf. at 19.

Discussion

There is significant uncertainty regarding the impact of the Project on bird and, particularly, bat populations. Recent studies have demonstrated that certain specific weather conditions, time periods, and characteristics of individual species are more likely to result in impacts to bat and bird populations.

Post-construction mortality studies, if properly designed and executed, can provide information that would inform operational controls to minimize the impacts of the Project on bats and birds. We require Deerfield to conduct a minimum of two years of post-construction mortality studies, and reserve the ability to require a third year if conditions indicate that an additional year would provide valuable data useful in evaluating appropriate adaptive

management techniques. If ANR believes that there are exceptional circumstances that merit a third year of post-construction mortality studies for the purpose of determining whether adaptive management techniques are required, it may request that the Board require additional studies.

ANR recommends that the Board establish specific mortality thresholds, at which the Project would likely be causing undue adverse impacts to bat populations. These thresholds are: 3.0 migratory bats/turbine/year (such as red bat, hoary bat, and silver-haired bat); or 0.0 threatened and endangered bat species/turbine/year (Indiana bat or small-footed bat); or 5.0 more common bats/turbine/year (such as little brown bat, big brown bat, northern long-eared bat, and eastern pipistrelle).⁸³ These threshold numbers proposed by ANR were developed by looking at the potential number of wind turbines developed in the east and estimates of bat populations to determine how many bats per species could be killed by wind turbines without an undue adverse effect on that species population. At this point, we find that there is insufficient information to establish such threshold mortality rates. The post-construction mortality studies that we require Deerfield to conduct will help to inform the types of operational adjustments that can be undertaken to minimize the impacts to bats. In addition to the studies at the Project, we expect that Deerfield and ANR will further explore the issue of adaptive management and threshold levels that would trigger such actions with colleagues in the northeast. The Board retains the authority to require operational adjustments based upon the results of these mortality studies as well as to set specific mortality thresholds if warranted. If operational adjustments are made, we will require that monitoring be conducted to verify the efficacy of these efforts.

ANR recommends that Deerfield be required to establish and fund an escrow account to support post-construction monitoring studies.⁸⁴ Since the Board is requiring post-construction monitoring as a condition of the certificate of public good, we find that there is no need to require Deerfield to establish an escrow account to support such studies. The Board has broad authority to ensure that the conditions of the CPG are fulfilled.⁸⁵ If ANR believes that a condition is not being appropriately carried out, it may request that the Board take appropriate action.

83. Darling pf. at 19–22; tr. 12/2/08 at 272–278 (Darling).

84. Darling sur. pf. at 3.

85. See 30 V.S.A. §§ 30, 247.

Deerfield proposes the following conditions related to post-construction monitoring and adaptive management:

Deerfield Wind shall submit a post-construction bird and bat mortality study to the Board for review and approval, and shall obtain such approval prior to commencing commercial operation of the Project. Prior to submission to the Board, Deerfield Wind shall first submit a draft of the plan to ANR for its review and concurrence. If after good faith discussions, Deerfield Wind is unable to obtain ANR's approval of the plan, it may submit the plan to the Board for resolution of any outstanding issues and final approval.

The bird and bat mortality study plan shall at a minimum include the following elements:

- The study will be conducted for up to three years, with a minimum of two years. The third year of study will only be required if the average avian and/or bat fatality estimates over the two-year period exceed the current established threshold ranges for mortality at wind projects located on northern forested ridges;
- The studies will be performed by a qualified third party consultant;
- The study periods will cover both spring and fall migration;
- Scavenging rates and searcher efficiency controls will be established for each period of study;
- Scientifically and statistically valid survey protocols will be employed based on the best available scientific information;
- Use of dogs on the project site will be limited to the extent absolutely necessary to design and test valid survey methods;
- The methodology will be designed to minimize impacts on other natural resources within the project area including bear and moose habitat; and
- ANR will have the opportunity to review the study results at the end of each study year.

Deerfield Wind will engage with ANR in a cooperative, team-based process to review bird and bat mortality data.

If post-construction monitoring for the two year period demonstrates that the Project is having an undue adverse impact, i.e., avian or bat fatality estimates over the two-year period exceed the most current established threshold ranges for mortality at wind projects on northern forested ridges, Deerfield Wind shall submit an adaptive management plan to ANR and the Board within 6 months of completion of the second year of post-construction monitoring. The adaptive management plan will incorporate reasonable scientifically proven measures to reduce fatality rates of the affected bird or bat species, and include a final third year of monitoring to evaluate the efficacy of the adaptive management measures. Actual measures to be taken will depend on the type and severity of impacts, cost

benefit considerations, likelihood of accomplishing the desired outcome, and practicality.

In the event that Deerfield Wind is unable to reach consensus with ANR during this review process, either entity may bring the matter to the Board for resolution. The Board shall retain final review and approval authority regarding the implementation of any adaptive management plan, and the need for a third year of mortality studies.

We accept the proposed conditions with some alterations. First, all parties with standing on the issue of wildlife access, as well as the Board, will have the opportunity to review the study results at the end of each study year. Second, Deerfield shall conduct a minimum of two years of post-construction mortality studies. If warranted, a third year of mortality studies will be required. In addition to these studies, if operational adjustments are required to reduce mortality, the Board may require additional studies to determine the efficacy of these adjustments. Third, the Board retains the authority to require operational adjustments at any time. If mortality events during the early portion of the mortality studies indicate that such adjustments should be made to reduce bat fatalities, any party, or the Board on its own motion, may propose such limits.

Deer

304. The Project, as designed, does not impact necessary wildlife habitat for white-tailed deer. There are no mapped or unmapped deer wintering habitats located within the Project area. Parsons pf. at 3.

305. The eastern project area is characterized by spruce-fir forest and could potentially be utilized by deer for winter cover. However, the elevation makes such utilization unlikely. Parsons pf. at 3.

Moose

306. There is no habitat in Vermont that has been identified as "necessary wildlife habitat" for moose. Certain types of habitat are important to moose, although none are identified as being decisive to the survival of the population. Parsons reb. pf. at 4.

307. The montane forest in the eastern project area and the existing clearcut in the western project area are the two most important areas of moose habitat within the Project area. Both areas contain moose sign and significant amounts of understory growth. Parsons pf. at 4–6.

308. A small amount of woody browse will grow along the edge of the access road and turbine clearings, providing a potential benefit to moose. It is also likely that moose will utilize the access roads as travel corridors during periods of deep snow. Parsons pf. at 6; Parsons reb. pf. at 5.

309. Deerfield is willing to create openings in the snow banks along the access roads to allow free movement by moose. Parsons reb. pf. at 5–6.

Rare, Threatened, and Endangered Wildlife (except birds and bats)

310. Deerfield conducted an inventory for rare, threatened, and endangered species in the Project area. The field assessments consisted of walking the access roads and turbine strings, including an approximate 100-foot radius from the proposed disturbance area. More detailed assessments were made in areas where resources such as wetlands and streams were present. Parsons pf. at 3.

311. No State or federally listed rare, threatened, or endangered species were discovered during the inventory. Parsons pf. at 14.

General Wildlife Findings

312. Fisher, bobcat, coyote, and red and gray fox are likely to be present in or near the Project area. Parsons pf. at 13.

313. The Eastern cottontail, snowshoe hare, Eastern chipmunk, gray squirrel, red squirrel, and flying squirrel are likely to inhabit the Project area or immediate vicinity, in addition to a wide variety of moles, voles, mice, shrews, and weasels. Extensive beaver wetlands located near the western array, but over 1500 feet from the Project area, likely provide habitat for mink, river otter, and beaver. Parsons pf. at 13.

314. The Project is unlikely to have a significant impact on the above species. Parsons pf. at 13–14.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

315. The Project will not unnecessarily or unreasonably endanger the public or quasi-public investment in public facilities, services, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to public facilities, services, or lands.

316. The Project is located primarily in the Green Mountain National Forest, which is owned and controlled by the U.S. Forest Service. The Forest Service is currently reviewing a Special Use Permit application which seeks federal approval to construct the Project on portions of the National Forest. Zimmerman pf. at 22; DEIS at 3.

317. The Project will not have an undue adverse impact on aesthetics or historic sites on public lands or facilities. *See Findings 205–249(aesthetics).*

318. The Project will not have an undue adverse impact on natural resources on public lands, if the conditions set forth in this Order are implemented. *See findings 130 through 318.*

Federal Preemption

Deerfield contends that, due to the location of the Project on Forest Service land, federal law preempts the Board's land use planning authority under Section 248. In particular, Deerfield argues that the Board is preempted from regulating the environmental impacts of the Project to the extent that such environmental regulation actually conflicts with federal law or stands as an obstacle to the accomplishment of a Congressional purpose. We find Deerfield's arguments to be unpersuasive. State regulation of the Project, through the Section 248 process, is explicitly recognized by the federal law, and is not preempted.

The U.S. Supreme Court has set forth the following test for determining whether State action is preempted by federal law:

State law can be pre-empted in either of two general ways. If Congress evidences an intent to occupy a given field, any state law falling within that field is pre-empted. If Congress has not entirely displaced State regulation over the matter in question, State law is still pre-empted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both State and federal law, or where the State law stands

as an obstacle to the accomplishment of the full purposes and objectives of Congress.⁸⁶

Deerfield has not demonstrated that field preemption exists such that no State regulation may exist. To the contrary, the Multiple-Use, Sustained Yield Act ("MUSYA"), one of the primary statutes governing use of national forest lands, specifically requires that the Forest Service "cooperate with interested State and local governmental agencies and others in the development and management of the national forests."⁸⁷ In addition, the MUSYA states that "[n]othing herein shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests."⁸⁸ No other federal statutes suggest a comprehensive federal scheme that leaves no room for State regulation. It is therefore clear that there was no intent by Congress to occupy the entire field of management of national forests.

The next question is whether Section 248 actually conflicts with federal law. In order to construct the facility within the National Forest, Deerfield must obtain a Special Use Authorization. The Forest Service has promulgated regulations governing the review of applications for special use authorizations that clearly demonstrate the Board's ability to impose conditions related to protection of wildlife.

The Forest Service regulations for special use authorizations require that, in reviewing the application, it "shall give due deference to the findings of another agency such as a Public Utility Commission" In addition, the regulations explicitly require "compliance with State standards for public health and safety, environmental protection, and siting, construction, operation, and maintenance if those standards are more stringent than applicable Federal standards." 36 C.F.R. § 251.56(a)(1)(i)(D). Vermont law, through 30 V.S.A. § 248, requires the Board to determine the appropriate standards for electric generation and transmission projects, such as the Deerfield facility. Accordingly, federal law does not conflict with State law, but specifically contemplates and defers to a parallel State regulatory scheme. This would include

86. *California Coastal Commission v. Granite Rock Company*, 480 U.S. 572, 581 (1987) (citations omitted).

87. 16 U.S.C. § 530.

88. 16 U.S.C. § 528.

the imposition of conditions related to protection of wildlife by the Board, as we have done in this Order and the Certificate of Public Good we issue today.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

Findings

319. Deerfield Wind is not a regulated electric utility and is therefore not required to prepare a least-cost integrated resource plan. Zimmerman pf. at 64.

320. GMP, the Vermont utility that has executed a letter of intent regarding the purchase of power from this Project, seeks to develop a diverse supply portfolio that includes a mix of renewable and non-renewable energy. GMP's 2007 IRP identifies renewable generation (including wind) as a priority supply resource for the company. Smith pf. at 5.

Discussion

Deerfield Wind is not required to prepare a least-cost integrated resource plan.⁸⁹ Accordingly, this criterion does not apply to the Project. Furthermore, to the extent that Vermont distribution utilities, such as GMP, purchase power from the Project, this renewable energy source is likely to be consistent with the principles of resource selection set forth in those utilities' IRPs.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

Findings

321. The Project complies with the Vermont Twenty-Year Electric Plan. Thomas/ Lamont pf. at 11; Lamont reb. pf. at 4.

322. The Twenty-Year Electric Plan supports renewable energy, stating that "Electric utilities should explore potential for appropriate new renewable resource acquisitions as existing energy sources and contracts expire." Zimmerman pf. at 65–66.

89. See 30 V.S.A. § 218c(a).

323. The Plan also states that wind "should be viewed as a component in a balanced portfolio of resources that can importantly act as a hedge against fluctuating fossil fuel prices." Zimmerman pf. at 66.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

324. The Project is not located near any outstanding resource waters. Zimmerman pf. at 56.

Waste-to-Energy Facility

[30 V.S.A. § 248(b)(9)]

325. The Project does not involve construction of a waste-to-energy facility. Therefore, this criterion is inapplicable.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

Findings

326. The Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers, as demonstrated by the Findings below.

327. Findings 73–80, relating to the Project's impact on system stability and reliability, are incorporated herein.

328. The proposed substation is the most economical interconnection alternative, and will have no cost impact on Vermont utilities or their ratepayers. Estey pf. at 11; Estey suppl. pf. at 3.

329. Deerfield will bear all the costs of the interconnection, with no impacts to Vermont utilities or ratepayers. Zimmerman pf. at 67.

330. The proposed point of interconnection for the Project is the National Grid/VELCO 69 kV line, which is the closest utility transmission line. National Grid has upgraded its portion of this line such that it is capable of handling a minimum of 65 MW. VELCO is in the process of making similar upgrades on the portion of the line that it owns. Estey pf. at 3; exhs. DFLD-DE-2 and -3.

Discussion

The Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. Deerfield will perform the upgrades identified by the SIS, thus maintaining and enhancing the existing infrastructure. Moreover, Deerfield will bear all the costs of the Project substation and its interconnection to the National Grid/VECLO 69 kV transmission line.

VI. DECOMMISSIONING FUND

Findings

331. The establishment of a fund to decommission the Project is necessary in the event the Project does not succeed, or to ensure its timely and permanent removal at the end of its useful life. *Ide pf. at 9.*

332. If properly maintained, the major equipment components of the Project (e.g., rotor blades, generators etc.) are designed to have useful lives of twenty to thirty years before a major overhaul or rebuild (re-powering) is considered. In the event that re-powering is not cost effective or permission to use the federal land on which the Project is constructed is withdrawn, the facility would be dismantled and removed, and the site would be restored to pre-construction conditions as much as is practical. *Zimmerman pf. at 35–36.*

333. Decommissioning would consist of the following: (1) all turbines, including the blades, nacelles and towers, would be disassembled and transported off-site for reclamation and sale; (2) all of the transformers would also be transported off-site for reuse or reclamation; (3) the overhead power collection conductors and the power poles would be removed from the site; (4) all underground infrastructure at depths less than two feet below grade would be removed from the site; and (5) all underground infrastructure at depths greater than two feet below finished grade would be abandoned in place. Areas where subsurface components are removed would be filled, graded to match adjacent contours, and re-seeded, stabilized with an appropriate seed mix, and allowed to re-vegetate naturally. *Zimmerman pf. at 35–36; exh. DFLD-HGC-2.*

334. Excavating and removing the Project's underground collector line could be more intrusive than leaving the line buried. *Tr. 12/2/08, vol. I at 25–26 (Habig).*

335. Salvage value for scrap is vulnerable to market price volatility and thus should not be considered a reliable funding source for decommissioning the Project. The amount placed in the

decommissioning fund should represent the full estimated costs of decommissioning without netting out estimated salvage value. Lamont reb. pf. at 4; Ide pf. at 12.

336. Deerfield estimates the cost of decommissioning as \$853,302. Exh. DFLD-JZ-Rev12; Habig Panel reb. pf. at 24; tr. 12/1/08 at 148, 158–159 (Habig, Cherian).

337. Deerfield's proposed Decommissioning Plan is largely similar to the decommissioning plan approved by the Board as a post-CPG filing in the UPC Vermont Wind Project proceeding, Docket No. 7156. The plan calls for the establishment of a Decommissioning Fund, to be funded by a Letter of Credit or other appropriate financial security. The plan also calls for the fund to be increased over time to account for inflation. Deerfield has agreed not to consider scrap or resale value of project components in establishing the size of the fund. Habig Panel reb. pf. at 24; tr. 12/1/08, vol. I at 159 (Cherian); exh. DFLD-HGC-2 at 2; Zimmerman pf. at 37.

338. Deerfield has agreed to post a Letter of Credit for the Decommissioning Fund prior to commencement of construction. The fund should be bankruptcy-remote to protect it against creditor claims in the event the Project encounters financial difficulty. Department Brief at 45; Ide pf. at 12.

339. If the Project fails to produce at least 65% of the output projected by Deerfield during any consecutive two-year period, then a decommissioning review should be instituted. Ide pf. at 13.

Discussion

The purpose of the Decommissioning Fund is to ensure that there are sufficient funds available to return the Project site to an appropriate condition at the end of the Project's useful life or earlier should the Project cease or reduce operations for any reason. The need for a Decommissioning Fund is not disputed among the parties; however some parties dispute the validity and sufficiency of the fund as proposed by Deerfield.

IWAG/SVR contend that the Decommissioning Plan lacks sufficient detail and that the dollar amount of the Decommissioning Fund has not been substantiated and is likely to be deficient in meeting the costs of dismantling the Project. IWAG/SVR recommend that the Board

seek counsel from an outside independent expert to validate the plan and the estimated decommissioning costs.⁹⁰

The Department recommends that the Decommissioning Fund "should not be controlled by or be an asset of Deerfield or any of its affiliates"⁹¹ and should be creditor and bankruptcy remote. The Department further states that if the Project's production falls below a level established by the Board, a decommissioning review should be initiated. The Department recommends that the production threshold should be set at 65% of the power output for the Project, projected by Deerfield to be 92,500 MWh annually.⁹² The Department also advocates that the amount of the Decommissioning Fund be based upon the full cost of decommissioning and not reduced by the estimated salvage value for any components of the Project.⁹³ Finally, the Department recommends that Deerfield provide, prior to construction, a revised detailed estimate of the costs of decommissioning, covering all activities specified in the plan.⁹⁴

Deerfield argues that the circumstances warranting future decommissioning and the establishment of its Decommissioning Fund are essentially the same as those considered by the Board for the UPC Vermont Wind Project.⁹⁵ Deerfield contends that its Project does not present any unique issues with respect to decommissioning that would necessitate a different approach.⁹⁶ Consequently, Deerfield asserts that its existing Decommissioning Plan, as represented by Exhibit DFLD-HGC-2, is consistent with the post-CPG plan approved by the Board in the UPC case, and thus the need for a post-CPG filing in this proceeding of an updated plan is unnecessary.⁹⁷ In addition, Deerfield argues that no other party has offered an estimate of the cost of decommissioning the Project, nor is there any evidence that Deerfield's cost

90. IWAG/SVR Brief at 8.

91. Department Brief at 46.

92. Department Reply Brief at 3; Finding No. 8.

93. Department Brief at 45.

94. Department Reply Brief at 4.

95. *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Final Order of 8/8/2007 at 107–110.

96. Deerfield Brief at 30.

97. *Id.*

estimate is unreasonable or inaccurate.⁹⁸ As a result, Deerfield proposes the following CPG Condition regarding decommissioning:

Deerfield Wind shall implement the Decommissioning Plan submitted as Exh. DFLD-HGC-2. The Decommissioning Plan may allow the fund to grow as the construction process proceeds such that the funding level is commensurate with the costs of removing infrastructure in place. The amount of the fund may not net out the projected salvage value of the infrastructure.

If actual power production falls below 65% of projected production during any consecutive two-year period, a decommissioning review is initiated; however, if Deerfield Wind can demonstrate that it has entered into stably priced power contracts with Vermont utilities through which a substantial amount of power is to be sold at stable prices, the Board may reduce the decommissioning trigger to as low as 50%.⁹⁹

Subsequent discussions between Deerfield and the Department have resulted in both parties reaching agreement on Deerfield's proposed condition above, plus three additional CPG conditions governing decommissioning of the Project.¹⁰⁰

Prior to commencement of construction, Deerfield Wind shall prepare a revised detailed estimate of the costs of decommissioning, covering all of the activities specified in the Decommissioning Plan. The plan shall certify that the cost estimate has been prepared by a person(s) with appropriate knowledge and experience in wind generation projects and cost estimating. The cost estimate shall be submitted to the Board for review and approval. Parties shall have two weeks to file any comments.

Deerfield shall submit to the Board, for review and approval, any permits, or executed lease agreements with involved private landowners. Any such lease agreements may be redacted to protect confidential business information. At a minimum, such lease agreements shall contain provisions which ensure that decommissioning can effectively occur in the event of Deerfield's insolvency or dissolution, the revocation of any permit issued to Deerfield, Deerfield's breach of any lease, or an order of the Board requiring decommissioning, and allow access to the impacted land for purposes of fulfilling any CPG condition, including access by representatives of the Department of Public Service, the Board, and the Agency of Natural Resources. Upon approval by the Board a notice of leasehold interest for each lease agreement shall be recorded in the land

98. *Id.*

99. *Id.* 30-31.

100. Department letter dated 2/20/09 at 1.

records of the relevant municipality. Deerfield may not begin significant construction activities prior to investigations, surveys, light construction, and other similar activities.

Deerfield shall submit to the Board the USFS special use permit and lease covering the federal lands on the site. Parties may file comments on whether the federal permit and lease contain terms that effectively meet the same objectives as detailed in the prior paragraph.¹⁰¹

We largely adopt the conditions agreed to by the Department and Deerfield as described above. We require Deerfield to file a Decommissioning Plan with the Board and parties prior to commencement of construction. The Plan shall include a revised estimate of the costs of decommissioning, covering all of the activities specified in the Decommissioning Plan, and shall contain certification that the cost estimate has been prepared by a person(s) with appropriate knowledge and experience in wind generation projects and cost estimating. Also, the Plan may allow the Decommissioning Fund to grow as the construction process proceeds such that the funding level is commensurate with the costs of removing infrastructure in place. The amount of the Fund may not net out the projected salvage value of the infrastructure. In addition, we require that the Decommissioning Plan include a copy of the Letter of Credit to be posted by Deerfield to secure the full amount of the Fund, and demonstrate how the Fund will be creditor and bankruptcy remote in the event of Deerfield's insolvency or business failure. We further require that the Letter of Credit be issued by an A-rated financial institution and that it name the Vermont Public Service Board as the designated beneficiary. The Letter of Credit shall be an "irrevocable standby" letter of credit and shall include an auto-extension provision (i.e. "evergreen clause").

Similar to the approach we approved in the UPC Vermont Wind Docket¹⁰² we adopt the Department's recommendation that a trigger be set for decommissioning review. Therefore, if actual production falls below 65% of projected production during any consecutive two-year period, a decommissioning review will be initiated.¹⁰³ However, in the event that Deerfield can show that it has entered into stably-priced power contracts with Vermont utilities through which

101. Department letter dated 2/20/09 at 1; Deerfield Reply Brief at Appendix A.

102. Docket 7156, Final Order of 8/8/2007 at 116

103. The 65% trigger for decommissioning review is also similar to that which we adopted in our consideration of the East Haven Windfarm. Docket No. 6911, Order of 7/17/06, at 85.

a substantial amount of power is to be sold to Vermont utilities at stable prices, we may reduce the decommissioning trigger to as low as 50% if we find that those contracts provide sufficient benefit to Vermont ratepayers. In any case, Deerfield would have the opportunity to demonstrate during this review that there are reasons for the decline in production such that the project should not be removed.

VII. POST-CERTIFICATION REVIEW

The Board typically requires that design detail level plans be filed for Board approval prior to construction. We continue this practice in this case. Deerfield shall file design detail plans with the parties and the Board for major project components, including access roads, collector lines, turbines, and the step-up substation. Parties will have three weeks, from the date each set of plans are filed with the Board, to comment on the plans.

VIII. CONCLUSION

For the reasons described above, we conclude that the Project, subject to the conditions listed below, will promote the general good, and a Certificate of Public Good shall be issued allowing its construction and operation.

IX. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that the 15-turbine, 30 MW wind generation facility and related facilities located in Searsburg and Readsboro, Vermont, proposed by Deerfield Wind, LLC ("Deerfield"), will promote the public good of the State of Vermont subject to the following conditions:

1. Construction, operation and maintenance of the Project shall be in accordance with the findings and requirements set forth in this Order.
2. Prior to proceeding with construction, Deerfield shall file, for Board approval, final construction plans for the turbines, access roads, collector lines, and substation. Deerfield shall note any changes in the final plans from the plans approved by this Order.
3. Deerfield shall obtain all necessary permits and approvals for the Project. Construction, operation, and maintenance of the Project shall be in accordance with such permits and approvals.
4. Deerfield shall enter into long-term, stably-priced power contracts with Vermont utilities for a substantial portion of the Project's power output. Deerfield shall provide an update of any negotiations with Vermont utilities 90 days after the date of this Order.
5. Prior to commencement of construction, Deerfield Wind shall file any such contracts entered into with Vermont utilities for Board review to determine if the contracts contain appropriate terms and conditions, including price stability and prices favorable to market purchases, to promote the general good of the State of Vermont. Along with the contracts, Deerfield Wind must also file an explanation as to how the contracts promote the general good of the State. If, after good-faith efforts on the part of Deerfield Wind and the utilities, Deerfield Wind cannot obtain in-state power contracts as specified above for the Project for a substantial portion of the output, it shall file a statement explaining why an agreement cannot be reached and why the Board should modify or remove this requirement.
6. Access roads will be gated and access to facility roads will be limited to authorized personnel only. The east-side access road will be double-gated with the existing gate at the end of the current GMP access road (at the beginning of the Deerfield access road). The west-side access road will be gated at the beginning of the Deerfield access road and again after the transmission corridor. Deerfield will include measures to prohibit and deter illegal ATV access and other unauthorized access.

7. Deerfield will prohibit major scheduled repairs and maintenance activities during fall periods when bears may be using beech trees.

8. Deerfield personnel will be restricted from the site during the nighttime hours and during the crepuscular periods that have been shown to be important periods for bear activity (one hour before and after sunrise and sunset), except in emergency situations and during necessary wildlife study periods not otherwise avoidable.

9. On the ground lighting at the facility will be limited to motion sensor lights at the substation.

10. Deerfield will evaluate each access road after construction to determine whether there are any specific bear crossings, and if identified, will take actions to preserve those crossing areas.

11. Deerfield shall file a proposal, for approval by the Board, for the land it proposes to conserve as a mitigation measure for the impact of the Project on bears. The proposal shall conserve at least 144 acres of land that is comparable to the remote, high elevation area of concentrated beech stands impacted by the Project.

12. Deerfield shall conduct a multi-year study on the impact of the Project on bears. Deerfield shall file a proposed study protocol for approval by the Board.

13. Deerfield shall file a detailed proposal describing how it will minimize indirect impacts to bears. Such a proposal shall address, at a minimum, gating the access roads, utilizing remote cameras to deter illegal entry, patrols by law enforcement, limiting activity at the Project during certain time periods, and preserving bear crossing areas along the access roads.

14. Deerfield shall not undertake construction activities during May and June to protect breeding birds. If Deerfield anticipates that construction will occur over the course of two seasons, Deerfield may propose that construction be allowed during May and June, but shall demonstrate that such permission will lessen the impact on breeding birds.

15. Deerfield Wind shall submit a post-construction bird and bat mortality study to the Board for review and approval, and shall obtain such approval prior to commencing commercial operation of the Project. Prior to submission to the Board, Deerfield Wind shall first submit a draft of the plan to ANR for its review and concurrence. If after good faith discussions, Deerfield Wind is unable to obtain ANR's approval of the plan, it may submit the plan to the

Board for resolution of any outstanding issues and final approval. The bird and bat mortality study plan shall at a minimum include the following elements:

- a) The study will be conducted for up to three years, with a minimum of two years.
- b) The studies will be performed by a qualified third party consultant;
- c) The study periods will cover both spring and fall migration;
- d) Scavenging rates and searcher efficiency controls will be established for each period of study;
- e) Scientifically and statistically valid survey protocols will be employed based on the best available scientific information;
- f) Use of dogs on the project site will be limited to the extent absolutely necessary to design and test valid survey methods;
- g) The methodology will be designed to minimize impacts on other natural resources within the project area including bear and moose habitat; and
- h) The Board and parties will have the opportunity to review the study results at the end of each study year.

16. Deerfield Wind will engage with ANR in a cooperative, team-based process to review bird and bat mortality data. If post-construction fatality monitoring demonstrates that the Project is having an undue adverse impact, i.e., avian or bat fatality estimates over the two-year period exceed the most current established threshold ranges for mortality at wind projects on northern forested ridges, Deerfield Wind shall submit an adaptive management plan to ANR and the Board. The adaptive management plan will incorporate reasonable scientifically proven measures to reduce fatality rates of the affected bird or bat species, and perform monitoring to evaluate the efficacy of the adaptive management measures. Actual measures to be taken will depend on the type and severity of impacts, cost benefit considerations, likelihood of accomplishing the desired outcome, and practicality. In the event that Deerfield Wind is unable to reach consensus with ANR during this review process, either entity may bring the matter to the Board for resolution. The Board shall retain final review and approval authority regarding the implementation of any adaptive management plan, and the need for a third year of mortality studies.

17. Deerfield shall submit to the Board and parties its NPDES Permit for Construction Sites for the Project prior to the commencement of earth-disturbing construction activities.

18. Deerfield shall submit to the Board and parties its Vermont operational phase stormwater permit prior to the creation of any impervious surfaces at the site.

19. Deerfield shall implement the Decommissioning Plan submitted as Exh. DFLD-HGC-2. The Decommissioning Plan may allow the fund to grow as the construction process proceeds such that the funding level is commensurate with the costs of removing infrastructure in place. The amount of the fund may not net out the projected salvage value of the infrastructure.

20. If actual power production falls below 65% of projected production during any consecutive two-year period, a decommissioning review is initiated; however, if Deerfield can demonstrate that it has entered into stably-priced power contracts with Vermont utilities through which a substantial amount of power is to be sold at stable prices, the Board may reduce the decommissioning trigger to as low as 50%.

21. Prior to commencement of construction, Deerfield shall prepare a revised detailed estimate of the costs of decommissioning, covering all of the activities specified in the Decommissioning Plan. The plan shall certify that the cost estimate has been prepared by a person(s) with appropriate knowledge and experience in wind generation projects and cost estimating. The cost estimate shall be submitted to the Board for review and approval. Parties shall have two weeks to file any comments.

22. Deerfield shall submit to the Board, for review and approval, any permits, or executed lease agreements with involved private landowners. Any such lease agreements may be redacted to protect confidential business information. At a minimum, such lease agreements shall contain provisions which ensure that decommissioning can effectively occur in the event of Deerfield's insolvency or dissolution, the revocation of any permit issued to Deerfield, Deerfield's breach of any lease, or an order of the Board requiring decommissioning, and allow access to the impacted land for purposes of fulfilling any CPG condition, including access by representatives of the Department of Public Service, the Board, and the Agency of Natural Resources. Upon approval by the Board a notice of leasehold interest for each lease agreement shall be recorded in the land records of the relevant municipality. Deerfield may not begin significant construction activities prior to investigations, surveys, light construction, and other similar activities.

23. Deerfield shall submit to the Board the USFS special use permit and lease covering the federal lands on the site. Parties may file comments on whether the federal permit and lease contain terms that effectively meet the same objectives as detailed in the prior paragraph.

24. Blasting associated with construction of the Project shall be minimized to the extent practicable and performed only during the hours of 9:00 AM-5:00 PM Monday-Friday, except that no blasting may occur on State holidays.

25. All blasting shall be carried out by licensed and certified blasting technicians. All blasting will be performed in accordance with any and all applicable laws and regulations, including, but not limited to, U.S. Department of Interior Rules 816.61-68 and 817.61-68 and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior to limit peak particle velocity and ground vibration to safe levels. Noise and air blast effects shall be limited through application of proper techniques and blasting mats will be used where needed to limit the occurrence of flyrock.

26. Prior to performing any blasting for the Project, Deerfield will develop a blasting plan that includes pre-blast surveys of wells and structures in the surrounding area and will arrange for a public information session with surrounding landowners to address concerns related to blasting.

27. In the event surrounding landowners express concern regarding the impacts of blasting on wells or other structures on their property, Deerfield shall perform evaluations to determine if any damage has occurred as a result of blasting activities and, if so, remediate any such damage.

28. Deerfield shall construct and operate the Project so that the turbines emit no prominent discrete tones pursuant to ANSI standards at the receptor locations; and Project- related sound levels at any existing surrounding residences do not exceed 45 dBA(exterior)(Leq)(1 hr) or 30 dBA (interior bedrooms)(Leq)(1 hr).

29. In the event noise from operation of the Project exceeds the maximum allowable levels, Deerfield shall take all remedial steps necessary to bring the sound levels produced by the turbine(s) into compliance with allowable levels, including modification or cessation of turbine(s) operation.

30. Deerfield shall submit to the Board for review and approval a noise monitoring plan to be implemented during the first full year of operation. The Plan shall establish a monitoring program to confirm under a variety of seasonal and climactic conditions compliance with the maximum allowable sound levels described above.

31. Deerfield shall submit the final SIS study (System Impact Study) and interconnection and substation plans to the Board, parties, and owners of the facilities to which the Project will

interconnect prior to construction. Parties shall have two weeks to file comments on the SIS study. Deerfield shall implement any changes determined necessary by the Board or ISO-NE to ensure system stability and reliability, and shall pay for any costs associated with such measures.

32. All turbine towers shall be painted white or off white.

33. Deerfield shall obtain and submit the final FAA determination prior to the erection of the turbine towers. Parties shall have two weeks to comment on the filing.

34. Deerfield shall submit a re-vegetation and landscape plan for disturbed areas created by the access road, substation, and transmission line infrastructure.

35. Deerfield shall take measures to ensure that disruptions to traffic flows are minimized and will implement appropriate safety measures, as described in this Order.

36. Deerfield must receive the necessary permits from the Vermont Agency of Transportation for oversized vehicles.

37. Deerfield shall pay to repair any damage to town roads caused by construction or other oversized vehicles.

38. Deerfield shall comply with the terms and conditions of the agreements between Deerfield and the Towns of Searsburg and Readsboro, which are attached hereto.

Dated at Montpelier, Vermont, this 16th day of April, 2009.

<u>s/James Volz</u>	)	
	)	PUBLIC SERVICE
	)	
<u>s/David C. Coen</u>	)	BOARD
	)	
	)	OF VERMONT
	)	

OFFICE OF THE CLERK

FILED: April 16, 2009

ATTEST: s/Judith C. Whitney
Deputy Clerk of the Board

NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.

JOHN D. BURKE**DISSENT**

I respectfully dissent from the Board's decision to grant a CPG for the Deerfield Project. I do agree with my colleagues' determinations that the Project will have adverse impacts on black bears and bear habitat, and that as proposed the Project offers insufficient benefits to offset those adverse impacts. Where I depart from the majority is their apparent conclusion that Deerfield can develop a plan that will sufficiently mitigate the impacts to bears and enter into purchase power agreements with Vermont utilities that will provide sufficient economic benefit such that, overall, the Project will promote the general good of the state. As presented, the costs resulting from this project are, in my estimation, dramatic and the benefits are comparatively insignificant.

As I see them, the most salient points are as follows:

First, as the majority acknowledges, at present the Project will provide relatively little public benefit. While the two host towns will receive payments that are, from the perspective of those towns, substantial, the remainder of the state will see minimal economic benefit. For instance, after the project is constructed only 2.5 full-time jobs would be created.

Second, the Project will have severe impacts on the local bear population. Construction of the Project will require cutting down 366 bear-scarred beech trees, directly destroying 35 acres of high-quality, high-elevation black bear habitat along the ridgeline. The majority characterizes as the direct loss of habitat by the relatively small percentage of the total habitat in the area that will be lost, approximately 1.3 percent. That percentage figure fails to capture the essential fact that the destroyed habitat sits at the top of the ridge, and thus comprises a much higher percentage of the critical ridge-top bear habitat. Furthermore, although the majority notes the remote nature of the ridge-top habitat, it does not give sufficient recognition to the extremely high value of this remoteness, especially critical to bear reproduction.

Third, in addition to the direct destruction of habitat, the Project will displace black bears from the ridgeline, forcing them to lower-elevation, lower-quality habitat where they face increased competition from other species. As the bears are driven down the mountain, they will likely come into closer proximity with humans, resulting in more "nuisance" bears with significantly higher mortality than if they had not been displaced from the higher elevations by

the Project. When bears have greater contact with domestic animals and people in residential back yards, their mortality rates skyrocket. The extent to which the Project would force bears down the mountain was disputed among the experts. None, however, disputed that displacement would occur, nor that those bears that do relocate in this manner have a shorter life span. As the majority points out, there is some uncertainty as to where the displaced bears may go. However, I found ANR witness Forrest Hammond to be the most persuasive of the bear experts. Mr. Hammond's testimony convinces me that the Project will result in the extensive downward displacement of bears and, correspondingly, a dramatic increase in the number of nuisance bears and a resulting increase in bear mortality.

Despite these drastic impacts on bear habitat and significant risk to bears, the majority would allow the Project to be constructed on the condition that Deerfield provides adequate mitigation. This I cannot accept for the simple yet profound reason that those impacts cannot be mitigated. While Deerfield might be able to develop a mitigation plan that adequately compensates for the direct loss of habitat, there is no foreseeable scenario in which it could mitigate the indirect impact of displacing bears down to lower elevations.

Even if substantial economic benefits combined with dramatic mitigation steps could shift the balance of costs and benefits, neither exists in this docket at present. No purchase power agreement exists except for an agreement to negotiate with Green Mountain Power Corporation, which is nothing more than a hollow and unenforceable promise.

I might be able to conclude that the Project's impacts on black bear would not be unduly adverse if the Project were accompanied by significant public benefits and sufficient mitigation. But that is not the case, as the majority itself has concluded. The majority decision affords Deerfield an opportunity to bolster the Project's economic benefit to the state through a condition requiring the sale of a substantial share of the power output to Vermont utilities at favorable prices. Inadequate mitigation of the risks to the bear population and the failure of the petitioner to provide adequate economic benefit to the State should have led to a denial rather than an approval with conditions.

Despite my conclusions in this proceeding, I believe that wind power projects on a Vermont ridgeline can be approved. While on the Board I have signed the Order approving such a project in Sheffield (Docket No. 7156), and while I signed the denial of the proposed East

Haven Windfarm (Docket No. 6911), that denial was specifically because of the petitioner's failure to conduct necessary scientific bat and bird studies.

Wind generation in Vermont appears to require ridgeline locations because our prevailing winds are from the west and we have hilly and mountainous terrain, most of which runs north and south. One size does not fit all, however, and the analysis of the costs and the benefits needs to be performed on a case-by-case basis.

In this case, the costs in my opinion clearly outweigh the benefits. I dissent.

Dated at Montpelier, Vermont, this 16th day of April, 2009.

s/John D. Burke

John D. Burke
Board Member

OFFICE OF THE CLERK

FILED: April 16, 2009

ATTEST: s/Judith C. Whitney

Deputy Clerk of the Board

Attachment A – Appearances

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Brian S. Dunkiel, Esq.
Geoffrey H. Hand, Esq.
Shems Dunkiel Kassel & Saunders PLLC
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John W. Kessler, Esq.
Julie F. Kelliher, Esq.
for Vermont Department of Housing & Community Affairs

Richard H. Saudek, Esq.
Cheney, Brock & Saudek, P.C.
for Towns of Readsboro and Searsburg

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for Green Mountain Power Corporation

Peter H. Zamore, Esq.
Benjamin Marks, Esq.
Sheehey Furlong & Behm, P.C.
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Robert M. Fisher, Esq.
Fisher & Fisher Law Offices
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James Matteau, Executive Director
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Jamey D. Fidel, Esq.
for the Vermont Natural Resources Council

Sandra Levine, Esq.
for Conservation Law Foundation

Lisa Linowes

for Industrial Wind Action Group

Thomas Shea, *pro se*

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Clifford and Diana Duncan, *pro se*

Phoebe Mills, Esq.
for Fairwind Vermont

Nancy S. Malmquist, Esq.
Downs Rachlin Martin, PLLC
for for National Grid USA, Inc.

Paul Burns, Executive Director
for Vermont Public Interest Research Group

Anthony Z. Roisman, Esq.
National Legal Scholars Law Firm
for For Save Vermont Ridgelines