STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7156

Amended Petition of UPC Vermont Wind, LLC, for a Certificate of Public Good, pursuant to 30 V.S.A. § 248, authorizing the construction and operation of a 40 MW wind electric generation facility, consisting of 16 wind turbines, and associated transmission and interconnection facilities, in Sheffield, Vermont, to be known as the "Sheffield Wind Project"	)))))))	Technical Hearings held at Montpelier, Vermont January 29, 30, 31, 2007 February 2, 5, 6, 7, 8, 2007 March 20, 2007

Order entered: 8/8/2007

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

APPEARANCES: *(See Appendix A)*

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I. INTRODUCTION

This Docket concerns a proposal by UPC Vermont Wind, LLC ("UPC", "Petitioner", or "Applicant") for a 16-turbine, 40 megawatt wind generation facility in Sheffield, Vermont (the "Project"). As the Public Service Board ("Board") has previously recognized, wind generation facilities such as the one proposed here can provide a number of benefits to Vermont and the region. The benefits can include fuel diversity, energy independence, reduced air emissions, increased tax revenues, and several other economic benefits.[1]

However, these benefits do not come without burdens. The Project would be located high on a ridgeline, with rotors 315 feet in diameter on towers 262 feet high. The towers have a sixteen-foot diameter at their bases and taper to nine feet in diameter just below the "nacelle".[2] With the blade tip in the vertical position, the total height would be approximately 420 feet. Given their size and location, the proposed wind turbines will be visible from many vantage points. In addition, the construction of sixteen turbines on an undeveloped ridgeline would result in significant environmental impacts.

It is our obligation and challenge to weigh these (and other) benefits and impacts to determine whether the proposed wind generation facility promotes the general good of the state, in accordance with the requirements of Section 248 of Title 30. After hearing from more than 35 witnesses at ten days of evidentiary hearings, from over one hundred citizens at three public hearings, and from hundreds more members of the public in written comments, we have concluded that with appropriate conditions the proposed Sheffield wind generation facility meets the statutory requirements, will promote the general good, and thus should receive a Certificate of Public Good allowing its construction and operation.

We have not reached this decision lightly, but only after consideration of thousands of pages of testimony, exhibits, and transcripts. Based on our review of that evidence, we have

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1. Docket No. 6911, Order of 7/17/06 at 101–102.

2. The nacelle houses the main mechanical components of the turbine and is approximately 15 feet square and 30 feet long.

reached the following conclusions, all of which are more fully addressed in the remainder of today's Order.

First, the Project will provide economic benefits to the state. These benefits include increased tax revenues to the state and the Town of Sheffield, new jobs associated with the Project, and lease payments for the use of the land on which the Project is to be located. Clearly, a primary economic benefit of the Project is the purchase by Vermont utilities of the renewable energy generated from the Project. Unfortunately, the pricing terms of the Vermont utilities' power purchases do not capture one of the major economic advantages of renewable energy: the free, and thus stable, cost of the fuel. Instead, the power contracts between UPC and Vermont utilities are largely indexed to regional power market prices, which are both highly volatile and expected to increase over time. By comparison, stably priced contracts — which could mean contracts with fixed price or contracts that are indexed to the regional power market but contain price collars or low-market adjusters — would provide the benefit of mitigating regional power market fluctuations and potentially high prices. Given the substantial additional benefits of stably priced contracts, we have concluded that, for the Project to promote the general good, we must include a requirement that UPC seek to negotiate stably priced contracts with Vermont utilities that would benefit Vermont ratepayers. We have also added an incentive for UPC, in the form of a relaxation in the trigger for decommissioning review if UPC enters such stably priced contracts.

Also from an economic perspective, we have concluded that concerns that the Project will result in closure of the King George School in Sutton are not supported by the evidence, nor are such concerns corroborated by the actions that the school's owner has taken in this proceeding.

Second, the Project will contribute to meeting a need for renewable power in the regional power pool of which Vermont is a member. Furthermore, this renewable generation source will promote significant public policy objectives that the Vermont legislature has established, including the goal of meeting the state's incremental load growth through the use of electricity generated by new renewable generation.

Third, we have carefully considered the impacts that the Project would have on aesthetics, noise levels, historic resources, public investments, the orderly development of the region, and the natural environment. We have concluded that while the Project would undoubtedly bring

some negative impacts, they would not be unduly adverse. The potential aesthetic and noise impacts have been among the most controversial of these impacts, based not only on the parties' positions but also on the large number of public comments that we have received. Many members of the public, and several of the parties, assert that the Project's large, utility-scale wind turbines will significantly diminish the scenic beauty of the surrounding area from which the turbines will be seen. In reviewing the visual impact of the Project, the Board utilized the Quechee test, adopted from the Vermont Environmental Board, and found that, although the Project would have an adverse visual impact, the impact would not be unduly adverse. In making this finding, the Board relied on visual simulations and viewshed analyses that demonstrated that the majority of the views of the Project are from a distance such that the size would not be overwhelming, and consequently, the average person would not find the Project shocking or offensive.

The Applicant was the only party to present an analysis of the potential noise impacts from the Project. While some of the other parties disagreed with the applicant's noise analysis, all parties agreed that conditions imposing maximum absolute noise levels could ensure that nearby locations do not suffer from unacceptable noise impacts. In today's Order we have included such conditions to protect the public from adverse noise impacts related to the construction and operation of the Project.

With respect to the Project's impacts on birds, bats, and other wildlife, we note first that the Project applicant has, commendably, conducted studies in accordance with the requests of the Agency of Natural Resources ("ANR"), which is the state agency with primary responsibility for and expertise in wildlife issues. The applicant also has entered into an agreement with ANR that includes measures to reduce, mitigate, and further assess the Project's impacts on wildlife. With the benefit of the solid groundwork provided by the applicant and the protective measures set forth in the agreement with ANR, we have been able to conclude that the Project, as conditioned in this Order, will not have an undue adverse impact on wildlife or on necessary wildlife habitat.

Another significant issue is the traffic impact from construction activities, particularly the impact on the Town of Barton. Today's Order acknowledges that, as in the construction of other large-scale projects that benefit the public good as a whole, some areas will bear more of a burden than others, even while receiving fewer of the project's benefits. However, we have

further concluded that the Project, with appropriate conditions, would not cause unreasonable traffic congestion or unsafe conditions.

In light of the real and potential impacts of the Project, it is critical to ensure that the facility is properly decommissioned at such time as it no longer provides substantial public benefit. We thus are requiring that the applicant establish a fully funded decommissioning account that would be unaffected by any future financial difficulties the applicant may experience.

Ultimately, our decision today rests on whether the Project promotes the general good of the state. After reviewing the evidence and arguments, we have determined that, with the conditions included in this Order, the Project satisfies the applicable statutory requirements, that the benefits of the Project are greater than its adverse impacts, and that, accordingly, it will promote the general good of the state.

II. PROCEDURAL HISTORY

On February 22, 2006, UPC Vermont Wind, LLC filed a petition for a certificate of public good, pursuant to 30 V.S.A. § 248, for the construction of up to a 52 MW wind generation facility, and associated transmission and interconnection facilities (collectively, the "Project"), in Sheffield and Sutton, Vermont.

The Board convened a prehearing conference on April 5, 2006, to establish a schedule for this Docket, identify potential parties, and explore preliminary issues.

On April 27, May 5, May 18, May 24, June 7, November 17, and November 30, 2006, the Board issued orders granting permissive intervention to interested parties. Permissive intervention was granted to: the Town of Sheffield; the Town of Sutton; the Town of Lyndon; the Town of Burke; the Town of Newark; the Town of Kirby; the Town of Westmore; the Town of Barton; Barton Village; Ridge Protectors, Inc. ("RPI"); Clean Power Vermont; Renewable Energy Vermont; Fairwind Vermont; United Health Services, Inc., and UHS of Sutton, Inc. (collectively "UHS"); Donald Gregory; Vincent and Frank Illuzzi; Michael and Marsha Burrington; Byron Savoy; and John and Marilyn Pastore.

Public hearings were held on April 26, 2006, in Sheffield, Vermont, on June 26, 2006, in Sutton, Vermont, and on November 8, 2006, in Sheffield, Vermont.

On May 12, 2006, UHS and RPI filed a motion to join, as necessary parties, the lessors of the land UPC has leased for the Project. On September 8, 2006, the Board issued an order denying the motion to join. The Board ruled that UHS and RPI had failed to meet the burden of advancing a cogent argument on why the absent party is needed to prevent inconsistent or inadequate judgements. Additionally, the moving parties failed to show that joinder would be necessary to minimize subsequent litigation.

On June 7, June 21, and September 7, 2006, the Board issued orders denying intervention requests by the Town of Sutton Planning Commission, Clint and Mary Grey, and Northeast Vermont Development Association ("NVDA"), respectively. The Board, in denying the Sutton Planning Commission's request, ruled that because the Planning Commission is a creature of the municipality of Sutton, without a distinct interest in the proceeding, approval would be inappropriate. The Board denied the Grey's intervention request for failure to demonstrate a substantial interest that may be impacted by the Project. The Board, in denying NVDA's request, stated that in addition to being untimely, the sole purpose of the request, to introduce the Regional Plan, had already been accomplished by another party.

On June 30, 2006, UHS and RPI filed a motion to compel information regarding the lease agreements that UPC had entered into with property owners. UHS and RPI requested: (1) information identifying the persons who had entered into lease agreements with UPC and the amount of land leased; (2) information related to the negotiation of property agreements; (3) information related to the negotiation of UPC's agreement with Sheffield; and (4) information related to UPC projects that are in the planning stage. On July 20, 2006, the Board issued an order in which the motion to compel was granted in part and denied in part. The Board found that information related to the lease agreements and information regarding UPC projects in the planning stage were not relevant to the proceedings in this case nor did UHS and RPI show that such information appeared to be reasonably calculated to lead to the discovery of admissible evidence. However, the Board found that information regarding negotiations between UPC and Sheffield was relevant to the issue of whether the Project promotes the public good and thus was within the proper scope of discovery.

On July 13, UPC filed a "Motion for a Protective Order" and requested that the Board approve a protective order between the Vermont Department of Public Service ("Department" or "DPS") and UPC. On July 20, 2006, the Board approved UPC's request for a protective order.

On July 28, 2006, parties other than UPC filed rebuttal testimony and exhibits.

On August 17, 2006, UHS filed a "Motion for a Protective Order" and requested that the Board approve a protective order between UHS and the Department. On August 18, the Board approved UHS's request for a protective order.

On August 28, 2006, UPC filed objections to certain testimony from the Town of Sutton, the Department, Donald Gregory, the Town of Westmore, and John and Marilyn Pastore. On September 27, 2006, the Board issued an order in which UPC's objections to portions of the prefiled testimony were granted in part, and denied in part. UPC asserted that Sutton did not have standing to present testimony from witnesses that do not reside within Sutton. The Board, in its September 27, 2006, Order, denied UPC's request to strike that testimony, stating that the testimony of those witnesses related to issues within the scope of Sutton's permissive intervention, and that Sutton's permissive intervention was not limited to only those factors which would affect the Town itself. The Board granted UPC's motion to strike portions of Robert Ide's testimony on behalf of the Department and testimony of Donald Gregory, a pro se party, relating to comments made by King George School employees, as hearsay. In addition, UPC's motion to strike the testimony of Westmore and the Pastores was denied. The Board stated that, while the testimony failed to comply with a strict interpretation of the Board's formatting rules, the filings provided the substantive content necessary to comply with the Board's procedural requirements.

UPC, on September 25, 2006, filed rebuttal testimony and exhibits that resulted in a substantially modified proposal for the project. On September 28, 2006, the Board issued a memorandum stating that the changes to the Project require an amendment to the petition.

A site visit was held on October 6, 2006. Over the course of the day, the site visit included stops at Crystal Lake State Park, the King George School, Darling Hill Road, Route 5, New Duck Pond Road and drives along Interstate-91 and several other roads in the area.

On October 13, 2006, UPC filed an amended petition indicating that the Project had been altered in several ways. The amendment removed 10 turbines from the array, altered the

locations of the remaining 16 turbines, and changed the turbine model, size, and rating, from 2.0 MW turbines to a 2.5 MW model. UHS and the Town of Sutton filed comments opposing UPC's amendment. By Order issued on November 1, 2006, the Board allowed UPC's October 13, 2006, amendment. Allowing the amended petition pursuant to Board Rule 2.204(G)(1), the Board found that the amendment would not unreasonably delay or unreasonably adversely affect the rights of any party, and that the amendments were a clear attempt to address concerns of parties and the public.

In an Order dated November 1, 2006, the Board established the schedule for the remainder of the proceedings.

On November 17 and 30, 2006, the Board issued orders granting intervention to the Village and Town of Barton, respectively.

On December 11, 2006, surrebuttal testimony and exhibits were prefiled by the Town of Sutton, the Town of Sheffield, the Department, the Vermont Division for Historic Preservation ("DHP"), and ANR.

On January 16, 2007, UPC filed a revised plan for the Project, which included moving two turbines, which had been proposed to be located in Sutton, to locations in Sheffield.[3]

Technical hearings were held from January 29 to February 9, 2007, and March 20, 2007.

Prefiled Testimony of Dr. Fitzhugh

On January 23, 2007, Sutton filed a motion to submit prefiled testimony from Dr. Karen Fitzhugh, the head of the King George School. The motion stated that it had subpoenaed Dr. Fitzhugh to appear because UHS, which owns the King George School, would not allow Dr. Fitzhugh to testify unless subpoenaed. On February 5, 2007, the Board allowed the late filed testimony of Dr. Fitzhugh, concluding that UPC would not be prejudiced if it was allowed to conduct discovery on Dr. Fitzhugh's testimony.[4] On February 16, 2007, the Board issued a

3. Throughout the remainder of this Order, the term "Project" refers to the project as revised by UPC's January 16, 2007, filing.

4. Tr. 2/5/07 at 93-94 (Volz).

memorandum establishing a schedule for additional proceedings that included a deadline for UPC to promulgate discovery regarding Dr. Fitzhugh's testimony on UHS and Sutton.

On March 7, 2007, UPC filed an objection to placing the prefiled testimony of Dr. Fitzhugh into evidence.[5] On the same day, UHS and RPI filed a request for a protective order against discovery requests from UPC.

UPC contended that the testimony of Dr. Fitzhugh was not compelled by subpoena, as represented by Sutton's January 23 filing, and that neither Sutton nor UHS would accept responsibility for responding to UPC's discovery requests concerning Dr. Fitzhugh's testimony. UPC stated that compelling discovery does not

> safeguard the Board's process, and does not provide an adequate remedy to UPC, given the now limited opportunity to prepare its case in response to issues raised by Dr. Fitzhugh. Postponing the hearings would also be an unfair and inadequate remedy, further delaying a timely decision on a project that UPC applied for over a year ago.[6]

UPC further contended that Dr. Fitzhugh's testimony is not necessary to its determination because the Board "now has a sufficient basis — from prefiled testimony, the live hearings and new admissions by UHS — to find that closure of the King George School *due to the Project* is speculative, represents a low risk, and thus doesn't warrant further hearings . . . ."[7]

In the alternative, UPC requested that the Board order Sutton and UHS to "immediately respond to UPC's discovery requests, and seeks an award to cover UPC's costs associated with this motion."[8]

On March 9, 2007, the Department filed a letter recommending that the Board deny UPC's motion to strike Dr. Fitzhugh's testimony. The Department contended that Dr. Fitzhugh's testimony is relevant to these proceedings. The Department recommended that the Board compel Sutton and UHS to respond to the discovery requests immediately.

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5. UPC's motion was termed a motion to strike. However, because the prefiled testimony had not been admitted into the evidentiary record it is inaccurate to designate the motion as one to strike testimony.

6. UPC 3/7/07 Objection at 2.

7. UPC 3/7/07 Objection at 1-2 (emphasis in original).

8. UPC 3/7/07 Objection at 2.

On March 12, 2007, UHS filed a letter recommending that the Board deny UPC's motion. UHS contended that the allegations made by UPC regarding any collaboration between Sutton and UHS are inaccurate. UHS stated that Dr. Fitzhugh's testimony would have been submitted only if a subpoena had been, or would soon be, issued that compelled the testimony. Additionally, UHS stated that UHS did participate in the preparation of Dr. Fitzhugh's testimony in that UHS had contemplated submitting rebuttal testimony by Dr. Fitzhugh and had prepared the testimony but not submitted the testimony due to cost constraints. UHS further contended that it is not subject to discovery regarding Dr. Fitzhugh's testimony and, if it were, the amount of discovery propounded by UPC is excessive.

On March 12, 2007, UPC filed additional information to supplement its objection to Dr. Fitzhugh's testimony.

The Board convened an oral argument on March 20, 2007, to hear from all parties. At the oral argument, UPC stated that UHS had ample opportunity to submit the prefiled testimony of Dr. Fitzhugh prior to January but chose not to, while Sutton never raised any concerns regarding the impact of the Project on the King George School until it filed its request to submit the late testimony of Dr. Fitzhugh. UPC further contended that Sutton took a risk by relying on UHS to file testimony regarding the King George School. Finally, UPC contended that the actions of UHS and Sutton damaged the integrity of the Board process.

Sutton stated that it did not assist in the preparation of Dr. Fitzhugh's prefiled testimony and also emphasized the importance of the King George School to Sutton.

Counsel for UHS stated that it was not taking a position regarding UPC's motion and that Dr. Fitzhugh's testimony

> does not represent the position of UHS in this case. We have answered discovery for UHS that specifically has acknowledged that UHS has no plan to close the school, if the project is built, it doesn't know what it will do. It has no current plan to do it. And it will consider a variety of factors about what to do.[9]

The Department stated that UHS had contacted counsel for the Department to ask whether the Department would be willing to subpoena Dr. Fitzhugh to produce testimony. The Department contended that it felt uncomfortable with the process leading to the filing of Dr.

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9. Tr. 3/20/07 at 23 (Marshall).

Fitzhugh's testimony but concluded that the issue of the impact of the Project on the King George School was sufficiently important that the Board should allow the testimony.

At the conclusion of the oral argument, we determined that the prefiled testimony of Dr. Fitzhugh would not be allowed into the evidentiary record and stated that we would subsequently issue a written order explaining the rationale for the decision.

We have sustained UPC's objection because the testimony of Dr. Fitzhugh has little relevance to this proceeding. Dr. Fitzhugh's prefiled testimony states that the Project would force the King George School to close. However, UHS, the parent company of the King George School, specifically disavowed Dr. Ftizhugh's testimony. If UHS believed that the Project would adversely impact the King George School it had sufficient opportunity to put forth such evidence, yet did not do so.

Further, we are troubled by the fact that counsel for UHS contacted the Department to see if the Department was willing to submit Dr. Fitzhugh's testimony. If UHS determined that it would not submit the testimony of one of its employees it seems questionable that it would offer another party to the case the opportunity to file the testimony.

Finally, we are disturbed that, once Sutton filed Dr. Fitzhugh's testimony, both Sutton and UHS failed to respond to discovery promulgated by UPC, each claiming that Dr. Fitzhugh was not its witness. In our February 5 ruling allowing Dr. Fitzhugh's testimony we specifically stated that discovery on Dr. Fitzhugh was necessary, and in a February 16, 2007, memorandum we developed a schedule specifically providing for Sutton and UHS to respond to any discovery requests regarding Dr. Fitzhugh's testimony. Because UHS and Sutton failed to respond to UPC's discovery requests, UPC was prejudiced in its ability to respond meaningfully to Dr. Fitzhugh's testimony. We expect parties to respond with legal adequacy to reasonable discovery requests by other parties. Neither UHS nor Sutton did so in this instance.

For these reasons we do not admit the prefiled testimony of Dr. Fitzhugh. With our ruling on Dr. Fitzhugh's testimony, UHS' motion for a protective order is moot.

III. COMMENTS OF THE PUBLIC

The Board actively solicited public comment in this Docket. Notice of the three public hearings in this docket was published in the *Caledonian Record.* Hundreds of people attended

and over one hundred members of the public commented on the Project at the public hearings. In addition, the Board has received hundreds of written comments both in support of and opposed to the Project, in the form of post-cards, letters and e-mails.

Under Vermont law, our decision must be based upon the evidence presented by formal parties during the evidentiary hearings. However, public comments play an important role by raising new issues or offering perspectives that we should consider. The Board has reviewed hundreds of comments and appreciates the many heartfelt concerns contained therein. These often eloquently expressed sentiments have greatly assisted us in our review of this Project. Although it is not possible to address each individual concern, we summarize the primary comments below.

The majority of the public comments addressed the issue of the aesthetic impacts of the Project on the surrounding area. Members of the public recommended that the Board deny the Project due to its adverse aesthetic impact, both visual and audial, and argued that Vermont's ridgelines would be degraded by windfarm development. Many of these comments focus on the bucolic and pristine natural environment of the surrounding area and describe what they argue are the negative impacts of the turbines on the beauty of the area. A great deal of the comments suggest that the adverse aesthetic impacts of the Project will negatively affect tourism, quality of life, schools and other activities in the surrounding area. Members of the public also argue that the economic benefits of wind power are outweighed by the adverse aesthetic impacts of the project. Other members of the public argue that wind turbines are aesthetically pleasing and, therefore, recommend that the Board approve the Project because it will enhance the beauty of the ridgelines. Some also asserted that the property tax paid by wind developers will benefit the communities in the area and thus outweigh any negative aesthetic impacts of the Project.

Numerous comments focused on the impact the Project would have on wildlife in the area. Members of the public argued that the Project will adversely impact wildlife in the area surrounding the project. Citizens also argued that the impacts on wildlife will also negatively impact fishing and hunting in the area.

The Board received many comments regarding the Project's impact on traffic in the area. Members of the public argued that construction of the Project and the associated transportation of

large equipment and machinery to the project site will be overly burdensome for local towns, especially the Town of Barton.

The Board also received a large number of comments concerning the renewable energy production of the Project. Members of the public cited the intermittent nature of wind power. Numerous comments suggested that the Project be located in areas with higher demand for power. Other members of the public argued that the Project is a clean, local, and renewable power source that will have fewer adverse environmental impacts than other power supply alternatives. A large number of comments focused on the Project as a means of combating global warming.

These issues are addressed throughout this Order. To the degree that these issues are within our jurisdiction, our Order seeks to address them by striking the proper balance among the Project's benefits and impacts based on the specific facts of this case.

IV. PROJECT DESCRIPTION

1. UPC Vermont Wind, LLC is a Delaware limited liability company, with its principal offices at 100 Wells Avenue, Suite 201, Newton, MA 02459 and with an office at 107 Eastern Avenue, Suite 10, St. Johnsbury, VT 05819. Cowan, Vavrik & Rowland pf. ("Cowan Panel") at 4.

2. The Project consists of the construction and operation of a 40 MW wind generation project to be located in the town of Sheffield in Caledonia County, Vermont. The Project would utilize sixteen, 2.5 MW turbines. The turbine array would run along a ridgeline from Granby Mountain to Libby Hill to Barrett Mountain (west of Norris Mountain). The elevation of the ridge varies between 1,970 feet and 2,540 feet. Cowan Panel pf. reb. at 2-3; tr. 1/29/07 at 36-40 (Cowan); exh. UPC-CRV-SSRb2a and SSRb3a.

3. UPC has entered into agreements with several landowners, covering approximately 3,000 acres in the Project area, which allow the company to:

- erect and operate the wind turbines and associated equipment;
- access the ridgelines from town roads and logging roads/trails;
- construct electrical collection lines from the turbines to a central collection

point near Vermont Electric Power Company, Inc.'s ("VELCO") existing St. Johnsbury to Irasburg 115 kV transmission line; and

- construct a substation and related electrical interconnection facilities to electrically connect to the VELCO line.

The vast majority of the Project lands that UPC has under agreement have been, and continue to be, utilized for timber harvesting. Cowan Panel pf. at 7; exh. UPC-CRV-13a-b.

4. The Project is partially located on timberlands that are actively owned and managed by Meadowsend Timberlands ("MTL"). MTL participates in the Use Value Appraisal Program and is required to conduct sustainable forestry under a forest management plan approved by the Department of Forests Parks and Recreation. Over the next five years, the management plan calls for logging on approximately 500 acres. Cowan Panel pf. reb. at 29; exh. UPC-CRV-Reb13.

5. In 2004, UPC received approval from the Board for the construction of meteorological towers at the Project site to measure wind speed. Cowan Panel pf. at 9.

6. UPC has gathered comprehensive, long-term wind resource data for the Project from the on-site meteorological towers. UPC has also obtained eight years of long-term wind data from a reference anemometer on Burke Mountain, located approximately twelve miles east of the site. Based upon all of the available data, the site has a predicted long-term average wind speed of 7.3 m/s (16.3 mph). Cowan Panel pf. at 9-10; exhs. UPC-CRV-5 and UPC-CRV-6.

7. Based upon the estimation of wind speed, and accounting for expected blade icing/fouling, cold temperature shutdown, turbine availability, array losses, high wind factors, electrical losses, and a margin for uncertainty, the expected annual net energy production of the Project would average 115,263 MWh. Cowan Panel pf. reb. at 4, as modified by exh. UPC-CRV-SSRb1; exh. UPC-CRV-6.

8. The Project's expected annual energy production would be equivalent to the energy demands of over 15,000 homes. This represents 100% of the homes in Caledonia County, or approximately 45% of the homes in the Northeast Kingdom. Exh. UPC-CRV-SSRb1.

Project Elements

Wind turbines

9. UPC intends to use Clipper Liberty Class IIB 2.5 MW turbines. It is possible, but not likely, that UPC would seek to use a different turbine given the rapid changes in wind turbine technology, and the severe supply limitations on turbines over the next few years. Cowan Panel pf. reb. at 8; tr. 1/29/07 at 52-54 (Rowland).

10. The proposed turbines are three-blade, upwind, Danish-style wind turbines with 315-foot diameter rotors on 262-foot towers. Each wind turbine is comprised of three components: the tower, the nacelle, and the rotor blades. The turbines would be supported by a conical tubular steel tower, which at its widest dimension is approximately 16 feet in diameter and which would taper to approximately nine feet in diameter just below the nacelle. The turbine towers would be painted white or off-white. The towers would be brought to the site in sections, and then mounted on a reinforced concrete foundation. The tower is topped by a nacelle, which houses the main mechanical components of the turbine. The nacelle is approximately 17 feet square and 22 feet long, and connects with the rotor hub. The interior of the towers can be accessed in order to maintain turbine components in the nacelle via a ladder. The rotor blades are made of carbon fiber reinforced fiberglass. 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. Cowan Panel pf. reb. at 3-4; Cowan Panel pf. at 13-14; exh. UPC-DR-Reb5.

11. Each Clipper machine houses four generators. By having four independent and smaller generators, the risk of power production outage is greatly reduced. If a generator fails, the turbine would still produce 75% of the rated power, rather than none in the single-generator design. Further, the Clipper incorporates a two-ton hoist in the nacelle that allows the onboard replacement of generators, pinions, and other equipment. This reduces the need for cranes to be brought on-site to perform repairs to the turbines. Cowan Panel pf. reb. at 3-4.

12. There are different types of foundations that can be used. If subsurface conditions are as anticipated, the concrete foundation would be a caisson approximately 20 feet in diameter and 30 feet deep. An alternate foundation would be a hexagonal block with a primary width of

approximately 55 feet and a depth of approximately 10 feet. The foundations would be almost completely below ground, with only approximately one foot visible above finished grade to serve as the attachment point for the lower tower section of each turbine. Cowan Panel pf. at 13; Cowan Panel pf. reb. at 5; tr. 1/29/07 at 152-153, 205 (Rowland).

Meteorological towers

13. The three meteorological towers that were constructed as part of the site evaluation would be removed. In their place, four meteorological towers would be constructed. The new meteorological towers would be of guyed lattice construction, with a triangular crosssection approximately 18 inches across. The top of the towers would be at nacelle elevation (78 meters or 256 feet). Two of these towers would be temporary. They would be placed on the footprint of a turbine, immediately following the clearing and before foundation work is initiated. The temporary towers would be removed after two to four months of data collection. Cowan Panel pf. at 14-15; exhs. UPC-CRV-12 and UPC-CRV-SSRb2a.

Transformers

14. Each turbine would have an associated step up transformer to increase the nominal generated voltage of 690V to 34.5 kV. The transformer would be a dead front, loop feed pad-mounted transformer mounted to a small foundation outside the base of the turbine. The footprint of these seven-ton units would be approximately eight feet square with the cabinet and cooling radiators in place (all dimensions and weights are approximate). A concrete pad approximately ten feet square would support each transformer at a location approximately ten feet from the base of the turbine. Each transformer would contain approximately 500 gallons of non- PCB containing mineral oil. Cowan Panel pf. at 15-16; Cowan Panel pf. reb. at 26-27.

Electrical collection lines

15. A 34.5 kV electrical gathering system would be built to deliver the energy from the turbine arrays to a substation to be built adjacent to VELCO's existing 115 kV line. The collector lines between the turbines along the ridge lines would be underground with an overhead collector line running along the Project's access roads to the substation. Pole heights would be

approximately 35 feet, although in some locations they may be as tall as 65 feet to span sensitive environmental resources (e.g., streams or wetlands) or due to other engineering constraints. Cowan Panel pf. at 16; exh. UPC-CRV-Reb 8.

Substation

16. Electrical energy collected at 34.5 kV would be transformed to 115 kV by a substation to be constructed adjacent to VELCO's St. Johnsbury-to-Irasburg 115 kV line. The substation would consist of 34.5 kV circuit breakers, a 34.5/115 kV power transformer, and related metering and protective relay equipment. Estey pf. at 16; exhs. UPC-CRV-SSRb3a and UPC-DC-3.

Other Equipment

17. Additional maintenance equipment would be located in a roughly 6,000-square-foot, single-story, metal-framed building. The location of the proposed maintenance building is identified on Exh. UPC-CRV-SSRb3a. An alternative under consideration is to lease adequate space within an existing building from a local landowner. Cowan Panel pf. at 17.

18. The maintenance building would be slab on-grade construction, with an appropriate climate-control system for the office and warehouse suitable for the equipment and personnel. An onsite septic system and water supply well would be provided. In addition, a gravel parking area would be created in front of the building that would allow for all-season access by maintenance personnel and delivery trucks. Given the height of trees in the areas under consideration (35 to 60 feet), it is unlikely that the building would be visible from any residence or public roads. Cowan Panel pf. at 17-18.

19. UPC proposed a lighting plan for the original layout under which 15 of the 26 turbines would be lit at night with synchronized pulsating red L-864 fixtures. The FAA approved that plan. *See* exh. UPC-CRV-14 and -15. UPC submitted an updated plan to the FAA for the September, 2006, revised layout, proposing that eight of 16 turbines be lit. The FAA has not yet made a determination on the January, 2007, layout. Cowan Panel pf. reb. at 11; tr. 1/29/07 at 57 (Vavrik); exh. UPC-CRV-Reb6.

20. The FAA's lighting determinations are advisory, not mandatory. However, not following its recommendations could expose UPC to significant liability, and project lenders would require that the FAA recommendations be followed. Tr. 1/29/07 at 179 (Rowland).

Transport Route

21. Entry to the proposed site area off of public roads would be from the west, rather than the east as contemplated under the original February, 2006, layout (which required access to both the northern and southern arrays). This is one of the three options provided for in the original Petition. UPC shifted to the proposed western access as the preferred route in order to address constraints regarding use of the I-91 emergency access ramp and the use of Dareios Road adjacent to the King George School. Cowan Panel pf. reb. at 6.

22. The proposed access route starts at the I-91 exit in Barton, proceeds on Route 16, then follows Route 5 through Barton Village to New Duck Pond Road, and then turns east into the project area via a legal town trail. A new access road would be built, utilizing portions of the legal trail as well as private land as the road runs west to east before turning north to the ridgeline. Cowan Panel pf. reb. at 6.

Internal Roads

23. The total length of on-site private roads is approximately 7.6 miles. This includes the access road from New Duck Pond Road, the existing logging roads that would be upgraded for use, and the new turbine roads. Of that total, 5.25 miles represents new road construction. Cowan Panel pf. reb. at 6; exh. UPC-CRV-SSRb1.

24. Upgrading the existing logging road to Barrett Mountain would consist of grading, new/replaced culverts, and new gravel work where necessary. The turbines on Granby Mountain and Libby Hill would be accessed via a new road. Cowan Panel pf. reb. at 5; exh. UPC-CRV-SSRb3a.

25. All access roads leading to the ridgeline would be 16 feet wide. Roadways that would require crane transit during construction of the Project would be constructed at a width of 16 feet, with a nominal ten-foot earthen shoulder on either side. This would allow sufficient width for a

large crawler crane to transit between the turbine sites, with the shoulders allowed to revegetate after completion of construction. Cowan Panel pf. at 19; exh. UPC-CRV-SSRb3a.

Land Clearing and Construction Activities

26. Existing vegetation cover in the project area reflects a variety of land management and timber harvesting activities. Vegetative cover includes active and recently cut areas, early successional forest, mid-successional second growth, and mature second growth forest. Cowan Panel pf. at 20; exh. UPC-CRV-13a and b.

27. The Project would involve clearing 63 acres during construction, of which 39 acres would be allowed to revegetate. Cowan Panel pf. at 20; exh. UPC-CRV-SSRb1.

28. Workspace and temporary laydown areas would be used to stage equipment and turbine components during construction. A workspace area around the base of each turbine would be cleared of vegetation and leveled to a maximum 5% grade during construction. Following construction, a permanent driveway would lead from the access road to each turbine, and a rectangular area of approximately 50 feet by 50 feet would be permanently established at the base of each turbine for maintenance purposes. Once construction and installation are completed, the remaining laydown areas would be stabilized, seeded and allowed to revegetate naturally. Cowan Panel pf. at 19-20, as modified by exh. UPC-CRV-SSRb3a (reduced size of laydown areas).

29. Construction of the Project would commence with site clearing of the existing vegetative cover in areas required to support road, turbine pad, and substation/interconnection facility construction and be followed in parallel fashion by construction of (a) project roadways and turbine area pads, (b) turbine foundations, (c) substation and interconnection facility, (d) electrical gathering system installation, (e) turbine erection, and (f) operations facility. Cowan Panel pf. at 21.

30. The Project would be built over one or two construction seasons, depending upon when construction begins. Tr. 1/29/07 at 79 to 80 (Rowland).

Project Operations

31. The Project would directly employ three to five permanent employees to maintain the individual wind turbines, transmission facilities, and site improvements (roads, gates, fences, etc.) on a routine basis, and to provide administrative assistance. A centralized Supervisory Control and Data Acquisition ("SCADA") system would monitor the condition of the wind plant equipment, alert service technicians to any fault or alarm conditions, record and sort data, and allow remote control of the turbines. Cowan Panel pf. at 25.

32. In general, with the exception of the fenced areas immediately surrounding the project substation and operations facility, landowners would continue to manage their lands and make decisions regarding access to their lands by the general public. If ice accumulation on the turbine blades poses an unacceptable safety risk (icing events of this magnitude would generally cause an automatic shutdown of the turbines), UPC may implement additional access restrictions in the area immediately surrounding the wind turbines. Cowan Panel pf. at 25-26.

V. SUBSTANTIVE CRITERIA OF SECTION 248(b)

Pursuant to statute, the Board is required to make positive findings related to criteria set out in Section 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

33. The 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 34 to 51, below.

34. The Project is located in the Town of Sheffield, in Caledonia County, Vermont, which is in the Northeast Kingdom region of the state. The Town of Sheffield does not have a town plan or zoning regulations. Cowan pf. at 32; Ide pf. at 5; exhs. UPC-CRV-SSRb 2a & b, 3a & b.

35. UPC provided forty-five day notice of the Project to the Sheffield and Sutton Selectboards, as well as to the Northeastern Vermont Development Association ("NVDA").[10] All towns within a ten-mile radius of the Project were also provided notice. Cowan pf. at 30; Ide pf. at 10.

36. On December 1, 2005, the Town of Sheffield conducted a special meeting at which residents, in a non-binding vote, voted 120-93 in favor of the Project. Aldrich pf. at 3-4; Cowan pf. at 31.

37. The motion voted upon at the December 1, 2005, meeting was "that the registered voters assembled at the special meeting, December 1, 2005, in this non-binding vote, approve in principle the proposal for a wind farm in the Town of Sheffield, subject to proper application being made, compliance with federal and state regulations, and further opportunities for the public input to state agencies as the project progresses." Aldrich pf. at 3-4.

38. The Town of Sheffield entered into an agreement with UPC that will provide the town with annual mitigation payments, based on fair market value and capacity of the Project, in addition to property tax payments. Aldrich pf. surreb. at 4; exh. Sheffield-MA-2.

39. The Town of Sutton does not support the location of wind turbines in Sutton because they would be inconsistent with the goals of the Sutton town plan and zoning regulations. The Sutton town plan was not intended to regulate development in adjacent towns. Michaud pf. at 12; tr. 2/7/07 at 193 (Michaud).

40. UPC has revised the Project so that no wind turbines will be located in the Town of Sutton. Exhs. UPC-CRV-SSRb 2a & b.

41. The NVDA did not file recommendations with the Board regarding the Project. *See* record, *generally*.

42. The regional plan for the Northeast Kingdom prepared by NVDA had expired in November of 2005, prior to UPC's filing of its initial petition in February of 2006. Cowan pf. at 33.

43. The current regional plan for the Northeast Kingdom was adopted on June 29, 2006, with an effective date of August 4, 2006. Exh DPS-RI-4.

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10. NVDA is the regional planning authority for Essex, Orleans and Caledonia Counties.

44. The region covered by the NVDA Regional Plan consists of Caledonia, Essex and Orleans counties, and includes the towns of Sutton and Sheffield. Exh. DPS-RI-4 at 1, 13.

45. The Regional Plan, in the "Future Land Use" subsection of the land use portion, divides the region into 5 categories. These districts are identified as (1) Regional Urban Centers, (2) Service Centers, (3) Rural Villages, (4) Rural Areas, and (5) Industrial Parks. Exh. DPS-RI-4 at 12.

46. The Plan sets forth "development pattern descriptions" for each category that "can be used to guide growth in an appropriate manner, keeping in the character of the area." Exh. DPS-RI-4 at 12.

47. The Project site is located within a Rural Area. Exh. DPS-RI-4 at 13.

48. The Regional Plan provides that the Rural Areas "should receive very little commercial or industrial development unless it occurs in an established industrial park, in an area specifically designated in the local zoning bylaw, or occurs in an appropriate scale for its rural surroundings." Exh. DPS-RI-4 at 15-16.

49. The Regional Plan recognizes wind energy as part of the region's energy portfolio. The Plan also recognizes that commercial-scale wind projects raise significant issues and identifies criteria to consider in reviewing these projects:

> (1) The consistency of the proposal with not only the region's plan and the host town's plan and zoning bylaws, but also the plans and bylaws of other towns which may be impacted by the proposed project.
> (2) A weighing of the potential benefits as well as negative impacts on not only the host town but other impacted towns, including a possible outline of tax payment benefits to impacted towns.
> (3) Applicants must include a comprehensive de-commissioning plan when filing for a Certificate of Public Good.
> (4) Appearance and operation of facilities should be weighed as an aspect to change the essential character of the area.
> (5) Proposed turbines should be sited to minimize the visual impacts.

Exh. DPS-RI-4 at 39.

50. The privately-owned land surrounding the Project is principally devoted to forestry. Road building and improvements for the Project will improve access for continued forest management on the surrounding land and provide additional revenue to the landowners. Cowan pf. at 29-30.

51. Outside of the fenced areas surrounding the electric substation and operations facility, public access to the land in the Project vicinity will be unaffected by the development of the Project. Cowan pf. at 25.

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.[11]

The Town of Sutton and RPI argue that the Project, because of its size and visibility, is not consistent with the land conservation measures contained in the Regional Plan or the town plans of surrounding towns. RPI argues that while an earlier draft of the Regional Plan supported commercial wind projects, the Plan "was revised to reflect that, overwhelmingly, comments on the draft NVDA plan reflected a negative attitude towards the construction of industrial wind facilities in the area."[12] Sutton contends that commercial scale wind turbines in a rural district of the region are not consistent with the Plan's directive "that all development comply with traditional development patterns and be compatible with existing land uses."[13] RPI and Sutton also argue that in addition to being inconsistent with the Regional Plan, the Project is opposed by several neighboring towns, including Sutton, Kirby, Westmore, and Barton.[14] In addition, RPI contends that "significant concern remains regarding whether the project will cause the King George School to close and, therefore, negatively impact the orderly development of the region."[15]

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

12. Brief of Ridge Protectors, Inc., at 5.

13. Brief of the Town of Sutton at 34-35.

14. Brief of RPI at 5; Brief of the Town of Sutton at 36.

15. Brief of RPI at 6.

UPC argues that while conformance with the Regional Plan and neighboring town plans is not required for Board approval of the Project, the Project, nonetheless is consistent with these plans. UPC argues that because the Regional Plan was not adopted until four months following UPC's filing of the initial petition with the Board, the Board "need not review the 2006 Regional Plan."[16] In the case that the Board decides that the Plan is applicable, UPC contends that the provisions of the Regional Plan applicable to the Project are "general guidelines and recommendations for assessing development" and, as such, do not "compel a particular outcome in this case."[17] UPC contends that the small footprint of the Project, "only 24 acres of permanent clearing," should be considered "very little" development in a rural area.[18] Further, UPC argues that unlike many large commercial enterprises, the Project "will not contribute to sprawl" because it will not increase traffic or development pressure along roads in the Project vicinity.[19] Finally, UPC argues that while the Project will be visible from some locations, the aesthetic impacts will not be so great as to impede orderly development of the region or have any effect on tourism in the region.[20]

The 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.[21] The Department contends that the Project will not impact public access to the privately-owned lands surrounding the Project and road improvements necessary for construction of the Project "may actually contribute to the surrounding lands remaining in a sustainable forestry context."[22] The Department argues that while there are some inconsistencies between the Regional Plan and the development of commercial wind facilities, these inconsistencies are not sufficient to conclude that the Project will unduly interfere with the orderly development of the region. The

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16. UPC Brief at 34.

17. *Id.*

18. UPC Reply Brief at 7.

19. *Id.*

20. *Id.* at 8.

21. Department Brief at 13.

22. *Id.*

Department contends that the Regional Plan adopts "a neutral approach to commercial wind development in the region."[23] The Department notes that the Plan "acknowledges that commercial wind generation deserves consideration as a potential resource for meeting current and future energy needs" in the region.[24] In addition, the Department argues that while the Sutton Town Plan discourages commercial wind development in specific areas in Sutton, it does not "provide insight into the town's vision for development in the region."[25]

UPC contends that we need not consider the Regional Plan, because it was not adopted until after the filing of UPC's initial petition in this docket. We agree. The Plan was adopted on July 29, 2006, over four months following the filing of UPC's initial petition in February of 2006. Therefore, the Plan does not apply to the Project.[26] However, even if the Plan applied to the Project, we conclude that the Project is consistent with the land use measures contained in the Plan.

As Sutton, RPI, and the Department have noted, commercial wind development is inconsistent with portions of the Regional Plan. The Plan divides land use in the region into five broad categories. The Project will be located in a designated rural area. Land use in this area is described as receiving "very little commercial or industrial development" outside of industrial parks or occurring in "appropriate scale for its rural surroundings."[27] Given the size and number of the turbines proposed, we conclude that they will constitute a large scale commercial development and thus be inconsistent with the land uses described as traditional in a rural area. However, given that most of the region's land is designated as rural and that the Project will impact only one small part of the region, we do not believe that this inconsistency compels a conclusion that the Plan prohibits these types of facilities.

Further, in spite of this apparent incongruity, the Plan specifically recognizes that commercial scale wind energy "needs to be considered as a resource" to meet some of the

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23. Department Reply Brief at 10.

24. Department Brief at 13-14.

25. *Id.* at 14.

26. See *Smith v. Winhall Planning Commission*, September 1, 1981, 140 Vt. 178, 46 A.2d 760.

27. Exh. DPS-RI-4 at 15-16.

region's "current and future" energy needs.[28] The Plan also recognizes that there are "significant, legitimate issues surrounding commercial-scale wind generation."[29] In order to mitigate the potential impacts of these facilities, the Plan sets forth several criteria for the Board to consider in its review of these types of projects.[30] The criteria include issues regarding regional and municipal plans and zoning, impacts on surrounding towns, de-commissioning, and aesthetics. In reaching our decision to approve the Petition in this case, we have addressed all of the issues raised in the Plan criteria elsewhere in this Order. Therefore, we conclude that the Project is consistent with the Regional Plan.

The Plan also acknowledges that towns within the region "may take positions on wind energy facilities which may be at significant variance with each other."[31] The Town of Sheffield does not have a town plan, but has voted in favor of the Project. The Sutton Town Plan discourages the development of commercial-scale wind facilities within the Town of Sutton. Other towns in the surrounding area also oppose the Project and contend, among other things, that the Project is not consistent with height restrictions or goals of preserving scenic vistas within their respective town plans.[32] While the statements in the respective town plans of neighboring towns are useful in defining the concerns of the towns regarding development within their respective boundaries, we conclude that they are not controlling of development within the region or, particularly, in other towns. It is true that the Project will be visible in neighboring towns. However, we conclude that the intrusion into the scenic landscape will not rise to a level that interferes with the orderly development of the neighboring towns or the region. The turbines will be located exclusively in the Town of Sheffield. Further, as we noted above, the Regional Plan recognizes that commercial-scale wind generation must be considered as a potential energy resource for the region as a whole. Therefore, we conclude that the Project will not unduly interfere with the orderly development of the region, and thus satisfies Section 248(b)(1). We

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28. Exh. DPS-RI-4 at 39.

29. *Id.*

30. *Id.*

31. *Id.*

32. Sutton Brief at 20-26.

also conclude that the Project will not negatively impact activities that currently take place on the lands surrounding the Project.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

52. 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 53 through 58, below.

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

54. UPC is not an electric distribution utility and is not required to implement energy efficiency or energy conservation programs. Because UPC is not selling electricity directly to retail customers it cannot implement load management programs. Cowan Panel pf. at 11, 34.

55. Energy efficiency and conservation programs do not increase the diversity of the state or regional generation supply. Cowan Panel pf. at 36.

56. Several states, including some in New England, have established programs such as Renewable Portfolio Requirements, which utilize a system of Renewable Energy Credits ("RECs"). There is a demand for RECs in New England and the Project would help meet that demand. Lamont pf. at 2-3; Kavet pf. at 6-7.

57. The Vermont legislature has established the Sustainably Priced Energy Enterprise Development ("SPEED") program that requires Vermont electric distribution utilities to meet their total incremental load growth between January 1, 2005, and January 1, 2012, through the use of electricity generated by new renewable generation. The Project would qualify under the SPEED program. Lamont pf. at 3; Kavet pf. at 7.

58. The Project is expected to produce an average of 115,263 MWh per year. Exh. UPC-CRV-SSRb1.

Discussion

The Board has previously addressed the applicability of the Need criterion to merchant power plants. In Docket 6812, involving a proposed power uprate of the Vermont Yankee Nuclear Power Station, the Board determined 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.[33]

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.[34] UPC's Project would contribute to meeting the regional need for power generally while also helping to meet the region's need for renewable power. Additionally, as discussed below, UPC has entered into power purchase contracts with Vermont electric distribution utilities; this would assist those utilities in meeting their renewable energy requirements under 30 V.S.A. § 8005.

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

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

59. The Project would not adversely affect system stability and reliability. This finding is supported by findings 60 through 66, below.

60. The Project would have the capability of isolating itself from the power grid if a portion of the Project experienced equipment failure. These capabilities include the ability to automatically shut off individual turbines or disconnect from the VELCO system in the event of ground faults, phase faults, over-current, under- and over-voltage, under- and over-frequency, and system imbalance within the Project. Cowan Panel pf. at 37.

61. The proposed turbines have power electronics that provide soft-start capability to reduce starting surges, ride-through short-term system voltage dips, and provide or consume reactive

33. Docket 6812, Order of 3/15/04 at 21, *quoting* Docket 6545, Order of 6/13/02 at 106.

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

power to improve voltage regulation on the interconnected transmission system. Cowan Panel pf. at 37.

62. A draft Interconnection System Impact Study ("ISIS") has been completed for the Project by GE Energy under contract with ISO New England Inc. ("ISO-NE"). The ISIS indicates that the Project would improve system performance for some contingencies. The Project would also likely increase the performance of the system by reducing line losses and reducing the loading of interconnections to other states and Canada. Estey pf. at 11-12; tr. 1/29/07 at 70 (Rowland); exh. UPC-CRV-SSRb4.

63. The draft ISIS identified a potential adverse contingency at the Berlin, New Hampshire substation. The Project's operation could cause voltage conditions at the Berlin substation to exceed acceptable levels. Three potential corrective measures being considered include: installing a capacitor bank at either the Project's substation or the Berlin substation; changing or adjusting the tap on the transformers at the Berlin substation; or adjusting the proposed turbines to operate in a lagging configuration to absorb excess VARs (volt-amperes reactive) from the system. Tr. 1/29/07 at 46-47, 196 (Rowland); exhs. UPC-CRV-SSRb4 and UPC-Cross-SL1.

64. UPC will not be allowed to connect the Project to the system until UPC demonstrates that the Project would not cause adverse impacts to system stability and reliability. Tr. 1/29/07 at 226 (Litkovitz); tr. 1/29/07 at 45 (Rowland).

65. UPC would be financially responsible for any modifications to the transmission system that are required to ensure that the Project does not impact system stability and reliability. Tr. 1/29/07 at 226 (Litkovitz).

66. The Project should not result in an adverse impact on transmission system stability or reliability. Estey pf. at 13.

Discussion

UPC has stated that the Project would not adversely impact system stability and reliability. It has also represented that ISO-NE would not allow UPC to interconnect with the transmission system until UPC has implemented any measures necessary to ensure that the Project would not adversely impact system stability and reliability.

We require UPC to submit the final ISIS study and interconnection and substation plans to the Board and parties prior to construction. Parties will have two weeks to file comments on the ISIS study. We also require UPC to implement any changes determined necessary by ISO-NE or VELCO to ensure system stability and reliability and to pay for 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

67. The Project would result in an economic benefit to the state and its residents. This finding is supported by findings 68 through 87, below.

68. The Project would result in the creation of new jobs, increased tax revenue to the State and Sheffield, and lease payments to the landowners hosting the facility. Kavet pf. at 3; Lamont pf. at 6; Ide pf. at 14.

69. Over 100 jobs are expected to be generated during the construction phase of the Project. UPC anticipates that the majority of the workers inolved in road, foundation, and electrical line construction would come from Vermont. Three to five jobs are expected to be created post-construction. Kavet reb. pf. at 13; Cowan Panel pf. at 21.

70. The majority of the economic expenditures that occur with the Project occur outside Vermont. Tr. 1/30/07 at 49-50 (Kavet).

71. Under an agreement between UPC and Sheffield, UPC would pay Sheffield between $400,000 to $550,000 per year in local taxes and mitigation payments. Local tax payments, which would represent between $125,000 to $150,000, would reduce Sheffield residents' taxes by 50%. The mitigation payments would be placed in a separate fund and managed and disbursed as determined by Sheffield. Aldrich pf. at 7; Aldrich surr. pf. at 6.

72. Additional generation in the regional mix would result in a slight lowering of the Location Marginal Price, thereby benefitting all ratepayers in New England. This effect would likely be more pronounced closer to the Project, allowing Vermont ratepayers to receive a benefit. Lamont pf. at 6-7.

73. Many of the construction materials needed for road building and for turbine foundations would be sourced locally. Cowan Panel pf. at 21.

74. There is no indication that the Project would have either a negative or positive impact on tourism. Kavet pf. at 5; Kavet reb. pf. at 23; exh. UPC-TK-2 at 17; tr. 2/7/07 at 247 (Copp).

75. There is no indication that the Project would have a negative impact on county-wide property values. Kavet reb. pf. at 21; exh. UPC-TK-Reb-1 at 38.

76. UPC's economic analysis of impacts on property values focused on the county level. Tr. 1/30/07 at 87-88, 90 (Kavet).

77. It is possible that aesthetic concerns could have a negative impact on property values in the area. Tr. 1/30/07 at 88 (Kavet).

78. There is insufficient information to determine the impact on property values on a town-wide basis. Tr. 1/30/07 at 90-92 (Kavet).

Dicussion

Pursuant to statute, 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.[35] 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. With respect to the economic benefit criterion, parties have made two overall arguments that the benefits of the project, as proposed, would not outweigh the impacts.

The first argument concerns the potential impact of the Project on the King George School, located in Sutton. For the reasons described below, we conclude that there is no evidence to indicate that the Project would impact the economic viability of the school, as some parties and public comments have claimed.

The second argument concerns the power purchase agreements that UPC has entered into, or intends to enter into, with Vermont electric distribution utilities. The Department contends that the Project does not sufficiently benefit the state absent stably-priced power contracts, rather

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

than the market-based contracts that UPC has negotiated. For the reasons described below, we conclude that, although stably-priced contracts would be preferable, the Project nevertheless provides sufficient economic benefit to the state to satisfy Section 248(b)(4).

King George School

One of the more contentious issues raised in this case involves the possible impact of the Project on the King George School. The school is owned and operated by UHS of Sutton, Inc; a subsidiary of Universal Health Services, Inc. UHS moved to intervene in this case and provided the following description in its motion:

> The King George School is a year-round, coeducational boarding school. The school's student population is comprised of young people who are bright and who have the intellectual capacity to succeed in a dynamic and challenging environment. However, they have psychological and behavioral issues that have caused them to experience difficulties in traditional public- or private-school environments. Thus, these are students who thrive in a school environment that is both structured and supportive and that maximizes their opportunities for academic and personal success. Thirty-five students presently attend the school and the school's existing facilities could accommodate as many as seventy-two students (with a staffing increase). With forty-five full-time employees and three vacancies, four part-time employees and three part-time contract positions, the King George School is also the largest employer in the Town of Sutton.[36]

Findings

79. The King George School has had financial difficulties for several years. Copp/Carr pf. at 12; tr. 1/30/07 at 94 (Kavet).

80. The King George School has had difficulty reaching projected enrollment levels that would be needed for it to break even financially and has been acquired by a company whose primary line of business is not operating schools. Tr. 1/30/07 at 75 (Kavet).

Discussion

UHS has been a party to these proceedings, and as such has never stated that the Project would have any impact on the school nor has it presented witnesses under oath to make similar

36. UHS Motion to Intervene, filed April 14, 2006, at 2.

claims. While Dr. Fitzhugh, the head of the King George School, made claims regarding the potential for the Project to cause the closure of the school, those claims have not been adopted by UHS in this Docket. Dr. Fitzhugh made her claims at the first public hearing[37] and in prefiled testimony that was prepared by Dr. Fitzhugh but was not admitted by the Board (see Procedural History). These claims are not evidentiary testimony, and are not made under oath and subject to cross-examination. Consequently, such claims cannot be relied upon as evidence. As noted earlier in this Order, counsel for UHS stated on the record that Dr. Fitzhugh's testimony

> does not represent the position of UHS in this case. We have answered discovery for UHS that specifically has acknowledged that UHS has no plan to close the school, if the project is built, it doesn't know what it will do. It has no current plan to do it. And it will consider a variety of factors about what to do.[38]

The record does not contain any evidence that the King George School will close if the Project is built.

UPC contends that the school has had financial difficulties in the past few years, and that if the King George School were to close in the near term it would be as a result of these factors rather then the Project.

RPI disputes UPC's contention that the King George School is in financial difficulty. RPI contends that the poor economic indicators regarding the school reflect the fact that the former corporate parent of the school experienced financial problems in 2005. RPI states that, "the only logical conclusion is that — present deficit included — the school is in the midst of a several-year turnaround and has the backing of a large, sophisticated [corporate] parent that wishes to see it succeed."[39]

We conclude that there is no evidence that the Project would adversely impact the King George School. Evidence in the record indicates that if the school has an uncertain future, it is due to financial issues unconnected to the Project.[40] Additionally, it is significant that none of

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37. Tr. 4/25/06 at 67-68 (Fitzhugh). Dr. Fitzhugh did not state, at the public hearing, whether she was speaking on behalf of the school.

38. Tr. 3/20/07 at 23 (Marshall).

39. RPI Brief at 6, footnote 1.

40. In addition to the findings included in this order there is additional evidence regarding the King George School's financial situation that was received under seal. While we are not relying on that evidence in this decision,

the comments regarding the possible impact of the Project on the school were made by UHS, the parent company for the King George School, nor would UHS allow Dr. Fitzhugh to testify in her official capacity.[41]

Power Purchase Contracts

81. Washington Electric Cooperative, Inc. ("WEC") has entered into agreements with UPC to purchase 2 MW of the Project for a fixed price and an additional 4 MW at a weighted average of the market price. Tr. 1/29/07 at 62 (Vavrik); Patt pf. at 3-4.

82. UPC and Vermont Electric Cooperative, Inc. ("VEC") have entered into a power purchase agreement whereby VEC would purchase 50% of the Project's output at 95 % of the market price for the first ten years and 90% of the market price for the following ten years. Tr. 1/29/07 at 42-43 (Vavrik).

83. UPC and Central Vermont Public Service Corporation ("CVPS") have discussed an arrangement similar to the power contract between VEC and UPC. Tr. 1/29/07 at 43 (Vavrik).

84. UPC is in the process of negotiating power contracts for the Project and anticipates that all output from the Project would be sold to Vermont retail electric utilities. Cowan reb. pf. at 19; tr. 1/29/07 at 42-43 (Vavrik).

85. A positive attribute of renewable power generation is that it does not have the cost volatility due to fuel prices that other forms of generation experience. Ide sur. pf. at 17.

86. Contracts tied to market prices do not provide the price stability that is desired in a power contract. Such market-based contracts represent a financial resource for the purchasing utility but do not stabilize power prices or provide much value in structuring a power portfolio. Lamont pf. at 6.

87. UPC expects the market price for power to increase over the next 20 years. Tr. 1/29/07 at 67-68 (Vavrik).

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that evidence is not inconsistent with these findings and conclusions.

41. Tr. 3/20/07 at 23 (Marshall).

Discussion

UPC proposes to sell the power from the Project to Vermont utilities. The fact that UPC has entered into agreements with Vermont utilities for the purchase of the renewable power produced from the Project has made it substantially easier to determine that the Project promotes the general good of the state. However, the degree of the economic benefit to the state resulting from the Project will be greatly dependent upon the terms of those power sales. The Department contends that the Project would not promote the public good without power contracts that have stable, rather than market-based, price terms and recommends that we condition any approval of the Project "on the requirement that UPC sell the Project's output to Vermont utilities at rates, terms and conditions that result in price stability for the purchasing utilities."[42] The Department contends that one of the major benefits of renewable generation is price stability, and the power contracts that UPC has negotiated do not contain this feature because they are indexed to regional power market prices. With respect to UPC's statement that UPC cannot reach an agreement with Vermont electric utilities regarding a stably priced power contract, the Department states:

> UPC is either unwilling, or unable, to price its power in a stable manner at a level low enough for the purchasing utilities to accept. If, in fact, UPC is unable to construct and operate the project in a manner that will deliver one of the primary benefits of renewable resource generation, then either UPC is not the appropriate petitioner, or this is not the appropriate project for approval under the public good standard.[43]

The Department contends that, "[g]iven the significant impacts associated with the project, the Board should adopt the Department's proposal with respect to purchase power agreements for the project's output or decline to find that construction and operation of the project is in the public good."[44]

UPC asserts that the Project would result in an economic benefit to the state due to the discount off the regional power market price that is contained in the power purchase contracts. Further, UPC contends that the long-term nature of the contracts "provides a measure of stability

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42. Department Brief at 49-50.

43. Department Reply Brief at 5-6.

44. Department Reply Brief at 6.

for the Vermont utilities."[45] UPC states that it is not necessary to sell all of the power from the Project to Vermont utilities in order for the Board to find that the Project results in an economic benefit to the state: "[e]ven if a smaller percentage were sold to Vermont utilities, Vermont would still benefit as part of the regional system that will have the increased renewable power supply, diversification, RECs, and reduced emissions."[46] Finally, UPC contends that it has offered its lowest non-market based price to Vermont utilities but the utilities have not accepted UPC's offer for such a fixed-price contract.[47]

The Vermont General Assembly delineated the policy goals to be achieved by renewable energy in 30 V.S.A. § 8001. In particular, the statute states:

> (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.
>
> (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.[48]

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45. UPC Reply Brief at 13.

46. UPC Reply Brief at 14.

47. Tr. 1/29/07 at 66 (Vavrik).

48. 30 V.S.A. § 8001.

Section 8001 provides a list of the benefits of renewable energy. The Department cites to one of these benefits, long-term stably priced power contracts, and recommends that we condition approval of the Project on UPC entering into such contracts. While the Project does not meet the policy goal of providing stably priced power, it provides several other benefits to the state, benefits that are specifically cited in Section 8001. The Project helps diversify the state's energy portfolio, contributes to reductions in global climate change, protects and promotes air quality, and results in long-term power contracts for Vermont's electric distribution utilities. An analysis of whether the Project meets the policy goals established in Section 8001 requires that we examine all of the policy goals, not just the question of what type of power contracts UPC has entered into.

Furthermore, we must look not only at these policy goals but also at the fundamental question of whether this particular project promotes the general good of the state and whether the impacts are outweighed by the benefits. As the Department notes, Vermont is bearing a burden by hosting the Project. Although we find that the aesthetic and environmental burdens associated with the Project are not undue, Section 248 further requires us to balance the burdens and benefits of proposed generation and transmission facilities and determine whether the Project "will promote the general good of the state . . . ."[49]

Power contracts indexed to the regional power market, such as those presented here, do not capture the economic value of wind generation facilities. From an economic perspective, one of the primary benefits of wind power is that the fuel source is free. Consequently, the majority of the costs of the Project are capital and maintenance, costs that are generally predictable. By comparison, gas-fired generation units have fuel costs that can vary considerably over time, in addition to the capital and maintenance costs. By entering into contracts that are indexed to the regional power market, the Project has economic characteristics similar to a gas-fired generation plant and fails to capture a primary benefit of wind generation facilities — price stability.

Currently, natural-gas-fired generating plants constitute a substantial portion of the installed generation capacity in New England and usually set the marginal price for electricity in New England's spot market. Because of this reliance on gas, regional power market prices are

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49. 30 V.S.A. § 248(a)(3).

subject to severe fluctuations due to events (such as cold snaps where gas is diverted for heating use or hurricanes that disrupt pipelines) that constrain delivery of the gas needed to run these plants. During such constrained periods, increases in regional power market prices can be substantial. Additionally, both global and national demand for natural gas make it unlikely that constraints will be mitigated in the near term, thereby increasing the likelihood that natural-gas prices, and therefore electricity prices in the ISO-NE regional power market, will continue to remain volatile and high. Because the power contracts that UPC has entered into are directly linked to natural-gas prices, rather than providing stable prices that would be expected from a generating source without fuel costs, the contracts may well result in volatile, high prices for Vermont utilities.[50]

The term "stably priced" that appears in Section 8001 is not fully explained in the statute. Although one possible description would be a contract with a fixed price over the term of the contract (that could include adjustments for inflation), this would constitute only one example. Other examples include (1) an indexed contract with price collars such that the price does not fall below or rise above certain amounts and (2) a fixed-price contract with a low market adjuster, such as the power purchase agreement reviewed in the sale of the Vermont Yankee Nuclear Power Station to Entergy Nuclear Vermont Yankee, LLC.[51]

In addition, it is possible that a contract could contain more than one type of price term. For example, a contract could state that a certain percent of the output would be sold at a fixed price, a certain percent would be sold at an indexed price containing collars, and a final percent of the output would be sold at a discount off the regional power market price. Such a diverse power purchase contract would help shield ratepayers from economic impacts arising from fluctuations in regional power market prices and would provide an economic benefit to the state.

The Department concludes that the Project does not provide sufficient benefit to Vermont without stably priced power contracts. We agree with the Department's general proposition that stably priced contracts, at reasonable price terms, are beneficial. The volatility of the regional power market and the price increases expected in this market lead us to conclude that UPC's

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50. This conclusion is supported by the testimony of UPC's own witness that regional power market prices are expected to increase. Tr. 1/29/07 at 67-68 (Vavrik).

51. See Docket 6545, Order of 6/13/02.

proposed indexed contracts with Vermont utilities may not provide an economic benefit to Vermonters sufficient to justify the impacts of the Project. While we are able to make positive findings under each of the criteria of Section 248 and find that the Project does not create undue adverse impacts, we must also, ultimately, determine whether the Project promotes the general good of the state. Because stably priced power contracts represent substantial potential economic benefits that have not been included in the Project as currently proposed, and in light of the not insignificant impacts from the construction and operation of the Project, we conclude that the general good will not be promoted unless we condition our approval of the Project on the requirement that UPC make further efforts to enter into stably priced contracts with the Vermont utilities.

The Department has proposed that we deny the Project unless UPC enters into stably priced contracts with Vermont utilities. The Department's proposal, while based on sound policy, could unfairly burden UPC's ability to negotiate power contracts with Vermont's distribution utilities. The failure of UPC to date to enter reasonable, stably priced contracts with Vermont utilities does not necessarily mean that UPC itself was unwilling to enter such contracts, given that the acceptance of both parties to the contract, including the utility, was required.

These considerations have led us to modify the Department's proposed condition, as follows: we condition the CPG on UPC making all reasonable efforts to enter into diverse, long-term, stably priced power contracts with Vermont utilities. UPC must produce copies of such contracts entered into with Vermont utilities for Board review and approval, prior to commencement of construction. We understand that UPC would be entering into these negotiations with a different negotiating status than if we did not include the condition regarding stably priced contracts. However, the Vermont utilities should be fully aware that, if needed, the Board has the authority to open an investigation into any unwillingness to enter into reasonable power contracts. If, after good-faith negotiations on the part of UPC and the utilities, UPC cannot reach an agreement, it may file a statement explaining why an agreement cannot be reached and why the Board should modify or remove this requirement. If UPC files such a statement, we will revisit this issue at that time. In any event, UPC should provide an update of any negotiations with Vermont utilities 90 days after the date of this Order.

It is in the interest of Vermont utilities to enter into such contracts and we expect the utilities to negotiate in good faith with UPC to reach mutually agreeable terms. Vermont utilities have an incentive, created by the Legislature's requirement that all distribution utilities meet incremental load growth through renewable energy,[52] to enter into contracts with renewable generators. One possible reason for the Vermont utilities' reluctance to enter into stably priced contracts is the regulatory uncertainty associated with entering into a long-term contract with set price terms. However, we note that there is no regulatory certainty for utilities entering into long-term market-based contracts. Furthermore, given the state's policy toward stably priced contracts, a failure to reach such beneficial contracts, or excessive reliance on market-based contracts, would not be looked on favorably when the Board reviews the prudence of Vermont utilities' resource acquisition decisions.

Given the substantial advantages of stably priced power contracts for Vermont utilities, we also offer UPC an incentive to enter such contracts. We address the issue of a decommissioning fund for the proposed project later in this Order, where we require UPC to develop a decommissioning plan and establish a trigger for decommissioning review; if the actual output of the project falls below 65% of the projected output over a two-year period, a decommissioning review will commence. Our concern in establishing a trigger for the decommissioning review is that the proposed project should not continue to impose aesthetic impacts if it is not producing sufficient benefit to the state. The benefit to the state is partially dependent on the terms of UPC's sale of power to Vermont's utilities; if Vermonters received the benefits of stably priced, long-term power contracts, the Project would have greater economic benefits. Consequently, if UPC can demonstrate that it has entered into stably priced power contracts with Vermont utilities, we could find that the benefit to the state from the project is sufficient such that the decommissioning trigger could be reduced to as low as 50% if a substantial amount of power is to be sold at stable prices.

52. 30 V.S.A. § 8005.

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

[30 V.S.A. § 248(b)(5)]

88. The modifications as proposed will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and public health and safety. This finding is supported by findings 89 through 321 below, which are the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)-(8)(a) and (9)(k).

Public Health and Safety

89. The Project will not have any undue adverse affect on public health and safety. This finding is supported by findings 193 through 204 (noise), findings 146 through 166 (traffic), and findings 91 through 92, below.

90. Analyses of potential icing and shadow flicker show that neither presents undue health or safety risks to the public. There are no residences, public roads, or other receptors that would be potentially impacted by either ice throw or shadow flicker from the turbines. Exhs. UPC-CRV-19 and -20; exh. UPC-CRV-Reb5; Cowan Panel pf. at 42; Cowan Panel pf. reb. at 9-10, 24-25.

91. The risk of fires due to lightning or equipment failures is small because there are very limited fuel sources available in modern wind turbines. Furthermore, if a turbine were to catch on fire, no specialized equipment would be necessary to combat the fire. No efforts would be, or should be, made to extinguish a fire on top of a wind turbine. The fire should be allowed to burn itself out with local crews set to extinguish any secondary ignition sources on the ground. Therefore, no special equipment would be needed in the event of a fire. To the extent that fires have occurred at modern wind turbines, they have been extremely rare events. Cowan Panel pf. reb. at 25.

Discussion – Public Health and Safety

The Project will not have an undue adverse effect on public health and safety. Ice throw, shadow flicker, and noise pose no risk to public health and safety, given the distance from the Project's turbines to residences and public roads. With respect to transport issues, UPC has

demonstrated that traffic delays at key Barton intersections will be brief, and that the transport trucks can be maneuvered out of the way to allow emergency vehicles to pass.[53]

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

92. The Project is not located near any outstanding resource waters. Cowan panel pf. at 38.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

Air Pollution

93. The Project would not result in undue air pollution. This finding is supported by findings 94–99, below.

94. The wind turbines themselves would not produce any air pollutants; however, one or more emergency backup generators may be installed on-site to provide power for the operations and maintenance center in the event of a loss of power. The generators would not require a permit from ANR. Cowan panel pf. at 39.

95. The power generated by the turbines may displace fossil fuel generation. In New England, the marginal energy source is fossil fuel (natural gas, coal or oil) and the emissions that would have been created in the absence of the Project may be displaced. Lamont pf. at 3.

96. The Project may not actually lower emissions in the region due to the existence of cap-and-trade regimes such as the Regional Greenhouse Gas Initiative ("RGGI"). However, the addition of a non-emitting generation source in the region could lower the price of emissions certificates, and thereby create an environment which could lead to the lowering of the emissions cap. Lamont pf. at 3-4; Lamont pf. surreb at 2-4.

97. Without additional renewable generation sources such as the Project, meeting the RGGI cap would become more difficult and more costly. Tr. 1/30/07 at 136 (Lamont).

98. There will be some dust created during construction activity from earth disturbance and from concrete batching. These activities will be subject to appropriate permits, and dust from

53. Transportation issues are discussed in greater detail below, in the section on Transportation Systems.

earth disturbance will be minimized through site-specific mitigation measures such as regular watering of earthwork areas and possible use of non-impacting chemical dust palliatives during heavy construction times. Cowan panel pf. at 40.

99. Sound levels from Project operation are expected to meet U. S. Environmental Protection Agency ("EPA") and World Health Organization ("WHO") noise guidelines, and thus will not create an undue adverse impact on human health. Bajdek pf. at 8; Bajdek/Menge pf. reb. at 14; tr. 2/2/07 at 66 (Bajdek); findings 192–203, below.

Discussion

The Project will not have an undue adverse impact on air quality in the region. While the Project may not result in a net emissions reduction in the region, neither will its operation result in any increase in air emissions.

The construction of the Project will result in some dust typical of a large construction project, and the Petitioner will implement a site-specific plan with construction practices that will minimize fugitive dust emissions.

With respect to noise, under Environmental Board precedent noise is considered air pollution under Criterion 1 of Act 250 when it may cause adverse health effect, i.e., impacts rising above annoyance and aggravation to cause adverse health effects such as hearing damage.[54] Welfare Impacts, or well being, are considered under Criterion 8 of Act 250.[55] There is no indication in this case that the Project will pose adverse health effects. UPC has performed noise modeling which demonstrates that the EPA and WHO guidelines designed to protect human health (including effects due to sleep disturbance) will be met. If the noise impacts are not as expected, the noise-related conditions that we impose below (in the discussion of noise as an aesthetic issue) will provide assurances that any undue noise levels will be properly mitigated.

Because operation of the turbines will not produce any emissions and because the emissions produced during construction will be limited and temporary, the Project will not have an undue adverse impact on air quality.

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54. *Re: Vermont RSA Limited Partnership*, DR #441, Memorandum of Decision at 2 (V.E.B. May 11, 2005).

55. *Re: City of Montpelier and Ellery E. & Jennifer D. Packard*, #5W0840-6-WFP, Order at 21 (V.E.B. May 22, 2000).

Water Pollution

Findings

100. The Project would not result in undue water pollution. This finding is supported by findings 101–114, below.

101. The total area of land clearing during construction will be approximately 66 acres. Of that total, approximately 15 acres will be permanent new impervious area. Because the Project will be constructed based on the higher regulatory standards for both construction-phase and operational-phase stormwater discharge that are now in effect, there is a high degree of confidence that water quality standards will be maintained during and following construction. J. Nelson pf. reb. at 7–8; exh. UPC-CRV-SSRb1; findings 102–108, below.

102. Only one turbine (T1) will be located above 2500 feet; that turbine would have a base elevation of 2531 feet. There are no identified surface waters within the area of this turbine. Given the very limited amount of construction that will occur within this area, there should be no adverse impacts to Class A waters. J. Nelson pf. reb. at 10, 22; Cowan Panel pf. at 44-45; exh. UPC-CRV-SSRb3a.

103. Construction and operation of the Project will require federal and state stormwater permits, for which UPC will submit applications during the final design stage of the Project, subsequent to issuance of a CPG. Preliminary plans show that the Project is capable of meeting or exceeding all of the technical standards required to obtain these stormwater permits. Cowan Panel pf. at 43; R. Nelson pf. at 9-21.

104. It is anticipated that an Individual National Pollutant Discharge Elimination System ("NPDES") construction phase stormwater discharge permit will be required for the Project. A site-specific Erosion Prevention and Sediment Control Plan ("EPSC") would be prepared in connection with that permit. This permitting process allows ANR to ensure that the Project is constructed in a manner that protects water quality. For example, very strict limits on the amount of exposed soil at any one time and the duration of time that exposed soil could remain unstabilized would typically be included as conditions to an individual permit. J. Nelson pf. reb. at 18.

105. The overall approach to development of the EPSC plan and the operational phase stormwater management plan has been to ensure that stormwater runoff discharging from the

project area would not adversely impact water quality within the associated receiving waters, and would comply with applicable regulations. The Project minimizes impacts by locating the turbines and service roads in areas of lesser sensitivity, for example by avoiding Class A waters and significant wetland areas. In addition, specific measures that will be considered in preparing final plans will include, to the extent possible:

> (a) Minimizing stream crossings; avoiding streams, ponds, wetlands, and their associated buffers; protecting watershed ecology, including special habitat values; mitigating historical impacts; and improving water quality.
>
> (b) Minimizing impacts associated with tree clearing and slash disposal by clearing trees during frozen ground conditions in the winter or extended dry periods in the summer; installing barriers, such as orange barrier fence or tape, to delineate areas where tree clearing would occur, with specific attention to sensitive areas that need to be protected; clearly identifying staging areas, landing areas, and logging and skidder roads; where possible, locating these areas within existing trails or logging and skidder roads; taking the seasonal high water table, slopes, and soil stability into consideration when burying wood products.
>
> (c) Avoiding earth disturbance activities during periods of snowmelt and heavy rainfall; phasing earth disturbance activities to minimize the total area of exposed soil; revegetating (seeding and mulching) areas once earth moving and disturbance activities are complete.
>
> (d) Using bridges for perennial stream crossings and culvert crossings for intermittent streams; constructing bridges and culvert crossings during dry weather conditions to the extent possible.
>
> (e) Considering topsoil management, with specific considerations for the erosion potential that may exist in areas where topsoil removal and/or replacement are to occur on shallow bedrock; reusing of existing topsoil to reestablish ground cover following construction.
>
> (f) Maintaining minimum riparian buffer zones, as determined by the buffer width needed to maintain the functions and values of the riparian area.
>
> (g) Minimizing changes in subwatershed boundaries, and thus contributing drainage areas as a result of proposed project grading and drainage structures.

J. Nelson pf. reb. at 4–6.

106. Stormwater basins for the Project have been sized and sited to meet applicable criteria, and designed to maintain existing drainage areas as closely as possible. J. Nelson pf. reb. at 13–15; exhs. UPC-JN-Reb3, Reb5, Reb6.

107. Hydrologic modeling indicates that there will be no increase in the peak discharge rate at the three receiving waters – Annis Brook, Clark Brook, and Calendar Brook – for a one-year or ten-year storm event. J. Nelson pf. reb. at 15-16; exh. UPC-JN-Reb7.

108. For the 100-year storm event, there is no projected increase in peak flow rates for Calendar Brook, and the projected increase for Clark Brook is insignificant. For Annis Brook, a small increase in peak flow rate is projected, which is not unexpected since 100-year peak flow control is not required for this brook. Also, this projected increase in 100-year peak flow rate for Annis Brook is overstated, because the analysis was performed based on the temporary rather than permanent impervious area. Furthermore, this increase is not considered significant, given that no increases are projected for smaller storms which are considered channel-forming. J. Nelson pf. reb. at 16–17.

109. UPC has prepared a Spill Prevention Control and Countermeasure Plan ("SPCC"). The SPCC Plan covers all fluid-storage vessels within the Project area, including the nacelles of the wind turbines, the transformers at the base of the towers and at the substation, and the vehicles and temporary containers associated with the construction phase. Cowan Panel pf. reb. at 27; tr. 1/29/07 at 185 (Rowland); exh. UPC-CRV-Reb12.

110. A lightning strike is unlikely to damage or rupture any internal equipment that could leak oil. Modern turbines contain specialized features to reduce the real potential effect of lightning strikes, and are constructed in compliance with standards recommended by the National Renewable Energy Laboratory. Further, if lightning were to strike a turbine, the most likely target would be the rotor blades. Cowan Panel pf. reb. at 26; tr. 1/29/07 at 85–86 (Rowland).

111. UPC intends to use biodegradable fluids in the turbines' pad-mounted transformers. In addition, the transformer at the substation will have secondary containment. Combined with the small probability of a large spill or release and the implementation of the SPCC Plan, there is no undue risk to environmental resources associated with potential oil spills from transformers. Cowan Panel pf. reb. at 26–27; tr. 1/29/07 at 89, 188 (Rowland).

112. Secondary containment (e.g., concrete berms) at the pad-mounted transformers is not feasible due to NEC and OSHA requirements regarding egress and facilities. Secondary containment would also present maintenance issues—especially in a snowy location with potential for cracking or icing—which could render it useless. Tr. 1/29/07 at 185 (Rowland).

113. UPC would be responsible for any remediation required in the unlikely event of a spill. Tr. 1/29/07 at 86 (Rowland).

114. There is reasonable assurance that the Project will not result in undue pollution of nearby waters, based on the combination of: (i) construction-phase erosion prevention and sediment control measures that are designed, implemented, and maintained in accordance with NPDES permit conditions; (ii) the operational-phase stormwater management system that collects and treats runoff from proposed surfaces; and (iii) the SPCC Plan to be implemented by UPC personnel and contractors. Such measures are routinely implemented at ski resorts in Vermont, and under current regulatory requirements have been found to be compatible with maintaining the quality of both surface water (streams and wetlands) and groundwater (wells and springs). J. Nelson pf. reb. at 24–25.

Discussion

Mr. Gregory has raised concerns about the possible water-quality impacts from the construction and operation of the Project, in light of the relatively high-elevation ridgeline locations of the turbines and associated oil-filled transformers. However, UPC has presented substantial expert testimony and analysis demonstrating that the Project can be constructed and operated in compliance with applicable standards designed to protect water quality. We require UPC to submit its NPDES Stormwater Permit for Construction Sites for the Project, prior to the commencement of earth-disturbing construction activities. We also require UPC to submit its Vermont operational phase stormwater permit, prior to the creation of any new impervious surfaces at the site. Finally, UPC has indicated that it intends to use biodegradable fluids in the turbines' transformers; we require that UPC use only biodegradable fluids in those transformers, given their high-elevation locations and the absence of secondary containment.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

115. The Project would meet all applicable health and environmental conservation regulations regarding reduction of the quality of the ground or surface waters flowing through or upon headwaters areas. This finding is supported by findings 102 through 115, above.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

116. The Project would meet applicable health and environmental conservation department regulations regarding the disposal of wastes. This finding is supported by findings 117 and 118, below.

117. Disposal of solid waste from construction and operational activities would be handled through private haulers and disposed of off-site in an approved landfill. Cowan Panel pf. at 45.

118. A septic disposal system would be designed and constructed to service sanitary facilities at the proposed maintenance building. The leach field would receive flows only from those generated by the sanitary facilities. Cowan Panel pf. at 46.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

119. The Project has been designed to consider water conservation. This finding is supported by findings 120 and 121, below.

120. During construction, water would primarily be used for earthwork compaction and dust control. If sufficient water is not available on-site, it would be brought to the construction site. Concrete batching would require the use of additional water, although it is anticipated that this would take place off-site. Cowan Panel pf. at 45-46.

121. Small volumes of water would be needed to maintain the wind equipment during operations and would be used primarily for periodic cleaning. UPC proposes to install a well at the proposed maintenance shed for consumption and sanitary facilities and would likely support the limited water needed for operations. Cowan Panel pf. at 45-46.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

122. The Project is not within a floodway or floodway fringe. Cowan Panel pf. at 46.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

123. The Project would, whenever feasible, maintain the natural condition of streams in the area and would not endanger the health, safety, or welfare of the public or of adjoining landowners. This finding is supported by findings 124 through 128, below.

124. There are several streams within the project area, including Calendar Brook and its several tributaries. Gilman pf. at 3-4; J. Nelson reb. pf. at 9-10; exh. UPC-JN-Reb2.

125. The Project would require crossing seventeen streams. J. Nelson reb. pf. at 18-21; exh. UPC-CRV-SSRb1; exh. UPC-JN-Reb3.

126. The Project would require some work within riparian buffer areas, primarily associated with construction and upgrade of the access roads. Gilman pf. at 4.

127. When stream crossing must be made, UPC would use the ANR Vermont Stream Geomorphic Assessment Protocols for Bridge and Culvert. All of the proposed crossings are located on small channels and it is anticipated that culverts and bridges could be designed to avoid impacts. J. Nelson reb. pf. at 21.

128. The upgrade and construction of access roads would result in temporary impacts and would maintain the natural condition of the streams. Stream quality may be improved in some instances where poorly built roads or culverts are upgraded. Gilman pf. at 4-5.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

129. The Project is not located on or adjacent to a shoreline. Cowan Panel pf. at 48.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

130. The Project would comply with the Vermont Wetland Rules and would not cause undue adverse impacts to wetlands. This finding is supported by findings 131 through 137, below.

131. The Project would impact approximately 0.55 acres over 16 wetlands. Tr. 1/30/07 at 21–22 (Gilman); exh UPC-CVR-SSRb1 at 2.

132. The impacted wetlands are all Class Three and therefore not regulated under the Vermont Wetlands Rules. Gilman reb. pf. at 15–16; exh. UPC-AG-Reb3.

133. The wetland that has been designated as "Wetland 22" is used primarily by beaver, various amphibians, bear, deer and moose, for all or part of the growing season, based on the evidence of wildlife usage, the size and nature of the wetland, and the surrounding land use. Because the wetland contains open water, it also is likely to provide habitat for water fowl, such as wood duck, as well as providing a rich source of insect life for birds and particularly bats. Morrison pf. at 3.

134. Forested wetlands, such as Wetland 22, are critical to bear, moose and deer, because they provide early foraging areas in the spring. The open water component of the wetland also provides a reliable source of water to these species throughout the year. Morrison pf. at 3.

135. Given the size of Wetland 22, the evidence of wildlife use, the combination of forested- and beaver-influenced wetland types, and the undisturbed nature of the surrounding area, this wetland complex is particularly important for wildlife use. If access to the wetland were obstructed by the project, it would impact the wildlife value of this wetland as a whole. Morrison pf. at 3–4.

136. The redesign of the Project has reduced its potential impacts on Wetland 22, both direct and indirect. The redesign, in conjunction with the provisions of the Stipulation between UPC and ANR,[56] adequately addresses the potential impacts to Wetland 22. Morrison pf. surreb at 2–3; exh. ANR-UPC-1.

137. The Project site contains a fen. Fens are under the influence of mineral-rich groundwater, and support hydrophytic vegetation. Fens are considered rare wetland natural community types by the Vermont Nongame and Natural Heritage Program. There is a proposed access road near the fen that would be expanded under the Project. If the proposed access road is built as described, it is not expected to adversely impact the fen. Morrison pf. at 2.

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56. This stipulation is described below in the section on Necessary Wildlife Habitat.

Discussion

Based on the above findings, we conclude that the Project would not result in undue adverse impacts on wetlands. The impacts on the fen are also addressed below, in the findings and discussion regarding rare and irreplaceable natural areas.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

138. The Project would not cause an unreasonable burden on an existing water supply and there is sufficient water available for the reasonably foreseeable needs of the Project. This finding is supported by findings 139 through 141, below.

139. Water needed for operations would be provided from a well drilled at the proposed maintenance building. Construction activities would utilize water brought from off-site locations. Cowan Panel pf. at 51; R. Nelson pf. at 22.

140. Blasting may be required for the construction of foundations for the proposed wind turbines. The blasting involved, if necessary, would involve small charges that result in localized effects. Pursuant to standard construction practices a detailed blasting plan would be prepared by a contractor prior to construction. Appropriately sized and timed explosive charges would produce low vibration levels and should not damage area homes or wells. Cowan Panel pf. at 51; exh. UPC-CRV-22.

141. UPC would be able to test the wells of landowners within an appropriate radius to ensure that blasting has not caused any impacts. UPC has stated it would remediate the situation if it was determined that its blasting impacted a water supply well. Cowan Panel pf. at 52.

Discussion

The potential impact on water supply from the Project would involve blasting that impacts a water supply well. UPC has indicated that it would be willing to work with landowners within an appropriate distance to determine if water supply wells were impacted by blasting, and if so, UPC would remediate the situation. We require these actions by UPC. UPC must file a plan for determining whether water supply wells would be impacted by blasting activities. The plan must include an appropriate radius within which UPC would work with

potentially affected landowners. We require this plan to be filed prior to the commencement of any blasting activities and will provide parties two weeks to file comments on the plan.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

142. The Project would 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. This finding is supported by findings 143 and 144, below.

143. UPC has prepared a conceptual erosion prevention and sediment control ("EPSC") plan. A final site-specific EPSC plan would include the use of silt fencing, stabilizing disturbed soils, matting, hay bale and stone check dams and diversion of water away from disturbed areas. R. Nelson pf. at 13, 15-18; exhs. UPC-RN-3 and UPC-RN-4.

144. UPC would apply for an NPDES stormwater permit for construction and a state stormwater permit for operations. Ongoing stormwater control would utilize stormwater basins and other features. R. Nelson pf. at 13, 15–18; J. Nelson reb. pf. at 4–6; findings 101–108, above.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

145. The Project would not cause unreasonable congestion or unsafe conditions with respect to the use of highways, waterways, railways, airports and airways, and other means of transportation. This finding is supported by findings 146 through 166, below.

146. UPC proposes to access the construction site from the west via New Duck Pond Road. Access would begin at the Barton exit from Interstate 91 and follow Route 16 into Barton Village and then via Route 5 to New Duck Pond Road. Vehicles would depart New Duck Pond Road at a point where it intersects an existing town trail and proceed east to the Project site area. Cowan reb. pf. at 6; exh. UPC-CRV-Reb 2A.

147. During the construction period, it is expected that a total of 8,000 vehicle round trips would be necessary. Of this total, approximately two-thirds of these trips would be passenger vehicles from workers going to and from the project site, 2,400 truck trips for gravel, aggregate,

water, concrete, and other equipment, and 160 oversized loads. The oversized loads would be spread out over six to twelve weeks, with delivery of no more than three to five complete turbines (ten trucks are required to deliver each turbine) in a given week. Public roads can handle the expected volume of construction and post-construction traffic without creating unreasonable congestion or unsafe conditions. Tr. 3/20/07 at 24 (Rowland); tr. 2/9/07 at 192 (Rowland); exh. UPC-Cross-GM1; Cowan Panel pf. at 53.

148. There are some physical changes to public roadways that would be required for access to the Project site. These include the use of temporary steel plating to ensure the stability of some culverts. Additionally, clearing a path on land adjacent to narrow sections of roadway may be needed to allow trucks to pull off to allow passage of emergency vehicles. Cowan Panel pf. at 53; tr. 2/9/07 at 223-224.

149. UPC would upgrade or alter portions of the access route to accommodate oversized and overweight loads necessary for construction of the Project. UPC has committed to bearing all costs for any modifications or repairs to roadways necessary to transport project components. Cowan pf. at 18-19; Cowan reb. pf. at 5-6, 24; exh. DPS-MK-2 at 11-12; tr. 2/9/07 at 137 (Marcotte); exh. UPC-Cross-GM-1.

150. The most feasible route for transporting oversized loads, including turbine components and the substations transformer, to the site would be an Interstate 91-exit 25 route through Barton Village. Cowan Panel reb. pf. at 6; tr. 2/9/07 at 177-178 (Rowland); tr. 3/20/07 at 24-25 (Rowland); exh. UPC-SR-Redirect1-3; exh. UPC-CRV-SSRb3a.

151. UPC explored several alternative routes to the Project site. Various constraints to the feasibility of these alternate routes were identified, including: the need to utilize an emergency exit located between Interstate 91 exits 24 and 25, something that the Vermont Agency of Transportation has never approved; Class Two wetlands located between TH 22 and TH 24, which would need to be connected; concrete tubes under Interstate 91 that would prevent the passage of oversized loads; and steep gradients on a portion of Duck Pond Road. Exh. UPC-DR-Redirect2.

152. UPC estimates that traffic delays of 5 to 15 minutes could occur when oversized loads make a turn within Barton Village or from Route 5 onto Duck Pond Road. Actual delays are expected to average 3-4 minutes. Tr. 2/9/07 at 216 (Rowland); exh. UPC-Cross-GM1.

153. There are approximately 4,400 to 5,400 vehicle trips per day in Barton Village and approximately 2,300 vehicle trips per day near the Route 5 and Duck Pond Road intersection. Tr. 3/20/07 at 26 (Rowland); tr. 2/9/07 at 141 and 165-166 (Marcotte); exhs. UPC-Cross-GM2 and GM4; exhs. Barton 15 and Barton 16.

154. Oversized trucks can be moved out of the way if emergency vehicles need to travel past an intersection in which the oversized truck is turning. Tr. 2/9/07 at 223-224 (Rowland).

155. The oversized loads would be transported over a six-week period (or somewhat longer if the substation transformer cannot be delivered at the same time as the turbines). Tr. 3/20/07 at 22 (Rowland); exh. UPC-Cross-GM1.

156. There are a number of measures that UPC could take to minimize traffic disruption in Barton; these include traffic control, scheduling loads, selection of the type of trucks used, and coordination with emergency services. Tr. 2/9/07 at 136-138 (Marcotte).

157. There are events in Barton, such as holiday parades, that require shutting down certain streets for some time. Barton has been able to perform these street closures successfully. Tr. 2/9/07 at 158-159 (Marcotte); exh. UPC-Cross-GM1.

158. UPC has committed to route as much construction traffic as commercially practicable away from Barton Village by using Route 5 from the south. Tr. 2/9/07 at 137-138 (Marcotte); exh. UPC-Cross-GM1.

159. Emergency vehicles would not be able to respond to approximately 90 to 100 residences located along Route 5 and adjacent town highways south of the intersection and 34 residences located on Duck Pond Road south of the intersection while traffic is halted at the Main Street - Duck Pond Road - Cemetery Road intersections. Marcotte pf. at 6; exh. Barton 13; exh. UPC-Cross-GM1.

160. Stopping traffic at various intersections in Barton would impede access to municipal offices, the post office, business located within the Village, and the Barton Village Electric Department. Marcotte pf. at 7; exhs. Barton 2-6; exh. UPC-Cross-GM1.

161. If an accident occurred that disabled oversize vehicles, or component parts being transported were dislodged from the vehicles, there is no equipment readily available in Barton or the surrounding area that could resolve the problem. Exh. Barton-Cross-7.

162. UPC could pre-position equipment at the intersection of Route 5 and Duck Pond Road, if necessary, to be available if an oversized vehicle breaks down and blocks emergency vehicles. Tr. 2/9/07 at 31-33 (Rowland).

163. UPC must receive appropriate permits from the Vermont Department of Motor Vehicles for overweight and overdimensional vehicles. Such permits would include weekend and holiday restrictions, restrict travel during daylight hours and inclement weather, insurance requirements, and require the use of flagging and the posting of roads during certain times of the year. Exh. UPC-Cross-GM2; tr. 2/9/07 at 150-152 (Marcotte).

164. Adequate space for parking construction vehicles and workers' cars is available on private land and private roads. Cowan Panel pf. at 53.

165. With respect to potential impacts to transportation systems, since the proposed turbines are over 200 feet in height, the Federal Aviation Administration ("FAA") guidelines call for lighting. Cowan Panel pf. at 53; *see* Aesthetics section below.

Discussion

The only contested issue with respect to transportation systems is the impact on the Village and Town of Barton. (Some parties have raised issues related to night-time lighting of the proposed turbines, but those issues were raised in the context of aesthetic impact and addressed in the aesthetics section, below). Barton contends that, should the Board issue a CPG for the Project, we should include a condition that UPC utilize access routes to the site that do not include transport through Barton. Barton contends that there are alternative access routes to the Project site that do not involve the use of Barton's roadways.

In particular, Barton contends that UPC did not make a sufficient effort to determine whether it could use the emergency exit off of I-91, which could then connect to the Project site without traveling through Barton. Barton further states that, should the Board allow UPC to access the Project site through Barton, we should require UPC to position emergency personnel on Route 5 and Duck Pond Road south of Main Street - Duck Pond Road - Cemetery Road intersections each time that an oversized vehicle travels these intersections to ensure that emergency services are accessible to potentially affected residences. Finally, Barton requests that we require UPC to transport all standard construction vehicles and vehicles used by construction

personnel to utilize what is termed alternate Route 1E.[57] This route would require the use of Interstate 91 exit 24 to Route 122 west to Old Duck Pond Road to New Duck Pond Road.

UPC contends that transportation of the project components during construction would not cause an undue adverse impact on Barton. In particular, UPC states that the majority of the traffic due to the Project would be construction workers traveling in passenger vehicles and of the trucks delivering non-oversize loads. It is possible that these vehicles would access the proposed site without driving through Barton, since these trucks would be traveling from the locations where the local contractors would be located. Additionally, UPC notes that the increased traffic would be spread out over several months.

There is some question of equity involved with the impact of the Project on transportation systems, specifically, the fact that Barton would receive impacts on its transportation infrastructure from construction vehicles while not receiving the direct benefits that Sheffield would receive from the Project. We recognize that during construction of large projects some areas bear more of a burden than others and some areas receive more benefits of a project than other areas. In this case Barton would bear some burden from the Project due to the increased transportation associated with construction activities. However, the question before the Board is whether the Project would promote the public good of the state. We include conditions, discussed below, that will minimize the burden on Barton, and with these conditions we conclude that the Project would not cause unreasonable or unsafe conditions.

The Department recommends that we impose the following conditions related to transportation issues:

> UPC shall submit to the Board any necessary AOT right-of-way permit(s) no less than 30 days prior to any road work approved under such permit. UPC shall also be responsible for obtaining all necessary DMV oversized load permits, and shall make them available for inspection upon request by the Board. No further action shall be required by the Board, unless the activities approved by AOT under the permit are materially different than UPC's prior representations to the Board or would materially impact any of the substantive criteria under 30 V.S.A. § 248(b).
>
> UPC shall develop and file with the Board a transportation plan for transport of project components and access by construction vehicles. The plan will be

57. Exh. UPC-SR.Redirect2.

> subject to review and comment by parties with standing on the issue and must be approved by the Board prior to the commencement of any significant vehicular traffic to the site and transport of any project components. In developing its plan, UPC shall account for traffic control and insure unimpeded emergency vehicle access to all areas of the town and village of Barton at all times. UPC's plan must also address transport of turbine components and construction vehicles through Barton town and village streets and roads in a manner that avoids undue disruption of municipal services, local businesses and travelers during times of expected increased traffic flows, such as rush hours, holiday periods, and municipal events.
>
> UPC shall, to the extent commercially practicable, route construction and maintenance traffic in a manner that avoids the streets in the town and village of Barton, for example, by accessing New Duck Pond Road from the south via Route 5.
>
> Absent agreement among UPC and UHS, or a ruling by a Court of competent jurisdiction that UPC is allowed to use Darieos Road, UPC is prohibited from use of Darieos Road for project access for all construction, operations, inspections and routine maintenance and repairs. However, access to the project site via Darieos Road for emergency purposes is not prohibited by this CPG.
>
> UPC shall bear the costs of any road alteration, improvements, repairs, traffic control and other activities necessitated by the Project and its construction and maintenance.

UPC does not dispute the Department's first proposed condition related to Agency of Transportation and Department of Motor Vehicle ("DMV") permits. UPC contends that the number of permits for oversized loads, which would be obtained from DMV are expected to be in the dozens, and it would therefore be impractical to require that all DMV permits be filed with the Board and parties, though it does not object to a requirement that the DMV permits be available for inspection upon request by the Board.[58] We find that the Department's proposed condition is reasonable, with the added requirement that UPC file all Agency of Transportation permits with the parties as well as the Board, and further require UPC to make all DMV permits available upon request of any party, as well as the Board.

UPC contends that the proposed condition requiring it to develop a transportation plan requires additional clarity. UPC states that it does not intend to route all construction related traffic through Barton but instead states that its proposed access route through Barton is only

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58. UPC Brief at 77-78.

required for oversized vehicles. UPC further represents that it "will take all commercially reasonable efforts to route all non-oversized loads around the Village."[59]

We adopt the Department's proposed condition requiring UPC to develop a transportation plan. Based on the potential impacts to the rural roadways of the Northeast Kingdom, the transportation plan should address all aspects related to construction, not just oversized loads.

UPC has previously stated that it would bear costs related to road improvements and that it would take commercially reasonable efforts to route construction traffic to avoid roadways in the Village of Barton.[60] We adopt the Department's proposed conditions on these issues with some modifications. In particular, the Department's proposed condition would have UPC attempt to avoid all roadways in Barton, not just those in the Village itself. We adopt a condition that UPC take all commercially reasonable efforts to avoid roadways in Barton Village.

UPC has agreed to not use Dareios Road to access the Project site during construction, except in the case of emergencies, given the concerns raised by the King George School.[61] However, UPC contends that the Department's proposed condition is overly broad in that it would prohibit UPC from utilizing Dareios Road during operation of the facility. The Department has not provided any rationale as to why UPC should not be allowed to use Dareios Road for purposes other than construction.[62] However, we include a condition that UPC not use Dareios Road to access the Project site during construction, except in the case of emergencies.

Finally, UPC has agreed to pay for all costs associated with road improvements necessitated by the Project. We make this agreement an explicit condition.

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59. UPC Reply Brief at 41.

60. UPC Reply Brief at 41 (avoiding Barton)

61. Tr. 1/29/07 at 56-57 (Rowland).

62. UPC states that it is currently litigating the issue of its right to use Dareios Road in Caledonia Superior Court. Our ruling has no bearing on that case.

Educational Services

[10 V.S.A. § 6086(a)(6)]

166. The Project would not cause an unreasonable burden on the ability of affected municipalities to provide educational services. It is unlikely that workers employed during the construction phase of the Project would move to the area due to the Project, given the temporary nature of the work. There would be three to five workers devoted to operation and maintenance of the Project, and it is possible that these workers would be hired from the existing local workforce. Cowan Panel pf. at 54.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

167. The Project would not cause an unreasonable burden on the ability of local governments to provide governmental services. This finding is supported by findings 168 through 170, below.

168. The transportation of oversized equipment through certain intersections in Barton could impair the ability of emergency vehicles to be able to respond to approximately 90 to 100 residences located along Route 5 and adjacent town highways south of the intersection and 34 residences located on Duck Pond Road south of the intersection while traffic is halted at the Main Street - Duck Pond Road - Cemetery Road intersections. Marcotte pf. at 6; exh. Barton 13; exh. UPC-Cross-GM1.

169. Stopping traffic at various intersections in Barton could temporarily impede access to municipal offices, the post office, business located within the Village, and the Barton Village Electric Department. Marcotte pf. at 7; exhs. Barton 2-6; exh. UPC-Cross-GM1.

170. UPC has agreed to take the following actions to minimize impacts to affected towns:

(a) Establish a business office in Sheffield and designate an on-site project manager. This position would begin at the start of construction and UPC would provide contact information that would include regular business hours and a 24-hour emergency phone number.

(b) Provide construction plans and a schedule to Sheffield in advance.

(c) Conduct a pre-construction survey along the proposed transportation route through Barton to assess the condition of road surfaces and bridges and obtain information on culverts, water and sewer lines, and other underground utilities.

(d) Designate an on-site coordinator to oversee transportation activities and coordinate with local emergency services to comply with Barton's emergency response plans.

(e) Take into account, when scheduling oversized loads, special events in Barton, peak traffic during tourism season, school bus schedules, commuting times, and limited work on weekends. Oversized loads would not be delivered on holidays.

Exh. Sheffield-MA-2 at 3-4; exh. UPC-Cross-GM1 at 2-3.

Discussion

We conclude that the Project would not cause an unreasonable burden on municipal services. The primary impact on the ability to provide municipal service results from construction traffic. In the previous section we imposed several conditions on UPC designed to minimize construction related impacts.

The Department recommends that we include the following conditions in the CPG:

> Prior to construction, UPC shall obtain and submit response letters from the Saint Johnsbury Barracks of the Vermont State Police, the Sheffield Fire Department and the Caledonia County Sheriff's Department indicating that the proposed project will not have an undue burden on their ability to provide service if the project is constructed.
>
> Prior to construction, UPC shall obtain and file a follow-up letter from Saint Johnsbury Emergency Dispatch indicating that its concerns regarding E-911 locations have been met.
>
> UPC shall conduct periodic seminars in fighting turbine fires/dealing with other turbine related emergencies for local and regional first responders.

UPC addressed the first two proposed conditions in its reply brief. UPC recommends that the proposed conditions be modified such that, rather than requiring that UPC obtain letters from the relevant emergency response entities, UPC be required to show that it has made good faith efforts to obtain the necessary letters. In light of the fact that UPC has no control over the issuance of the letters that the Department is seeking, we find UPC's proposed solution reasonable and condition the CPG accordingly.

We also include the Department's third proposed condition.

Sheffield requests that we include in the CPG a condition requiring performance of the agreement between UPC and Sheffield. We include such a condition in the CPG.

Aesthetics

[10 V.S.A. § 6086(a)(8)]

171. The Project would not have an undue adverse impact on the scenic and natural beauty of the area or aesthetics. This finding is supported by findings 172 through 203, below.

172. The area surrounding the Project is characterized by extensive woodlands, numerous small glacial lakes and rivers and rolling to rugged topography. The vegetation in the area is a mix of northern hardwoods at lower elevations and softwoods along higher elevations. Forest cover in the area is extensive. Exh. DPS-MK-1 at 6.

173. Forest cover in the area of the Project is extensive at approximately 75%. Evidence of past logging activities is visible but the clearings do not appear as large clearcuts and the area has a high degree of intactness. Exh. DPS-MK-1, p. 7.

174. The proposed turbines would be arrayed along a ridgeline from Granby Mountain to Libby Hill to Barret Mountain with an east to west orientation. The ridgeline elevation ranges from 1,970 to 2,540 feet. Cowan Panel pf. reb. at 2-3; tr. 1/29/07 at 36-40; exhs. UPC-CRV-SSRb2a and SSRb3a; exh. DPS-MK-1 at 6.

175. The area in the immediate vicinity of the Project is largely undeveloped. Located within the broader area are an existing 115 kV VELCO transmission line, Interstate 91, single-family residences and farms and the nearby communities of Sheffield and Sutton. Exh. DPS-MK-1 at 7.

176. The landscape surrounding the Project is sensitive to visual impacts due to its high level of intactness and its strong sense of contrast. Exh. DPS-MK-2 at 6.

177. The Project would be visible from a small percentage of the area, within a ten-mile radius of the proposed site, due to vegetative screening. Exh. DPS-MK-2 at Figure 11.

178. The Project would have an adverse impact on the aesthetics of the area due to the introduction of large turbines into a sensitive visual environment. Exh. DPS-MK-2 at 9.

179. However, the average person viewing the Project would not be shocked or offended because the majority of the public viewing areas are at a sufficient distance from the proposed turbines that the turbines would not dominate the view. Kane sup. sur. pf. at 2-3; Raphael reb. pf. at 31-32.

180. There would be limited views of the Project from most of the major public roads in the area. Where the Project would be visible from a road the visibility would be intermittent due to

vegetative screening along the roads and, due to the speed of the vehicle, the duration of the view would be limited. Exh. UPC-DR-2 at 24.

181. Drivers along Interstate 91 would have a direct view of the Project with the closest wind turbine being 2.9 miles from the interstate. Due to the speed of vehicles on the interstate, their views of the Project would be of limited duration. Exh. DPS-MK-2 at 4; exh. UPC-DR-SSRb1; Raphael reb. pf. at 27; Kane sup. sur. pf. at 2; tr. 2/5/07 at 223 (Raphael).

182. It is unlikely that the proposed access roads would be directly visible from Interstate 91, although there will be an opening in the canopy of the trees. The area has varied canopy cover due to recent logging in the area. Kane sup. sur. pf. at 2; tr. 2/5/07 at 71 (Raphael); tr. 1/29/07 at 139 (Cowan).

183. The view of the Project from Interstate 91 would not be unduly adverse. Kane sup. sur. pf. at 2; tr. 2/5/07 at 14 and 223 (Raphael).

184. Crystal Lake State Park is open from May 26 to September 5, with a sandy beach and a designated swimming area. There are picnic tables, charcoal grills, play areas, rental boats and canoes, substantial parking, a rental cottage, and a bathhouse with restrooms, changing areas, and a concession stand. Activities at the park and the lake include swimming, picnicking, boating and jet skiing. There are residential homes along the shoreline and in the surrounding vicinity. Exh. UPC-DR-2 at 25.

185. The landscape at Crystal Lake State Park is highly scenic, with rock cliff shorelines and smooth, reflective water. In the foreground is an open viewshed, and in the background is the ridgeline upon which the Project would be located. That ridgeline serves as the visual terminus of the park. Crystal Lake, with its presently unaltered mountain background, is symbolic of Vermont's landscape. Exh. DPS-MK-2 at 5.

186. The proposed turbines would occupy the western half of the ridgeline at the far end of the lake, with some portion or all of each turbine being visible. The Project would be located approximately 5.6 miles from the beach, picnic and swimming areas at Crystal Lake State Park. Views from these areas would be open and direct, although distant, and the project's visibility would be influenced by atmosphere and weather. Exh. DPS-MK-2 at 4, 5, 6–7; exh. UPC-DR-SSRb, 3 of 6.

187. The distance of the turbines, in conjunction with the recreational activity in the foreground, will tend to de-emphasize the view of the turbines from Crystal Lake State Park. The presence of the Project would not materially change the recreational experience at the park with respect to the sun, water quality, and noise. Exhs. UPC-DR-2 at 26 and UPC-DR-SSRb1, 3 of 6; tr. 2/5/07 at 205 (Raphael).

188. Pursuant to FAA lighting guidelines, UPC proposed that 8 of the 16 turbines be lit at night with red pulsating lights. The FAA lights are similar to lights on telecommunications towers that are found in other areas of Vermont. Exh. UPC-DR-2 at 27.

189. The night-time lighting would be visible, but because the lighting would be small, it would not draw significant attention and would not be not unduly adverse. Exh. DPS-MK-1 at 26.

190. The proposed substation would be sited adjacent to the existing VELCO 115 kV line, which would limit the aesthetic impact of the substation. Exh. UPC-DR-2 at 35.

191. The electrical collection lines would be underground along the ridgeline; where they are above ground, they would follow the contours of the land. Exh. UPC-DR-2 at 35.

Discussion

In determining whether a proposed project would have an undue adverse impact on aesthetics, the Board has adopted the Environmental Board's Quechee test. The Board has previously summarized the Quechee analysis:

> In order to reach a determination as to whether the project will have an undue adverse effect on the aesthetics of the area, the Board employs the two-part test first outlined by the Vermont Environmental Board in Quechee, and further defined in numerous other decisions.
>
> 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?[63]

In addition to the Quechee analysis, the Board's consideration of aesthetics under Section 248 is "significantly informed by overall societal benefits of the project."[64]

No party disputes that the Project would have an adverse aesthetic impact. The proposed turbines are out of character with the surrounding area.[65] The second step, pursuant to the Quechee test, is a determination of whether the adverse aesthetic impacts rise to the level of undue. This determination is made by answering the following questions: does the Project violate a clear, written community standard, has UPC failed to take all reasonable steps to mitigate the Project's aesthetic impacts, or does the Project offend the sensibilities of the average person?

Sutton contends that the NVDA Regional Plan contains certain provisions that constitute clear, written community standards that would be violated by the Project. Specifically, the Regional Plan identifies the area surrounding the Project as a "rural area" district in which there should be "little commercial or industrial development, unless it occurs in an established industrial park in an area specifically designated in the local zoning bylaw."[66] In addition,

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63. *In re Petition of Tom Halnon*, CPG NM-25, Order of 3/15/01 at 10–11 ("Halnon").

64. *In Re: Northern Loop Project*, Docket 6792, Order of 7/17/03 at 28 ("Northern Loop").

65. UPC's aesthetics witness states in his prefiled testimony that the first step of the Quechee analysis should be broadened to appropriately address the circumstances presented by wind generation facilities; however, UPC does not pursue this issue in its briefs. Consequently we do not address the issue here.

66. Exh. Sutton RM-4, Vol. II at 15-16.

Sutton cites to several portions of the Regional Plan that state that development in the area should be compatible with existing land uses and development patterns.[67]

UPC contends that the Regional Plan does not contain language that constitutes a clear, written community standard but rather is a "high-level planning document and does not identify specific areas, or views, that should be protected."[68] The Department likewise states that the Regional Plan contains general language and does not specify specific scenic resources.

We conclude that the Regional Plan contains no clear, written community standards with which the Project would be inconsistent. In order for a provision to be considered a clear, written community standard, it must be "intended to preserve the aesthetics or scenic beauty of the area" where the proposed project is located and must apply to specific resources in the proposed project area.[69] The Regional Plan does not specify particular scenic areas that would be impacted by the Project. Instead the plan references "rural area" districts which make up large portions of the Northeast Kingdom and recommends that there be little development in such areas. Additionally, the Regional Plan states generally that development should be compatible with existing land uses without specifying the scenic resources that are meant to be protected.

Sheffield does not have a town plan.

Sutton contends that the Sutton Town Plan is applicable to the Project and contains clear, written community standards that would bar the Project. Sutton cites to the language of Section 248, that in reviewing the impact of a Project on orderly development of a region we must examine the "land conservation measures contained in the plan of any affected municipality."[70] However, UPC has modified the Project through the course of these proceedings such that none of the proposed turbines or any associated facilities are located within Sutton. Since the Sutton Town Plan is not applicable beyond the borders of the town, there is no basis for applying the objectives of the Sutton Town Plan.

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67. Sutton Brief at 52.

68. UPC Brief at 104.

69. *In re Halnon*, NM-25, Order of 3/15/01 at 22 n.5.

70. 30 V.S.A. § 248(b)(1), emphasis supplied.

In ruling that the Sutton Town Plan is not applicable here, we are not stating that the aesthetic impacts on Sutton are inconsequential. We have examined the potential aesthetic impacts on Sutton and found that they are not undue. To the extent that we examine clear, written community standards for areas outside of the host town, we look to the regional plan. Pursuant to statute, the purpose of the regional plan is to "guid[e] and accomplish[] a coordinated, efficient and economic development of the region which will, in accordance with the present and future needs and resources, best promote the health, safety, order, convenience, prosperity and welfare of the inhabitants as well as efficiency and economy in the process of development."[71] To the extent that a municipality wishes to have some control over land outside of its borders, it should participate in the development of the regional plan.

If we applied the Sutton Town Plan to our review under the Quechee test in this case, we would need to apply the town plans of any municipality that has a view of a proposed project, a policy that has not been applied by any other regulatory body in Vermont. Additionally, if the town plans of neighboring municipalities were considered in planning decisions, it would undermine the municipal planning process by allowing municipalities to make planning decisions for neighboring towns. Also, we have considered the impact of the Project on Sutton under our analysis of Orderly Development (discussed earlier in this Order at pages 21 through 28).

Sutton also asserts that with respect to Crystal Lake State Park, the Project would violate a clear written community standard – the Division of Historic Preservation ("DHP") "Criteria for Evaluating the Effect of Telecommunications Facilities on Historic Resources" – and would thereby have an undue adverse impact on aesthetics. In response, UPC contends that these DHP criteria do not constitute a clear written community standard, in that they neither have been adopted by a community nor have identified specific scenic resources worthy of protection. For the reasons stated by UPC, we conclude that the DHP "Criteria for Evaluating the Effect of Telecommunications Facilities on Historic Resources" are not a clear written community standard for purposes of the Quechee analysis.[72]

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71. 24 V.S.A. § 4347.

72. We further address these DHP criteria in our discussion of Historic Sites, below.

The second step in evaluating whether the Project would have an undue adverse aesthetic impact is to determine whether UPC has taken generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings. It is not possible to provide screening for a 420-foot wind turbine and consequently mitigate the visibility of the Project. However, UPC has taken steps, including painting the proposed turbine colors that would blend more easily with the sky, siting the Project near an existing transmission line, and the proposed placement of the turbines, access roads, collector lines, and substation, to minimize the aesthetic impact of the Project.

The final step under the Quechee analysis is to determine whether the Project would be shocking or offensive to the average person. UPC contends that the Board should consider how a viewer perceives the proposed intrusion on the landscape in determining whether they would find the new development shocking or offensive. UPC cites to the Board's Searsburg decision where we stated:

> With adequate information about the benefits of sustainable wind-generated electrical energy over other energy alternatives, the average person should not find this proposed project shocking or offensive. While some individuals who live close to the proposed project may find the proposed project offensive, they are not representative of the "average person" because of their personal interest in the area and their opposition to change. These individuals generally do not oppose the concept of wind power, only the proposed location of this project.[73]

Sutton cites to several Environmental Board decisions in which proposed projects were found to be so out of character with the surrounding area that the average person would find the development shocking and offensive. Based upon these Environmental Board decisions, Sutton contends that the "steel turbines would be grossly out of character with the scenic natural surroundings of Granby Mountain and its adjacent ridgelines, and would significantly diminish the aesthetic qualities of the area . . . ."[74]

The Department contends that the Project would not be shocking and offensive to the average person because "most of the points from which views are possible are either at a long distance, which will significantly reduce the perceived size of the turbines, or are mid-range

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73. Docket 5823, Order of 5/16/96 at 26 (finding 128).

74. Sutton Brief at 60.

views that are transitional in nature, which also significantly reduces the perceived impact of the turbines on the landscape."[75] The Department further states that Sutton's reliance on the Environmental Board cases cited in Sutton's brief is misplaced because these cases dealt with projects that were immediately adjacent to public use areas. In contrast, the Department contends that the Project is far more isolated or distant from public viewing areas, thereby reducing the effects on viewers.

In a previous docket, we stated that consideration of wind generation facilities "requires a balancing of two fundamental state policies: promoting in-state renewable resources, and protecting Vermont's ridgelines."[76] A large number of the public comments received in this Docket focused on the fact that the Project would impair the aesthetic qualities of the ridgelines. We recognize that scenic qualities of the area are important to its residents and there will always be some resistance to any change in the landscape. However, the Quechee test does not guarantee that the aesthetic qualities of an area will not change.[77] The majority of the views of the Project are from a distance such that the size would not be overwhelming. Viewed from such distances, the average person would not find the scale of the Project shocking or offensive.

The Department recommends that we impose the following conditions to further mitigate the aesthetic impact of the Project:

> All turbine towers will be painted white or off white.
>
> UPC shall obtain and submit the final FAA determination prior to the erection of the turbine towers. No further Board action is necessary unless the contents of the determination are materially different than UPC's prior representations to the Board or would materially impact any of the substantive criteria under 30 V.S.A. § 248(b).
>
> UPC shall submit for comment by the parties and review and approval by the Board, a proposal to place educational signage at Crystal Lake State Park. Any necessary permits must be identified and obtained by UPC and submitted to the Board prior to placement of the signage.

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75. Department Brief at 38-39.

76. Docket 6911, Order of 7/17/06 at 3.

77. Docket 6860, Order of 1/28/05 at 140.

UPC has previously stated that the turbines would be painted white or off-white. We include this condition for the sake of clarity.

UPC must obtain a revised FAA lighting determination due to the January 16, 2007, changes to the Project configuration. UPC contends that the FAA lighting plan is unlikely to materially change and therefore is unnecessary to require submission of the new FAA determination prior to construction. UPC instead contends that it should be required to submit the final FAA determination prior to commencement of operations.

While UPC states the lighting plan is unlikely to change, it is not able to affirmatively state that the lighting plan will not change. Since the night-time lighting has an impact on aesthetics, we will ensure that the lighting plan does not represent an undue aesthetic impact by requiring UPC to file for Board approval the FAA-approved lighting plan for Board approval prior to the commencement of construction. Parties will have two weeks to file comments on the approved lighting plan.

We also include the Department's third proposed condition.

Noise

192. Noise generated by the project will be audible at some locations, including homes, in the area surrounding the Project site, but will be below the Environmental Protection Agency's guideline of 55 dBA. Bajdek pf. at 6; exh. DPS-MK-1 at 22; Kaliski pf. at 7; Bajdek and Menge pf. reb. at 8.

193. In order to evaluate the effect of noise on the surrounding area, UPC's noise consultants conducted background noise measurements at four locations in the vicinity of the Project over a period of 45 hours in October of 2005. Bajdek pf. at 2-3.

194. The hourly background noise levels measured at the four measurement locations ranged from 23 to 63 dBA. Bajdek pf. at 3; Bajdek and Menge pf. reb. at 21-22; exh. UPC-CB-2 at 26; Kaliski pf. at 6.

195. Sound modeling using the measurement data and manufacturer's data regarding the sound levels produced by the proposed wind turbines were used to calculate noise levels for 50 locations in the area surrounding the Project. Bajdek pf. at 3; exh. UPC-CB-SSRb1; Bajdek and Menge pf. reb. at 6-8.

196. Sound from the wind turbine will be audible at many of the receptor locations closer to the turbines at certain times. Bajdek pf. at 6; exh. UPC-CB-SSRb1; Bajdek and Menge pf. reb. at 19-22; Kaliski pf. surreb. at 4.

197. Impulse noise from the turbines may also be audible at receptors within 2 km of the turbines, including the King George School and many residences. Guldberg pf. at 8.

198. The State of Massachusetts has adopted air pollution control regulations limiting increases in broadband sound levels to not more than 10 dBA above background noise levels that are exceeded 90% of the time measured during equipment operating hours. Exh. Sutton Cross CB-13.

199. A standard limiting the maximum sound pressure level from the operation of the turbines at the nearest receptor points, including the King George School and nearby residences, to those represented by the Applicant at those locations would be reasonable. Tr. 2/8/07 at 117 (Guldberg); tr. 2/9/07 at 248-49 (Cowan, Vavrik, Rowland).

200. In the event the standard limiting noise from the turbines at receptor locations is exceeded, the Applicant should be required to cease operation of the turbines under certain wind conditions until the sound can be reduced to acceptable levels. Tr. 2/9/07 at 245-46 (Cowan, Vavrik, Rowland).

201. Construction activities including the use of excavation equipment, crane operation and truck traffic, will cause a temporary increase in noise levels in the area surrounding the project predominately during daylight hours and will be minimized to the extent practicable. Cowan pf. at 41.

202. Rock blasting and ripping will be required to construct the turbine towers. Blasting will be kept to the minimum extent practicable, performed during normal business hours, and will use multi-stage delayed charges, to mitigate any impacts. Tr. 2/9/07 at 125 (Nelson); Cowan pf. at 42.

203. Noise from the substation and electrical lines should not have a significant impact on existing background sound levels because the substation will be located approximately one-half mile to the closest receptor locations. Bajdek pf. at 8.

Discussion

UPC is the only party that has conducted a noise analysis in this case. UPC argues that based on its 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 within EPA and WHO guidelines. UPC points out that it is required under an agreement with the Town of Sheffield to conduct noise monitoring for compliance with those guidelines for the first full year of turbine operation. The agreement requires mitigation measures to be implemented should the noise levels exceed those specified in the guidelines. UPC also agrees to submit a noise monitoring plan to the Board for review and approval.

Noise experts for Sutton and UHS/RPI have raised questions regarding the noise modeling methodology, the audibility of the turbines, and the standards used to evaluate noise impacts employed by UPC's experts. Sutton and UHS/RPI argue that noise from the Project, under certain meteorological conditions, will be audible at homes closest to the project and at the King George School. Sutton and UHS/RPI contend that noise standards, such as those adopted in Massachusetts, should be imposed here to ensure noise levels do not exceed those modeled by UPC. Sutton and UHS/RPI also point out that little information regarding the potential of impulse noise generated by the project has been presented and that this type of noise could adversely impact residents in the area.

The Department acknowledges that there is some dispute as to the quality of analysis performed by UPC and the appropriate sound level standards that should be imposed on the Project. However, the Department notes that witnesses from UPC, Sutton and UHS/RPI all testified that 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 regarding noise from construction and operation of the turbines to ensure that residences near the Project and the King George School are protected from undue noise impacts.

The potential for adverse noise impacts from the turbines are one of the principal concerns raised by the parties in this case. As the Department points out, the opponents of the Project dispute the sound measurement methodology and conclusions of UPC'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 are 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. No blasting shall occur on state holidays.
>
> All blasting shall be carried out by licensed and certified blasting technicians. All blasting shall 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 sage levels. Noise and air blast effects shall be limited through application of proper techniques and blasting mats shall be used where needed to limit the occurrence of flyrock.
>
> Prior to performing any blasting for the Project, UPC shall develop a blasting plan that includes pre-blast surveys of wells and structures in the surrounding area and shall 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, UPC shall remediate any damage caused by blasting activities.
>
> UPC shall construct and operate the Project so that they emit no prominent discrete tones pursuant to ANSI standards at the receptor locations identified in findings 189-194, and indoor sound levels at any King George School structure and any surrounding residences do not exceed 30 dBA(Ldn).
>
> In the event noise from operation of the Project exceeds the maximum allowable levels, UPC 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.
>
> UPC 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.

Finally, we address a procedural matter raised with respect to the issue of noise. In its brief, RPI requests that the Board take notice of e-mail correspondence that was provided by UPC subsequent to the evidentiary hearings:

> RPI asks that the Board take notice of these documents pursuant to 3 V.S.A. § 810(1) as they are documents that would have been introduced by RPI during the technical hearings but for the fact that they were not disclosed by UPC in time to be introduced and examined during the hearings. Nor, as they were produced by UPC, can there be any claim that the documents lack authenticity.[78]

UPC objects to the admission of the e-mail correspondence, asserting that the correspondence is hearsay, that RPI received the documents three weeks prior to the last evidentiary hearing, and that RPI's reliance on 3 V.S.A. § 810(1) is "inapposite."[79]

We deny RPI's request that we take notice of the documents. The e-mail correspondence in question contains neither "judicially cognizable facts," nor "generally recognized technical or scientific facts within the [Board's]specialized knowledge," and thus is not susceptible of official notice. *See* 3 V.S.A. § 801(4).

Historic Sites

[10 V.S.A. § 6086(a)(8)]

204. The Project will not have an undue adverse impact on historic sites, including archeological resources. This finding is supported by findings 205 through 226, below.

205. There are no direct impacts to any historic resources in the Project's footprint. Exh. UPCDR- 2, Attachment 24 at 11.

206. The only potential impacts are indirect visual impacts from historic resources in the viewshed of the Project. Exh. UPC-DR-2, Attachment 24 at 2 and 11.

207. The Project as currently proposed (i.e., the January, 2007, revised project) will not have an undue adverse impact on any historic resources, with the possible exception of Crystal Lake State Park (which is addressed below). Exhs. UPC-DR-2, Attachment 24 at 10–11 and Historic

78. RPI brief at 12, n. 4.

79. UPC Reply Brief at 37, n. 35.

Structures Location Map, UPC-LP-Reb1a and 1b; Pritchett pf. reb. at 5–6; Raphael pf. reb. at 38; tr. 2/8/07 at 223 (Gilbertson).

208. Crystal Lake State Park is located in Barton on the northern end of Crystal Lake. Gilbertson pf. at 6; exhs. UPC-DR-Reb4a, UPC-DR-SSRb1, 3 of 6.

209. The Project will be visible from Crystal Lake State Park. Portions of approximately 13 turbines will be visible from the Park in the January, 2007, layout. The closest turbine will be approximately 5.7 miles from the Park. Exh. UPC-DR-SSRb1, 3 of 6; tr. 2/5/07 at 84, 204- 205 (Raphael).

210. The setting surrounding Crystal Lake State Park is not pristine. The Park includes a parking lot, structures and man-made elements which have altered the natural state of the lakeshore. A former granite quarry is still visible from the Park. Railroad tracks and Route 5 run north-south along the shore of the lake, and are visible from the Park and the bathhouse. Electric lines also run along the Route 5 corridor, and are visible from the Park and the bathhouse. Several private camps are also visible from the Park and the bathhouse. Raphael pf. reb. at 37; exhs. UPC-DR-SSRb1, 3 of 6, UPC-Cross-EG2.

211. Crystal Lake State Park and its bathhouse were listed on the National Register of Historic Places on August 30, 2005. The Registration Form for the listing states, "Crystal Lake State Park consists of the Park's recreational area, the bathhouse, and the thin strip of beachfront land along the northern border of Crystal Lake in Barton, Vermont." The Park is also listed on the State Register of Historic Places. Exh. DHP-Surrebuttal-1, Section 7 at 1.

212. Crystal Lake State Park was deemed significant for purposes of the National Register nominating process because of the historical significance of the bathhouse and the beach. Pritchett pf. reb at 14.

213. Development of the Park began in the late 1930s. The bathhouse, which is the main building in the Park, was built in 1942 by the Civilian Conservation Corps ("CCC), and was constructed from granite quarried on the shores of Crystal Lake. Gilbertson pf. at 6; exh. UPC-DR-2, Attachment 24 at 6; exh. DHP Surrebuttal-1, Sec. 7 at 1–3 and Sec. 8 at 1.

214. The Park's nomination for the National Register of Historic Places, as with all National Register nominations, provides a general description of the property, its history, and significance

to the extent necessary to document that the property meets one of the four criteria for listing. Tr. 2/8/07 at 226 (Gilbertson).

215. The Park qualified for listing on the National Register under two criteria: Criterion A, which applies when the "[p]roperty is associated with events that have made a significant contribution to the broad patterns of our history," and Criterion C, which applies when the "[p]roperty embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic value, or represents a significant and distinguishable entity whose components lack individual distinction." Exh. DHP-Surrebuttal-1.

216. The Park is historically significant under Criterion A "because of its association with the CCC and the New Deal in Vermont." The bathhouse is similarly significant under Criterion A, and also Criterion C, "because of its architectural design that combines the rustic architecture so popular with CCC recreational park structures at the time, with the contemporary style of modernism." Exh. DHP-Surrebuttal-1, Section 8 at 1.

217. According to National Park Service ("NPS") guidelines, the summary paragraph in Section 7 of the nomination papers should "briefly describe the general characteristics of the property such as its location and setting, type, style, method of construction, size and significant features." The NPS guidelines provide that a summary paragraph for Section 8 should "simply and clearly state the reasons why the property meets the National Register criteria . . . . Using the summary paragraph as an outline, make the case for significance in subsequent paragraphs." Pritchett pf. reb. at 9–10.

218. The Crystal Lake State Park nominating papers do not emphasize scenic views as contributing to the historic character of the site. The only mention of scenic views in the summary paragraphs in Section 7 (narrative description of the site) is the sentence, "The parking lot has scenic views of the lake and distant mountains." The remainder of Section 7 includes only one other reference to scenic views: "The [bathhouse] faces Crystal Lake, the beach, and scenic vistas of the water and mountains." The summary paragraphs of Section 8 (statement of historic significance) do not mention the scenic views. Scenic views are discussed only once in the remainder of Section 8, in a statement that the parking lot "has access to a scenic view." Pritchett pf. reb. at 9-10; exh. DHP-Surrebuttal-1.

219. According to NPS guidelines, "photographs should give an honest visual representation of the historic integrity and significant features of the property. They should illustrate the qualities discussed in the description and statement of significance." There are no photographs in the Crystal Lake State Park Registration Form that illustrate the views down the Lake from the bathhouse or the beach. The only photographs included are of the bathhouse building. Pritchett pf. reb. at 9-10 (quoting National Register Bulletin: How to Apply the National Register Criteria for Evaluation); exh. SHP-Surrebuttal-1.

220. It is clear from the nominating papers that the historically relevant aspects of the Park are largely defined by what is within the property itself, and the distant views outside the property boundaries are secondary. Pritchett pf. reb at 11; exh. SHP-Surrebuttal-1.

221. Historical records from the planning phase and early years of the Park's operation confirm that distant views of the ridgeline were not considered a critical component of the Park. The Biennial Reports of the State Forester (1939-1959) and newspaper articles in The Orleans County Monitor (1936 and 1937) focus on its importance as a "fine bathing beach", but do not mention the views as important. Pritchett pf. reb. at 15.

222. Historical records reflect that the most photographed views from the north end of Crystal Lake are those of the high granite ledges along the east shore. Pritchett pf. reb. at 15.

223. Although the scenery surrounding Crystal Lake contributes to the qualities of the Park, Crystal Lake State Park was not deemed historically significant because of the scenic views. Pritchett pf. reb. at 10; findings 214–220, above.

224. Given the distance to the turbines (5.7 miles or more) and the small percentage of the total viewshed that they would occupy, the turbines will not interfere with the public's use of the State Park, or the public's interpretation of the historical qualities of the Park and the bathhouse. Pritchett pf. reb at 19; findings 184–187, above.

225. The Project will not result in an undue adverse impact on archaeological sites. Cowan Panel pf. at 58; Cowan Panel pf. reb. at 10; exhs. UPC-CRV-27, CRV-Reb7 and CRV-7b; finding 226, below.

226. The proposed feeder line to the substation for the Project would cross over the foundation of a barn and house that appeared on historic maps. Impacts to this historic site can be avoided if UPC maintains a 15-meter buffer around the site, with no utility-pole placement or

soil disturbance allowed within the buffer, and if heavy equipment avoids the site. Exh. UPC-CRV-Reb7a.

Discussion

The Division of Historic Preservation contends that the presence of the proposed wind turbines at the far end of the Crystal Lake viewshed would result in an undue adverse impact on the historic site of Crystal Lake State Park. The DHP relies on the following three-part test for evaluating impacts on historic sites, as articulated by the Environmental Board in its *Middlebury College* decision:[80]

1. Whether the proposed project site is historic.

10 V.S.A. § 6001(9) provides:

> "Historic site" means any site, structure or district or archaeological landmark which has been officially included in the National Register of Historic Places and/or the state register of historic places or which is established by the testimony of the Vermont Advisory Council on Historic Preservation as being historically significant.
>
> Accordingly, there are three ways in which a site's historic nature may be established under Act 250:
>
> (1) placement on the National Register of Historic Places;
>
> (2) placement on the Vermont register of historic places; and
>
> (3) persuasive evidence of historic significance brought before the Board or District Commission by the testimony of the Vermont Advisory Council on Historic Preservation.

2. Whether the proposed project will have an adverse effect on the historic site.

> In evaluating adverse effect on a site, it is central to determine whether a proposed project is in harmony or fits with the historic context of the site. Important guidelines in evaluating this 'fit' include: (1)whether there will be physical destruction, damage, or alteration of those qualities which make the site historic, such as an existing structure, landscape, or setting; and (2) whether the proposed project will have other effects on the historic structure, landscape, or setting which are incongruous or incompatible with the site's historic qualities, including, but not limited to, such effects as isolation of an historic structure from its setting, new property uses, or new visual, audible or atmospheric elements.

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80. *Re: Middlebury College,* No. 9A0177-EB (V.E.B., Jan. 26, 1990).

3. Whether the proposed project's adverse effect will be undue.

The 'undue' quality of an effect on a historic site can be judged in several different ways. A positive conclusion on any one of the following guidelines can lead to a determination that an adverse effect is undue:

a. The failure of an applicant to take generally available mitigating steps which a reasonable person would take to preserve the character of the historic site.

b. Interference on the part of the proposed project with the ability of the public to interpret or appreciate the historic qualities of the site.

c. Cumulative effects on the historic qualities of the site by the various components of a proposed project which, when taken together, are so significant that they create an unacceptable impact.

d. Violation of a clear, written community standard which is intended to preserve the historic qualities of the site.[81]

There has been no dispute that Crystal Lake State Park and its bathhouse are historic sites. With respect to the impacts of the proposed wind turbines on the historic sites, DHP asserts that "the proposed project will alter both the landscape and setting that are elements of the historic site and thereby adversely affect the historic qualities of Crystal Lake State Park."[82] DHP further contends that this adverse impact will be undue because the presence of the wind turbines will interfere with the ability of the public to interpret or appreciate the historic qualities of the site. According to DHP, "[t]he relationship between the Park and its surrounding is unmistakable."[83] DHP explains that:

> All design elements and function of the Park revolve around its setting and the Park has been designed to fully integrate not only the recreational opportunities of Crystal Lake, but also the omnipresent scenic vistas of the water and the distant mountains.
>
> By erecting sixteen 420-foot tall wind turines visible from the Park, the proposed project will interfere with the ability of the public to enjoy the elements

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81. *Re: Middlebury College,* No. 9A0177-EB (V.E.B., Jan. 26, 1990) at 9–10.

82. DHP Brief at 6.

83. DHP Brief at 7.

> and functions of the Park designed to take advantage of the unobstructed view of the unspoiled Granby-Norris ridgeline.[84]

DHP also relies on its own "Criteria for Evaluating the Effect of Telecommunications Facilities on Historic Resources," contending that the Project would have an undue adverse effect under two of those criteria, Criterion 11 and Criterion 12. Criterion 11 provides that a project may have an adverse impact:

> If installation of the telecommunications facility would significantly impair the viewshed from an historic resource if that viewshed is a significant component of the character of the historic resource and its history of use (e.g., the home of an important artist whose work portrayed the viewshed landscape); . . .[85]

Criterion 12 provides that a project may have an adverse impact:

> If installation of the telecommunications facility would significantly interfere with the public's ability to interpret and appreciate the qualities of a historic cultural facility, including impairment of the viewshed if experiencing the view from the site is an important part of experiencing the site; . . .[86]

UPC disputes DHP's conclusions. UPC contends that the only impacts of the Project on the historic Park and bathhouse are indirect, visual impacts almost six miles distant. UPC asserts that "[t]hese distant views of the Project, while having some effect on the scenic quality of the area, will certainly not destroy the historic qualities of the bathhouse and park or otherwise interfere with the physical features of the building and park."[87]

UPC further contends that both the Environmental Board and Public Service Board have approved development projects that have had much greater *direct* impacts on historic properties. UPC notes that in the *Middlebury College* decision itself, the Environmental Board found that two additions totaling 14,500 square feet, which included four towers, would not have an undue adverse effect on the historic gymnasium to which they would be attached. UPC also points to the Public Service Board's previous review of a different proposed wind generation facility, in which this Board found that demolition of historic resources would not result in an undue

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84. DHP Brief at 9.

85. Exh. ANR EG-2.

86. Exh. ANR EG-2.

87. UPC Reply Brief at 58.

adverse impact, if the historic resources were photo-documented and if an interpretative exhibit were installed.[88]

UPC asserts that the DHP's "Criteria for Evaluating the Effect of Telecommunications Facilities on Historic Resources" should be given little weight, because they were not developed for evaluating wind generation facilities and because, according to UPC, DHP has applied them inconsistently to wind projects.

We conclude that the Project will not have an undue adverse effect on the historic Crystal Lake State Park or the Park's bathhouse. We reach this conclusion because, first, the National Register nomination form pays scant attention to the scenic views. The nomination papers only mention the scenic views in three sentences (as noted in the above findings) out of ten and one-half pages of single-spaced text. More importantly, none of the references to scenic views include any explanation or assertion that the scenic views themselves are an important element in the historic significance of the Park or bathhouse. Second, for the reasons set forth in our discussion of the aesthetic impact of the Project on Crystal Lake State Park, the Project will not have an undue adverse visual impact on the Park. Even if we were to apply the DHP's telecommunications criteria, our conclusions would not change, due to the lack of sufficient evidence to show that the scenic views are important to the historic resources.

Rare and Irreplaceable Natural Areas

[10 V.S.A. § 6086(a)(8)]

Findings

227. The Project will not result in an undue adverse effect on rare or irreplaceable natural areas. This finding is supported by findings 228 through 235, below.

228. Neither a literature search nor map reviews identified any rare and irreplaceable natural areas that might be adversely affected by the Project. The project area was also inspected for the presence of any natural communities that would be ranked as "rare" by the Vermont Nongame and Natural Heritage Program ("VNNHP"). Gilman pf. at 12; exh. UPC-AG-3.

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88. Docket No. 6911, *Petition of EMDC*, Order of 7/17/06 at 56–59.

229. Based upon the field survey, there are no areas within the project footprint or revised project footprint that are comparable to any other areas in the State that have been designated as rare and irreplaceable natural areas. However, two habitats that may be of some importance on a statewide basis were noted: the fen between Libby and Barrett Mountains, and patches of "rich northern hardwood" forest. Gilman pf. at 12; Gilman pf. reb. at 16; exh. UPC-Cross-SM1 at 2.

230. Fens are considered rare wetland natural community types by the VNNHP ranking system. They are significant because they support hydrophytic vegetation, and are a rare wetland type in Vermont. Fens are under the influence of mineral rich groundwater. Morrison pf. at 2.

231. The fen at the project site (Wetland 16) is not an exceptional example of this community type, because a number of the plant species that would make it a "rich" fen are lacking. The Project will not have any direct impacts on the fen, nor are indirect impacts anticipated that would result in undue adverse effects. Gilman pf. at 12; Gilman pf. reb. at 5.

232. As part of the Project, the petitioner proposes to expand an access road close to, but not in the direction of the fen. The road drainage will be directed away from the fen. If the project is built as described, it is not expected to adversely impact the fen. Morrison pf. at 2; Nelson pf. surreb at 24.

233. Compliance with the construction and operational stormwater permitting requirements should provide adequate protection for the fen. All stormwater from new temporary or permanent impervious surfaces would be diverted away from the fen. The existing road adjacent to the fen would be maintained with minimal widening and improvements to address potential runoff. J. Nelson pf. reb. at 23–24.

234. There are three areas that would meet the definition of "rich northern hardwood forests": Wetlands 18, 38 and 39. This forest type is not ranked as "rare" by the VNNHP, and is probably the "climax forest" community in this area based upon the bedrock type, nutritive soils, and climate. UPC has planned the Project to specifically avoid these areas, and they are outside of the project footprint. Gilman pf. at 12-13; Gilman pf. reb. at 6; exh. UPC-CRV-SSRb3a at sheets 2 and 3.

235. The revised January 2007 layout eliminates all turbines and roads approaching or on Norris Mountain. This avoids areas of "rich" or "very rich" northern hardwood forest, and avoids

the vicinity of two wetlands believed to be functional vernal pools (Wetlands 46 and 47). Gilman pf. reb. at 15; exhs. UPC-CRV-SSRb2b and SSRb3b.

Discussion

The evidence demonstrates that the Project should not have adverse impacts on any rare and irreplaceable natural areas. The only such area within the vicinity of the Project is the fen between Libby and Bartlett Mountains, and the project design is such that impacts to the fen will be avoided.

Wildlife, Including Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

Findings

236. Based upon the investigations and analyses performed by UPC's wildlife consultants, and the conditions set forth in the UPC-ANR Stipulation, the Project should not have an undue adverse impact on wildlife or necessary wildlife habitat. This finding is supported by findings 237 through 317, below.

237. The Project presents potential impacts to wildlife and habitat, including: (1) disturbance associated with construction activity; (2) the scale of the Project; (3) clearing associated with the Project; and (4) human activity associated with operation and maintenance of the Project. Austin pf. at 5.

238. There is a scientific uncertainty concerning the indirect impacts of a wind project on black bear use of nearby habitat, and on potential bird and bat fatalities at a wind project on a forested hilltop in the northeastern United States. Exh. ANR/UPC-1.

239. The wildlife habitat impacts associated with the Project are likely to be more ephemeral than those associated with certain other types of development (i.e., residential construction and ski-area development). Exh. ANR/UPC-1.

240. UPC has agreed to provide ANR with access to the project site for the life of the project to facilitate study of potential impacts of the project on wildlife and the effectiveness of mitigation measures in the UPC-ANR Stipulation. Exh. ANR/UPC-1.

Mammals

Deer

241. There is no evidence of deer winter habitat within the project area or the immediate vicinity. Austin pf. at 5; Wallin pf. at 3.

242. Deer readily acclimate to human activity and adapt to a consistent source of noise. Walling reb. pf. at 9.

243. The Project would not result in an adverse impact on the local deer population or on deer winter habitat. Austin pf. at 5; Wallin pf. at 4.

Moose

244. The project site is located within an area of apparently high moose densities as evidenced by the extensive degree of browsed vegetation, moose tracks, trails, pellet piles, reported moose/vehicle collisions, and suitable habitat. Austin pf. at 6.

245. Moose are unlikely to be adversely affected by the construction and operation of the Project. Austin pf. at 6; Wallin pf. reb. at 10-11; exhs. UPC-JW-Reb3, JW-Reb4a and 4b, JW-Reb5, and UPC-CB-Reb3.

246. Suitable moose concentration habitat is important for winter survival of moose as it provides relief from deep snow, cold temperatures and associated wind. Austin pf. at 6.

247. Within moose concentration areas, openings must be created along roadside snow banks in the winter to ensure unrestricted ingress and egress between the softwood shelter and the plowed road. These openings allow the moose to access the cover without becoming mired in a high snow bank. The location of breaks in snow banks should be frequent and strategically placed based on moose trail and travel activity within the concentration area. Wallin pf. reb. at 8-9; tr. 1/31/07 at 86 and 90 (Wallin); Austin pf. at 6.

Black bear

248. Black bear require large areas of forest habitat conditions with a variety of food resources to serve as core habitat that allows for successful reproduction and avoidance of human disturbance. Austin pf. at 7.

249. Black bear rely on concentrated stands of American beech trees as an essential source of high nutrition food. Production of hard mast (beech nuts, acorns) is important to reproductive success and cub survival for black bear. Concentrated areas of American beech trees that have a history of use by black bears are essential for the long-term survival, well-being, and reproductive success of black bears in Vermont, and constitute "necessary wildlife habitat" under Act 250. Austin pf. at 7, 9–10.

250. Other essential hard and soft food resources for black bear in Vermont include oak, cherry, berries, apples, and mountain ash. Black bear also rely on forested wetlands, particularly in the northeast highlands of Vermont, as an important feeding habitat during the spring and early summer. Austin pf. at 8.

251. Assessing the degree of a development's impact to black bear habitat, such as concentrated areas of bear-scarred beech and wetlands, is a function of both direct and indirect impacts associated with the project. Direct impacts involve the direct, physical destruction of those habitats (or portions thereof), while indirect impacts involve disturbance and displacement from those habitats based on a project's close proximity. Austin pf. at 13.

252. Within a 600-foot radius of the Project, more than 1,460 bear-scarred beech trees were identified through intensive field surveys. With the January 2007 project layout, an estimated 20 bear-scarred beech would be removed, which represents approximately 1.3% of the bear-scarred beech on the project site. Wallin pf. reb. at 3–4, 6–7; exhs. UPC-CRV-SSRb1, SSRb3a.

253. There are likely to be some indirect effects from the construction, operation, and maintenance of the project that may influence the extent of impact to the habitat beyond the direct loss of habitat associated with the footprint of the project. However, the extent to which wind turbines result in such indirect impacts is uncertain. Austin pf. at 13; tr. 1/31/07 at 162, 168, 176–17 (Austin).

254. The project, without appropriate mitigation, would result in significant, undue adverse impacts to black bear behavior, survival, reproductive success and relationships to specific habitat conditions. ANR's Black Bear Habitat Mitigation Guidelines provide that there should be a mitigation ratio of 4:1. Austin pf. at 7; tr. 1/31/07 at 175, 186 (Austin).

255. Under the UPC-ANR Stipulation, UPC has agreed to provide assurances through Meadowsend Timberlands, Ltd. (MTL) that MTL's 2,700 +/- acre so-called "King George

Forest" parcel,[89] within which a portion of the Project is located, will remain in forest management and will not be developed for the life of the project. These assurances are to be accomplished through a written agreement that would run with the land, that would terminate upon decommissioning of the project following the completion of site restoration measures, and that would allow timber operations to continue but prohibit other development. Exh. UPC-Cross-JA1; exh. ANR/UPC-1 at section 1a.

256. As a contiguous parcel, the King George Parcel provides a variety of black-bear habitat components, including concentrated and dispersed bear-scarred beech habitat, wetlands, and various serial stages of upland forest. The King George Parcel also has some very rich, high-quality forest wetlands that are also considered necessary habitat for black bear. The area itself is part of a larger, remote, relatively unfragmented area of habitat that is of importance to bears. These factors are important for the survival and well-being of the state's black-bear population. Exh. ANR/UPC-1 at section 1a; tr. 1/31/07 at 188-189, 207-208 (Austin).

257. Under the UPC-ANR Stipulation, a habitat management plan will be established in coordination among UPC, ANR and MTL. The plan will be consistent with MTL's forest management objectives for the parcel, and will ensure the proper stewardship and enhancement of the critical bear habitat features. The plan is to be reviewed and approved by ANR, and will be submitted to the Board for final approval prior to commercial operation of the Project. The responsibility for the implementation of the wildlife habitat plan would ultimately rest with the Petitioner. Exh. ANR/UPC-1 at section 1b; tr. 1/31/07 at 166, 191–192, 195 (Austin).

258. The habitat mitigation on the King George Parcel, as established in the UPC-ANR Stipulation, represents an outstanding mitigation offer that justifies deviation from the ANR guidelines. Tr. 1/31/07 at 189 (Austin).

259. The UPC-ANR Stipulation provides that during project operations, UPC may, in consultation and coordination with ANR, conduct or cooperate in conducting research into the possible effects of the project on black-bear use of adjacent habitats. Any such research is to be conducted in accordance with proper research protocols that must be the result of a coordinated

89. The King George Forest parcel is to be distinguished from the King George School, which is discussed elsewhere in this Order.

effort between UPC and ANR and be reflected in a research proposal that must be reviewed and approved by both parties and filed with the PSB. If such research indicates that the Project is not having an undue adverse impact on habitat utilization by bears (and in particular female bears) due to avoidance of the bear-scarred beech habitat within ¼ mile of the turbines, UPC may seek ANR's concurrence that the agreement with MTL can be scaled back, modified in some way, or possibly even discontinued. UPC and ANR have agreed to work in good faith regarding the evaluation of any such information, and ANR has agreed that its concurrence shall not be unreasonably withheld. Exh. ANR/UPC-1 at section 1c.

260. UPC will provide for the funding of decommissioning and site restoration measures for the Sheffield wind farm. Tr. 1/31/07 at 181 (Austin); Cowan Panel pf. at 27; Cowan Panel pf. reb. at 13.

261. Public access to the project site should be restricted during the fall and spring seasons, when bears are feeding on beechnuts. Tr. 1/31/07 at 90 (Wallin).

Discussion

Bears require large areas with a variety of food sources. In Vermont, concentrated areas of bear-scarred beech qualify as necessary wildlife habitat. The project before the Board has been redesigned to impact only a small number of individual beech trees. The impact of development, however, extends beyond the cutting of individual trees. The construction, operation, and maintenance of the Project can have indirect impacts on bears' use of their habitat. All of these impacts on black bears need to be mitigated.

UPC and ANR have agreed in the Stipulation for the preservation of the nearby King George Parcel to provide a suitable vehicle for mitigating these impacts. The parcel in question is comprised of 2,700 acres of unfragmented forestland. In addition to bear-scarred beach, it contains various kinds of wetlands, as well as forest in varying degrees of succession. It therefore not only provides appropriate mitigation for the Project's impacts on bears, but also constitutes an "outstanding" mitigation measure, in the words of ANR's expert wildlife biologist.[90]

90. Tr. 1/31/07 at 189 (Austin).

RPI contends that the UPC-ANR Stipulation fails to adequately protect black bear habitat, because it does not ensure that Meadowsend Timberlands and any successor would be bound by its provisions, and because "it allows UPC to scale back black bear conservation efforts" without requiring an evaluation of the Project's impacts on bears and without allowing ANR to seek additional conservation efforts if there are adverse impacts on bears.[91]

We are not persuaded by RPI's criticisms. First, it will be incumbent upon UPC to execute a conservation easement, or other similar legal means, and to secure the rights necessary for the conservation of the land for the life of the Project. Specifically, it will be the responsibility of the Petitioner to ensure that any successors in interest to the parcel honor the commitments made in the Stipulation. We are including a condition to this effect in our Order. Second, while the Stipulation does allow UPC to seek a relaxation of the black-bear mitigation requirements, it does so only if "research indicates that the Project is not having an undue adverse impact on habitat utilization by bears (and in particular female bears) due to avoidance of the bear-scarred beech habitat that is within 1/4 mile of the turbines. . . ."[92] Such a "reopener" provision is reasonable given the substantial uncertainty over the extent to which wind turbines might indirectly affect black bears' use of their habitat.

While the King George Parcel provides sufficient mitigation, the Stipulation also provides for an opportunity for UPC and ANR to conduct studies on the effects of a wind facility on bear health, behavior, survival and reproduction. Such studies, while not mandatory, could provide invaluable data for the future.

The Stipulation also requires the Petitioner to provide funds for decommissioning and site restoration of the project. Because the timing, manner and thoroughness of decommissioning are critical to the rehabilitation of this area for wildlife, and thus constitute important mitigation for the Project's impacts on bears, ANR will be provided an opportunity to review and comment on the plan prior to Board approval.

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91. RPI brief at 24.

92. Exh. ANR/UPC-1 at 2.

Birds and Bats

262. The Project will not have an undue adverse impact on bird and bat species. This finding is supported by findings 263–317, below.

263. UPC's bird and bat consultant conducted a number of initial bird and bat studies in the project area. During the fall of 2004, a visual survey of raptor migration, a radar survey of night-time bird and bat migration, and a detector survey for migrating bats were conducted. These same surveys were repeated in the spring of 2005. Bat detector data were collected during a third season, in late-summer and the fall of 2005. In the fall of 2005, potential eastern small-footed bat (Myotis leibii) habitat was assessed. Roy pf. at 3; exhs. UPC-RR- 2, 3, 4, 5.

264. Additional field surveys were conducted in 2006, based on consultation with ANR's Department of Fish and Wildlife. The additional field work included bat detector surveys in the project area from spring to fall, avian acoustic surveys during the spring and fall migration seasons, and bat detector data collection at Duck Pond, an area identified as potential small-footed bat maternity roost habitat. Roy pf. reb. at 4; exhs. UPC-RR-5, UPC-RR-Reb1a, 1b, 1c, 1d, and UHS/RPI-Cross9.

Birds — Raptors

265. A total of 194 raptors, representing 10 species, were observed during the fall 2004 survey, yielding an observation rate of 3.2 birds/hour. During the spring 2005 survey, 98 raptors representing 10 species were observed, yielding an observation rate of 1.6 birds/hour. Broadwinged hawks were the most common species, followed by red-tailed hawks, sharp-shinned hawks, turkey vultures, and osprey. The species composition was generally similar to other sites in the region, which is largely due to the fact that the common species observed are generally the most abundant species in the northeast. Roy pf. at 5-6.

266. The surveys conducted by UPC's consultant during the fall of 2004 and the spring of 2005 to evaluate raptor migration provide a useful set of baseline data for assessing potential impacts of the Project to migrating raptors. The numbers of migrating raptors observed at the project site are not high relative to some other sites within the northeast region. However, a particular location need not be one of the best of its kind in terms of raptor habitat conditions to

merit protection or special consideration in terms of impact assessment and avoidance. Austin pf. at 15; Roy pf. at 5-6; exhs. UPC-RR-2 and RR-3, Appendix A.

267. The data collected during the spring of 2005 indicate that 69% of the observed raptors were flying at or below 125 meters (400 feet) in altitude, placing them at risk of colliding with the proposed turbines. However, the number of raptors observed during this survey period was quite low (roughly 100). Austin pf. at 15-16.

268. Some of the raptor species observed during both the spring and fall surveys periods, including coopers hawk, northern harrier, American kestrel and osprey, are considered "species of greatest conservation need" in the State of Vermont Wildlife Action Plan. A species of greatest conservation need is a species whose populations, in the case of these raptors, may be experiencing certain pressures that merit attention in order to maintain their populations at levels that allow them to persist. Austin pf. at 15-16.

269. Raptor fatalities, to the extent that they are understood at other utility-scale wind energy facilities in the northeast, have been very limited. Daytime visibility and avoidance of wind turbines may be the greatest mitigating factor that has resulted in the relatively low raptor fatalities at wind facilities in the northeast. However, there is only limited data regarding raptor fatalities at wind facilities in the northeastern United States, and some of the data that has been collected to date has not been made available to state or federal agencies responsible for reviewing such projects. For the site under review in the current proceeding, the survey data from Spring 2005 raises some concern that raptors may collide with the proposed turbines under certain conditions (e.g., wind, weather, behavioral) that are yet to be understood. Austin pf. at 16.

Breeding Birds

270. Preliminary surveys conducted in 2004 documented a variety of species common to both mature and second-growth northern hardwood forests. These included, among other species, common raven (Corvus corax), blue jay (Cyanocitta cristata), hermit thrush (Catharus guttatus), veery (C. fuscescens), blue-headed vireo (Vireo solitarius), chestnut-sided warbler (Dendroica pensylvanica), ovenbird (Seiurus aurocapillus), black-throated green warbler (D. virens), black-throated blue warbler (D. caerulescens), yellow-rumped warbler (D. coronata),

rose-breasted grosbeak (Pheucticus ludovicianus), dark-eyed junco (Junco hyemalis), and white-throated sparrow (Zonotrichia albicollis). Roy pf. at 13-14.

271. Of the 43 bird species observed during the 2005 surveys, the five most common species were black-throated blue warbler, ovenbird, black-throated green warbler, red-eyed vireo (Vireo olivaceus), and winter wren (Troglodytes troglodytes). Other frequently observed birds include the Swainson's thrush (Catharus ustulatus), dark-eyed junco, hermit thrush, yellowbellied sapsucker (Sphyrapicus varius), American robin (Turdus migratorius), and magnolia warbler (Dendroica magnolia). Swainson's thrush occurred at higher elevations, and the peaks on which it was observed probably represent the only suitable nesting habitat in the project site for this species. Recently-cut-forest-edge species observed included white-throated sparrows, chestnut-sided warbler, common yellowthroat (Geothlypis trichas), and mourning dove (Zenaida macroura). The forest generalists include blue jay, rose-breasted grosbeak, black-and-white warbler (Mniotilta varia), and black-capped chickadee (Poecile atricapillus) (NAI 2005). Roy pf. at 14.

272. Thus, the surveys conducted by UPC's consultant identified a variety of breeding birds that are typical of the various age classes of forest habitat conditions in the project vicinity. Some of these species are habitat specialists that require unfragmented, forest habitat conditions for nesting and successful rearing of young (e.g., hermit thrush, black-throated blue warbler, ovenbird). Austin pf. at 23–24.

273. The general project area, although subject to logging practices, supports a diversity of remote forest habitat conditions, parts of which represent suitable interior forest habitat for forest-interior songbirds. This type of habitat is important because roads, residential and commercial development, and agriculture have resulted in habitat and forest fragmentation in many parts of Vermont. Austin pf. at 23–24.

274. Forest-interior nesting songbirds such as hermit thrush, ovenbird, and black-throated blue warbler are habitat specialists that require large patches of unfragmented forest habitat to nest and reproduce young successfully. The consequences of habitat fragmentation are complex and cannot be quickly or easily identified. Habitat fragmentation can affect the types and abundance of species in that habitat. Austin pf. at 25.

275. There is a lack of sound scientific data regarding the effects of wind energy development on breeding birds in general, and forest-interior nesting songbirds in particular. Such information is necessary to fully understand and appreciate the long-term ecological effects of wind turbines on Vermont ridgelines. Austin pf. at 24–25.

276. Surveys for nesting raptors were conducted in April, May, and June 2004. These included playback surveys and searches for old nests. The calls produced no response and no old or existing raptor nests were observed within the project site. Roy pf. at 14-15.

277. A species of special consideration during field surveys was the Bicknell's thrush (Catharus bicknelli), which is rare and uncommon in Vermont. This species nests in spruce-fir forests above 1000 m (3,000') in elevation. The elevation of the project area at all sites is lower than 792 m (2,600'). Only one turbine site is above 2,500'. Therefore, the Bicknell's thrush would not be expected to breed within the project area. Spring 2004 surveys examined potential nesting habitat for the Bicknell's thrush and found no suitable habitat. Bicknell's thrush were not observed during any of the wildlife surveys or breeding-bird surveys conducted at the project site. Another investigation of Bicknell's thrush at the Project site, conducted by an expert consultant for UHS and RPI, also did not identify any Bicknell's thrush. Thus, the evidence demonstrates Bicknell's thrush are not using the site of the Project. Roy pf. at 15; exh. UPC-CRV-SSRb3a; tr. 2/2/07 at 11–12 (Kilpatrick).

Nocturnal Migrant Birds

278. Bird fatalities have been documented for many years at wind energy facilities throughout the United States, as well as in other countries. Many species of passerine birds (songbirds) migrate at night during spring and fall migration periods. Austin pf. at 18.

279. Some birds that migrate at night fly lower than others. Migration can be influenced by encounters with steep, high topography, such as is found in parts of Vermont. In addition, birds migrating at night that encounter low cloud cover, fog, or precipitation, as is often the case in Vermont during the fall, will fly at lower altitudes. These factors create a risk of collision for birds with tall structures such as wind turbines. Austin pf. at 19.

280. Radar evaluations of nocturnal bird migration are essential for the proper assessment of siting and designing utility-scale wind facilities, as well as understanding the potential effects of

wind energy development on migrating birds in Vermont. However, there are no standard protocols for conducting radar investigations of nocturnal bird migration. Austin pf. at 17–18.

281. UPC's consultants conducted radar surveys in the fall of 2004 and the spring of 2005. The fall survey was conducted over 18 nights from September 26 to November 3, 2004, and the spring survey was conducted on 20 nights from April 26 to May 27, 2005. The surveys were conducted from the same site — just west of the peak of Hardscrabble Mountain — during both seasons. This site was chosen because it was reasonably accessible and representative of the project area, and provided the greatest radial scope of view for the radar. The data collected were used to calculate passage rate (reported as the number of targets/kilometer/hour or t/km/hr), flight direction, and flight altitude of targets. Roy pf. at 8–11; exhs. UPC-RR-2 and RR-3.

282. In general, the protocol that was used by UPC's consultants to conduct the radar studies is consistent with those of radar evaluations of nocturnal bird migration at other utility-scale wind facilities. Austin pf. at 17.

283. The information gathered by UPC Wind's consultants suggests that the bird-passage rates for this area are not unusually high, nor do they appear to be influenced by any existing landscape feature. In addition, the results indicate that the vast majority of targets are flying at altitudes much higher than the proposed turbines, suggesting a limited risk of collision. This information is useful for understanding pre-construction siting considerations, and will be essential in interpreting the significance of post-construction bird mortality. Austin pf. at 20; Roy pf. at 11–13.

284. Based on the information provided, and relative to similar information collected at sites in New York and Maine, it appears that the risk of avian collisions with turbines in the proposed location may be low. The overall passage rates (taking into consideration the variation in passage rates over time) of 114 targets/km/hr and 208 targets/km/hr are similar to other passage rates recently recorded in other parts of the northeast using similar methods and technology. Austin pf. at 20; Roy pf. at 15–16; exh. UPC-RR-6 at 21.

Birds – Mitigation

285. Based upon currently available information, the Project is unlikely to result in undue adverse impacts to bird populations. However, collecting data to estimate bird fatalities during

project operations provides a basis for a carefully informed determination regarding impacts to birds. The Project can provide an opportunity to develop such data regarding bird (and bat) mortality associated with utility-scale wind energy on ridgelines in Vermont. Findings 263–284, above; exh. ANR/UPC-1 at section 3.

286. In the UPC-ANR Stipulation, UPC Wind agrees to work with ANR, as a condition of the CPG, to prepare an appropriately designed post-construction bird fatality monitoring protocol for meeting these objectives. The final protocol would require approval by the Board prior to commercial operation of the Project. The protocol will:

> (a) employ "state-of-the-art" mortality survey methods and techniques that have proven effective at other wind energy facilities in the eastern United States;
>
> (b) establish a sampling design that will result in data collection with sufficient frequency at a statistically valid sample of turbine locations within the Project;
>
> (c) benefit from the assistance or review of a trained statistician for sample design and the statistical analysis of sample data;
>
> (d) ensure that bird mortality surveys are conducted by qualified biologists/technicians that are experienced and trained in conducting surveys of this type;
>
> (e) include measurement and recording of meteorological data during each day of surveys;
>
> (f) include searches following significant weather events (e.g., cold fronts, strong north or south winds, periods of fog and precipitation) to assess the effects of environmental variables on collision rate;
>
> (g) include collection of all bird carcasses for identification by a qualified professional, with collected carcasses to be made available to ANR for record keeping, proper scientific handling and necropsy, if necessary;
>
> (h) include mapping of bird carcasses where found using sub-meter GPS technology;
>
> (i) Include a scavenging rate control test for each operation assessment season using dead birds to estimate the rate of carcass removal by scavengers;
>
> (j) include a searcher efficiency control test each season and/or for each set of searchers employed;
>
> (k) allow for monitoring to be conducted by a third party and funded by UPC, subject to UPC's approval; and
>
> (l) provide for the collection and identification of any bat carcasses located during bird fatality searches.

Exh. ANR/UPC-1 at section 3a-3l.

287. The UPC-ANR Stipulation further provides that, as currently envisioned, mortality surveys would be conducted during the spring and fall bird migration periods during the first year of project operation, with follow-up searches as necessary over the course of the second and third years of project operation. During this three-year period, a maximum of 600 turbine searches would be conducted. (A "turbine search" is one search conducted at a single turbine.) The timing and number of searches would be tailored to focus on specific periods or events of greatest interest, in consultation with ANR, with the understanding that reasonable efforts would be made to keep the time and costs associated with mobilizing/demobilizing searchers to a minimum. Exh. ANR/UPC-1 at section 3; tr. 1/31/07 at 169 (Austin).

288. UPC and ANR agree to engage in a cooperative, team-based process to prepare the protocol and review bird mortality data. If at some point in time prior to the completion of 600 turbine searches, sufficient data is collected to confirm that under a reasonable range of "typical" meteorological conditions the Project is not likely to pose an undue adverse impact on bird populations, further action by UPC will be limited to monitoring strategies designed specifically to "spot check" following potential catastrophic events, such as those resulting from important weather events. UPC agrees to cooperate with ANR and to consider measures to reduce any impacts that are documented. Exh. ANR/UPC-1 at section 4; tr. 1/31/07 at 169 (Austin).

289. The UPC-ANR Stipulation further provides that if post-construction monitoring demonstrates that the Project is having an undue adverse impact on bird populations, UPC and ANR will work together to identify the problem and prescribe appropriate, practical and reasonable measures for avoiding or minimizing continued impacts. 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. UPC and ANR agree to work together to establish criteria and mortality thresholds based on post-construction mortality survey analysis that will trigger mitigation. Exh. ANR/UPC-1 at section 4; tr. 1/31/07 at 169 (Austin).

290. In the UPC-ANR Stipulation, UPC and ANR agree to use their best efforts to reach consensus in this review process. In the event that consensus cannot be reached, ANR may petition the Board to determine whether further monitoring or mitigation should be considered, and UPC retains the right to present its position to the Board. Exh. ANR/UPC-1 at section 4.

Bats

291. Nine species of bats are found in Vermont. In general, six of the species hibernate in caves or mines during the winter and emerge in the spring to migrate to their summer range. These species include the little brown bat (Myotis lucifugus), big brown bat (Eptesicus fuscus), the eastern pipistrelle (Pipistrellus subflavus), and the northern long-eared bat (Myotis septentrionalis). There are also two species that are listed as threatened or endangered: the Indiana bat (Myotis sodalis) is federally and state listed as endangered, and the small-footed bat (Myotis leibii) is listed as threatened by Vermont. The remaining three bat species, the red bat (Lasiurus borealis), hoary bat (Lasiurus cinereus), and silver-haired bat (Lasionycteris noctivagans) may be considered long-distance migrants in that they migrate out of the Northeast in late summer and early fall and spend the winter months in the southeastern United States or further south (Fleming and Eby 2003). They return to Vermont and the Northeast in late spring. Darling pf. at 5.

292. Vermont's bat populations are required to survive at the more northern latitudes of bat range in North America. Vermont's bats must cope with shorter summers, longer hibernation periods, and cooler, more volatile temperatures. These factors all result in lower bat populations relative to other parts of North America. Because bat numbers may be smaller at Vermont's latitude, the bats may, in fact, be more vulnerable to added mortality factors. Darling pf. at 5–6.

293. All of Vermont's bat species have very low reproductive potential, increasing their vulnerability to additional mortality factors. Vermont's bat species generally give birth to one young per year, with long-distant migrants often giving birth to two young. Factors such as cool spring temperatures and poor quality food supplies may further reduce reproduction and survival. Darling pf. at 6.

294. Little is known about Vermont's bat species and populations, particularly the long-distance migrant bats which have been found to be most vulnerable to collisions with utility-scale wind projects. There are significant data gaps regarding the distribution, abundance, and stability of the species' populations in the state, particularly during the summer season. This is particularly true of the species that are more difficult to capture and less abundant in the state, such as the long-distance migrants. Darling pf. at 6.

295. Pre-construction bat surveys do not always reliably predict post-construction bat fatality levels. As an example, new information from a recently constructed wind energy project in the Tug Hill Plateau of New York (Maple Ridge Wind Power Project) indicates that pre-construction bat activity has not corresponded to post-construction fatalities. Pre-construction surveys that initially indicated low bat activity ultimately yielded a large number (over 300 observed) of dead bats from the active turbines. After searcher efficiency rates are calculated, the final estimates of total bat mortality will be several times the number actually observed. Darling pf. reb. at 5–6.

296. Recent findings from three new ridge-top wind facilities in the East suggest that these projects result in the highest bat-collision mortality levels among utility-scale wind projects in the nation. While as many as eight different bat species have been found dead at utility-scale wind projects, the species composition of the mortality is not evenly distributed. The long-distant migrant species (red bat (Lasiurus borealis), silver-haired bat (Lasionycteris noctivagans), and hoary bat (Lasiurus cinereus) comprise the majority of the mortality at these sites. Darling pf. at 7.

297. Bat mortality at wind projects in the eastern United States has recently been identified as an issue of concern. Based upon the relatively few bat fatality studies, the mortality rates observed range from 0.07 to 2.32 fatalities/turbine/year at facilities in open and mixed landscapes in the west and mid-west to 46.2 fatalities/turbine/year at facilities located on forested ridgelines in the central Appalachian states. Researchers currently have limited understanding of the specific factors influencing rates of bat collision mortality, although evidence from the timing of fatalities suggests that migrating bats suffer the highest risk, while risk during the summer feeding and pup-rearing period is low. Most of the fatalities of bats that have been documented have occurred during the fall migratory period. Tr. 1/31/07 at 230 (Darling); Roy pf. direct at 23.

298. Several bats species may be affected by the Project, primarily as a result of collisions with the turbines and their rotating blades. These include the silver-haired bat (Lasionycteris noctivagans), red bat (Lasiurus borealis), and the hoary bat (Lasiurus cinereus). These species, along with the eastern pipistrelle bat (Pipistrellus subflavus), have comprised a significant majority of bat fatalities at existing utility-scale wind projects in the East. Darling pf. at 8.

299. The summer-resident bat species that may be affected include the little brown bat (Myotis lucifugus), northern long-eared bat (Myotis septentrionalis), big brown bat (Eptesicus fuscus), and

the small-footed bat (Myotis leibii) which is listed as a state threatened species. These species have not been documented in great numbers in bat fatality surveys in the East. However, most bat fatality surveys have been limited in duration and season, and it is uncertain the extent to which attractive habitats at utility-scale wind facility sites, such as the beaver-influenced wetland, may influence the species killed. Darling pf. at 8–9.

300. While many of Vermont's ridgelines are dominated by spruce-fir forest community types, the project site is comprised of the northern hardwood forest community type. This may be significant because many of Vermont's bat species tend to prefer the northern hardwood (deciduous) forests for summer residential habitat. In addition, the mature stages of deciduous forest habitat provides suitable foraging habitat for several bat species. However, it is not known how this forest type affects bat activity and use by the more vulnerable long-distance migrant species. Darling pf. at 9.

301. UPC Wind's consultant conducted bat detector surveys in the project area for three migration seasons during 2004 and 2005. The migration season surveys involved the deployment of one to four detectors within the guy wire array of the on-site meteorological measurement towers. Roy pf. at 17–18; exh. UPC-RR-4.

302. The bat detectors record high frequency sounds, including the echolocation calls of bats. Unfortunately, some of the calls, particularly of the Myotis genus, cannot easily be distinguished from each other. Under such circumstances, other factors such as roost sites (e.g., buildings, trees, cliff faces) may need to be considered to help distinguish the particular Myotis species present. Darling pf. at 10; Roy pf. at 18–19.

303. The bat survey data collected during 2004 and 2005 suggest that the level of bat activity in the project area surveyed does not appear high enough for the Project to present an unacceptable risk to bats. Darling pf. at 11.

304. UPC Wind's consultant also conducted a spring 2006 bat detector survey, deploying four detectors during an approximately seven-week (April 24 to June 13, 2006) period, and a summer and early-fall 2006 bat detector survey, deploying five detectors from June 14 to October 15, 2006. Roy pf. rebuttal at 5–7; exhs. UPC-RR-Reb1d, Reb3.

305. Over the course of three years, UPC Wind's consultant collected more than 1000 detector/nights of data on bat activity on the Project site. These bat detector studies were

conducted at multiple locations across the Project site, and provide a good sample of the average bat activity at the site. Roy pf. at 21; Roy pf. reb. at 4; tr. 2/02/07 at 15–16 (Kilpatrick); exhs. UPC-RR-Reb1a, 1b, 1c, 1d, and UHS/RPI-Cross9.

306. The quality of bat survey reports and data analysis by UPC Wind's consultants has been very high. The Petitioner also made the data collected available for review in specific formats that assist evaluation of bat activity at the project site. However, each acoustic survey has some limitations that have affected confidence in the survey results and the conclusions that can be drawn about the potential impacts of the project on bat populations. Darling pf. at 11.

307. The data from these surveys raise some concerns about the level of bat activity at the beaver-pond wetland. While a detector at the beaver dam did not detect an unusually high level of activity, a detector at the northern end of the wetland did register numerous bat calls (18.6 bat calls/detector night). This is significantly higher than the average activity at the project's other survey sites, and comparable to wind-energy project sites such as one in Iowa where significant bat mortality occurred. Darling pf. reb. at 3-4.

308. An analysis for potentially suitable summer maternity roost habitat for the eastern small-footed bat within three miles of any of the proposed turbines identified one area with potential habitat: a south-facing cliff near the summit of Simpson Hill, just southeast of Duck Pond in Sheffield. The cliff is approximately 1 mile west of the western-most turbine in the revised project layout. Roy pf. at 19-21; exhs. UPC-RR-5 at 2 and 3; exh. UPC-CRV- SSRb1a.

309. After consultation with ANR's Department of Fish and Wildlife, UPC Wind's consultant conducted an acoustic survey at Duck Pond on the evening of June 14 and into the morning of June 15, 2006. Of the three detectors located at the cliff site, two did not detect any strong evidence of emergence activity (directly exiting a roosting site) from small-footed bats. At these two detectors, bat activity did not commence until well after dusk, with none of the calls identified as small-footed bats. Calls just prior to sunrise, when the bats would be expected to return to the cliff site, did not detect potential small-footed bats. Darling pf. reb. at 2.

310. One of the three detectors (the central one) had significant "noise" associated with the files and could not be reviewed using standard filters. The "noise" was caused by some additional acoustic activity (e.g., walking) that made it hard to distinguish the bat calls. Approximately 1/2 hour after sunset, nearly all of the bat calls were Myotis species, which could include small-footed

bats. While the characteristics of these unfiltered calls were more similar to northern long-eared bats than small-footed bats, differentiating the bat calls of some of the Myotis species is problematic. In addition, it is possible that calls made by bats during emergence may not be similar in structure to the reference calls normally made during flight and/or feeding. Darling pf. reb. at 2–3.

311. As a result of the evaluation of the Duck Pond cliff site, the presence of a colony of small-footed bats has not been demonstrated, and ANR has determined that UPC should not be required to obtain a state endangered species permit for the Project. However, because of the proximity of the cliff site to the proposed turbines and the high quality of the cliff face for potential roosting, the project should include monitoring for small-footed bat fatalities from collisions with turbines. Darling pf. reb. at 3.

312. UHS and RPI's consultant conducted five nights of mist-net surveys on the project site at Wetland 22 (the beaver wetland). None of the bats captured were rare, threatened or endangered bat species. Tr. 2/2/07 at 29-31 (Kilpatrick); exh. UPC-Cross-WK1.

313. The revised project design effectively reduces the potential impacts to bats for several reasons. The elimination of ten turbines reduces the likely number of bat fatalities from collisions. Because the turbines proposed for the Hardscrabble array have been removed from the project, the project is now more concentrated, thereby limiting the exposure of passing bats to turbines. The elimination of the Hardscrabble array also removed a series of turbines that were associated with acoustic surveys that yielded a preponderance of silver-haired bat calls in the fall 2005 survey. The reduction in the number of turbines proposed near the existing beaver-pond wetland reduces the likelihood of resident bat collisions. However, the anticipated reduction in bat collisions may not be proportional due to the increased height of the new turbines. There is increasing evidence that as turbine height increases, the number of bat fatalities increases as well. Darling pf. reb. at 4–5.

Bats — Mitigation

314. In the UPC-ANR Stipulation, UPC and ANR agree to work together subsequent to issuance of a CPG to develop criteria for modifying project operations in order to substantially reduce the risk of bat collisions, while at the same time minimizing impacts to project operations.

For the purposes of estimating an outside maximum cost to the project, UPC has agreed that curtailment of turbines could extend up to the periods specified below:

(a) For up to 120 nights between June 1 and September 30;

(b) For up to 8 continuous hours per night;

(c) When average wind speed (10 minute interval) at the hub height of a turbine is 6 m/s or below; and

(d) Air temperature at hub height is above 49 degrees Fahrenheit.

Curtailment will only be required when all four criteria (a-d) are met at the same time. The final bat curtailment criteria will require approval by the Board prior to commercial operation of the Project. Exh. ANR/UPC-1 at section 2b; tr. 1/31/07 at 229-230 (Darling).

315. The Stipulation's specified maximum curtailment boundaries will provide the opportunities necessary to address bat fatalities. Tr. 1/31/07 at 231–232 (Darling).

316. The UPC-ANR Stipulation provides that the bat curtailment conditions specified therein are in lieu of any requirement to conduct bat-fatality monitoring at the Project (other than any bat searches that may be part of the bird-fatality monitoring specified in section 3.l. of the Stipulation). The Stipulation further provides that UPC will not be required to curtail operations or provide additional bat mitigation above or beyond the specified conditions. However, UPC may support or cooperate in research into bat impacts in consultation with ANR for the purpose of reducing the total amount of curtailment, modifying curtailment conditions to better suit operations, or reducing bat impacts. Such research could involve experimental operation of the turbines during curtailment conditions, provided it is with the concurrence of ANR and in close consultation with ANR biologists, and does not pose an undue hardship for UPC operations staff or resources. Exh. ANR/UPC-1 at section 2c.

317. The UPC-ANR Stipulation provides that either party may petition the Board to revisit the mitigation conditions related to bats, in consultation with one another, to provide evidence that curtailment can be modified (or an alternative mitigation measure substituted) to better suit operations without resulting in undue adverse impacts to bat populations. Evidence may be in the form of new research conducted at other operating projects, or from research conducted at the Project as described above. Exh. ANR/UPC-1 at section 2d.

Discussion — Birds and Bats

RPI asserts that UPC's studies did not sufficiently follow the scientific method, and did not adequately assess potential impacts on the bat population. RPI further contends that the UPC-ANR Stipulation is deficient in that it does not permit ANR to seek additional mitigation if the curtailment procedures are not effective, and in that it does not ensure funding for studies, remediation, enforcement, and decommissioning.

We are not persuaded by RPI's claimed deficiencies. To the contrary, UPC has, commendably, provided this Board with studies and commitments that allow us adequately to assess the Project's potential impacts on birds and bats. Thus we are not faced with the situation that we encountered in Docket No. 6911[93], in which we denied approval of a different proposed wind generation facility due to the lack of necessary information on which to assess the potential impacts of that project on birds and bats. In the present case, UPC's willingness to cooperate with ANR and to provide the information and assurances sought by ANR has allowed UPC to demonstrate that the Project complies with the relevant statutory requirements.

There remains scientific uncertainty concerning bird and bat populations and the impacts of wind turbines on them, with bat populations in Vermont possibly being particularly vulnerable due to their low reproductive rates. However, as the findings above demonstrate, UPC has adequately addressed these uncertainties and concerns by conducting site-specific studies and by committing in the UPC-ANR Stipulation to sufficient mitigation measures. Accordingly, we conclude that the Project is unlikely to have an undue adverse impact on birds and bats.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

Findings

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

93. *See,* Petition of EMDC, LLC, d/b/a East Haven Windfarm, Order of 7/17/06.

facility, service, or lands. This finding is supported by findings 145–165, 168–170, 172–203, 205– 226, above, and 327–331, below.

319. The Project is not directly adjacent to any publicly owned lands or facilities. Cowan Panel pf. at 63.

320. The Project would not have an undue adverse impact on aesthetics or historic sites of public lands or facilities from which the project would be visible, including Interstate 91, Crystal Lake State Park, and the Lake Willoughby Natural Area. *See* findings 172–203 and 205–226, above.

Discussion

Under criterion (b)(5) of Section 248, the Board must give due consideration to Act 250 criterion 9(K), which provides:

> A permit will be granted for the development or subdivision of lands adjacent to governmental and public utility facilities, services and lands, including, but not limited to, highways, airports, waste disposal facilities, office and maintenance buildings, fire and police stations, universities, schools, hospitals, prisons, jails, electric generating and transmission facilities, oil and gas pipe lines, parks, hiking trails and forest and game lands, when it is demonstrated that, in addition to all other applicable criteria, the development or subdivision will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facility, service, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, the public's use or enjoyment of or access to the facility, service, or lands.[94]

In Docket No. 6860, the Board adopted the Environmental Board's interpretation of the word "adjacent" as "a relative term that must be considered in the context of the scale of a project."[95] Accordingly, in its review of a proposed, significant transmission project (the "Northwest Reliability Project"), the Public Service Board's analysis under Criterion 9(K) considered that project's impacts on public investments "on lands physically adjacent to the proposed Project and to lands where the proposed Project has an adverse aesthetic impact."[96]

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94. 10 V.S.A. § 6086(a)(9)(K).

95. Docket No. 6860, Order of 1/28/05 at 164, quoting *Re: L & S Associates*, No. 2W0434-8-EB at 37 (Environmental Board, September 22, 1993).

96. Docket No. 6860, Order of 1/28/05 at 164.

The Board has previously applied this precedent to the review of a proposed commercial-scale wind generation facility, in Docket No. 6911. In that case, the Board determined that the proposed 329-foot-tall wind turbines, which would have been sited on the highest peak in the vicinity, would have adverse aesthetic impacts on public lands far beyond those that lay directly adjacent to the project site, and that "the analysis under Criterion 9(K) should consider the proposed Project's impacts on public and quasi-public investments with respect to all lands where the Project would materially interfere with the function or the public's use and enjoyment of those investments."[97]

Board precedent establishing the appropriate test for determining a project's impacts under Criterion 9(K) has also borrowed heavily from the Environmental Board, which:

> interprets Criterion 9(K) to call for two separate inquiries with respect to public facilities. First, the Board is to examine whether a proposed project will unnecessarily or unreasonably endanger the public investment in such facilities. Second, the Board is to examine whether a proposed project will materially jeopardize or interfere with (a) the function, efficiency or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities.[98]

Applying the first of these two steps to UPC Wind's Project, the evidence reveals no potential endangerment to any public investment itself. As for the second step, there is the potential for the adverse aesthetic impacts of the Project to interfere with the public's enjoyment of certain public investments, most notably Crystal Lake State Park. However, as discussed above, those aesthetic impacts would not be unduly adverse, and thus we conclude that the aesthetic impacts would not rise to a level that would materially interfere with the public's use or enjoyment of those public investments.

Furthermore, as UPC notes in its brief,[99] the Vermont Department of Forests, Parks and Recreation ("FPR") is the owner and manager of Crystal Lake State Park and the Willoughby State Forest, and has not filed any testimony regarding adverse visual impacts to those state properties. FPR is a department of ANR, which not only is a party to this proceeding but also is

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97. Docket No. 6911, Order of 7/17/06 at 77.

98. Docket No. 6860, Order of 1/28/05 at 165, quoting *Swain Development Corporation*, No. 3W0445-2-EB at 33 (Environmental Board, August 10, 1990).

99. UPC Proposed Findings of Fact at 182.

affirmatively charged by statute to "provide evidence and recommendations concerning any findings to be made under subdivision (b)(5) of [Section 248] . . . ."[100] ANR's lack of expressed concern about impacts on those public investments further supports what the record evidence indicates: that the Project satisfies the requirements of Criterion 9(K) with respect to Crystal Lake State Park and the Willoughby State Forest.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

Finding

321. UPC is not required to prepare a least-cost integrated resource plan. However, Vermont utilities that might purchase power from the Project would likely each seek to diversify its supply portfolio to include renewable energy resources. For example, a central assumption of Washington Electric Cooperative, Inc.'s approved IRP is the inclusion of 1 to 5 MW of wind power. Patt pf. at 5; Cowan Panel pf. at 64; exh. UPC-AP-1.

Discussion

EMDC is not required to prepare a least-cost integrated resource plan.[101] Accordingly, this criterion does not apply to the Project. Furthermore, to the extent that Vermont distribution utilities 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)]

322. The Project complies with the Vermont Twenty-Year Electric Plan. This finding is supported by findings 323 and 324, below.

323. The Project is consistent with the Vermont Twenty-Year Electric Plan. Lamont pf. at 7.

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100. 30 V.S.A. § 248(a)(4)(E).

101. *See* 30 V.S.A. § 218c(a).

324. The Twenty-Year Electric Plan states that one of Vermont's energy priorities is to "ensure that Vermont's overall energy portfolio is sufficiently diverse, especially in light of the potential loss of major generating supplies." Kavet pf. at 6.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

325. The Project is not located near any outstanding resource waters. Cowan panel pf. at 38.

Waste-to-Energy Facility

[30 V.S.A. § 248(b)(9)

326. 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)]

327. The Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. This finding is supported by findings 328 through 331, below.

328. The Project would involve an electrical collection system that is underground running between the turbines on the ridgeline and an overhead section from the ridgeline, down the access road, and to the substation. The overhead system would be constructed in a Hendrix style configuration. Estey pf. at 2-3.

329. The proposed substation would be located immediately adjacent to the existing VELCO 115 kV St. Johnsbury to Irasburg transmission line. The proposed substation would convert the 34.5 kV power from the proposed turbines to 115 kV. Estey pf. at 3; exh. UPC-DG-3.

330. The proposed substation would be developed as a single common facility with the demarcation of ownership occurring between the 115 kV breaker and the 115 kV transformer. VELCO would own and maintain the 115 kV equipment, including bus work, switches, breakers, metering, protection and control, SCADA, control house, fencing, dead-end and other 115 kV

structures, and the VELCO portion of the substation yard. UPC would own and maintain the transformer and all remaining 34.5 kV facilities. Estey pf. at 4-5.

331. UPC could incur some costs related to maintenance of the tap structure associated with interconnecting the Project to the 115 kV VELCO line. If these costs are not paid by UPC, they would flow into VELCO's rates and be paid by Vermont ratepayers, although any such costs would likely be minimal. Tr. 1/29/07 at 229 (Litkovitz).

VI. DECOMMISSIONING FUND

Findings

332. A decommissioning fund is necessary to ensure removal of the Project at the end of the Project's useful life, or if the Project does not succeed. Ide pf. at 17.

333. Decommissioning would include: (1) removal of all turbine components and associated transformers from the site; (2) removal of the collector circuit components from the site, including cutting off all poles at grade; and (3) removal of all substation components from the site. Road materials would stay in place. Cowan Panel pf. at 27.

334. Decommissioning would include removing all infrastructure at depths up to two feet below finished grade, including removing turbine foundations to a depth of two feet below finished grade. In the case of infrastructure at depths greater than two feet below finished grade, the top two feet of the infrastructure would be removed and the remainder would be abandoned in place. Appropriate grading and seeding would occur where subsurface infrastructure is removed. Cowan Panel pf. at 27; tr. 2/9/07 at 260 (Cowan).

335. The amount of the decommissioning fund should represent the full estimated costs of decommissioning without netting out estimated salvage value. Ide sur. pf. at 18.

336. The decommissioning fund should be bankruptcy remote to protect it against creditor claims. Ide sur. pf. at 17.

337. The decommissioning fund could be funded by cash, letter of credit, bond or corporate guarantee. Cowan Panel reb. pf. at 13.

338. The amount placed in the decommissioning fund would build up over time such that the amount in the fund would be equivalent to the projected cost of decommissioning at set intervals during the construction process. Tr. 1/29/07 at 59-60 (Vavrik).

339. UPC does not have any assets other than leases covering the Project site and a lease for an office in St. Johnsbury. Tr. 1/29/07 at 128 (Vavrik).

340. If the Project fails to produce at least 65% of the output projected by UPC during any consecutive two-year period, then a decommissioning review should be instituted. Ide sur. pf. at 19.

Discussion

No party disputes the need for a decommissioning fund although there are some disputes regarding the details of such a fund, including the fund amount and the trigger for when the Project would be decommissioned.

The Department recommends that the decommissioning fund "not be controlled by or be an asset of UPC or any of its affiliates"[102] 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 would be initiated. The Department recommends that the production threshold should be set at 65% of the output projected by UPC. Finally, the Department recommends several conditions related to decommissioning.

RPI contends that the dollar amount proposed by UPC in its rebuttal testimony is insufficient to achieve full remediation of the site, including unexpected contingencies.

UPC suggests that it be required to submit a Decommissioning Plan prior to significant construction activities. UPC rejects the Department's assertion that a decommissioning review be initiated if production falls below 65% of projected generation. UPC contends that such a requirement would exceed Board Rule 5.402(C)(2) which states that a non-utility petitioner must submit "a plan for decommissioning the project at the end of its useful life." UPC further argues that such a requirement is not necessary, citing to its prefiled testimony:

> Further, if the turbines did not perform as specified by the manufacturer, making the project economically unviable, then insurance and/or warranty coverage would provide for either the correction of the problem or decommissioning of the facility. Insurance coverage will be carried in the unlikely event that the entire facility is rendered worthless by a natural disaster. Therefore, the only purpose for the

102. Department Brief at 46.

> decommissioning fund is to remove the facility at the end of its useful life, following 20 years or so of operation.[103]

We require UPC to file a decommissioning plan with the Board and parties prior to commencement of construction. 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. In addition, the decommissioning plan must include a description of how the fund would be secured and why that mechanism is appropriate; and if UPC elects to utilize a corporate guarantee to secure the fund, it must demonstrate how such a guarantee would be bankruptcy remote.

We adopt the Department's recommendation of a trigger for decommissioning review, although we provide for the possible modification of the trigger, as discussed below. UPC contends that the decommissioning fund should be tapped only at the end of the Project's useful life because insurance and manufacturer's warranty would ensure that any turbines not operational would be fixed. However, if UPC has sufficient resources to ensure that non-functioning turbines would not be left in place, this strengthens the argument that there should be a trigger for decommissioning, as UPC has the economic motivation and means to ensure that the turbines would generally be functioning. Also, the trigger simply initiates a decommissioning review. UPC would have the opportunity to demonstrate during this review that there are sufficient reasons for the decline in production and the project should not be removed.

The Department recommends that the an appropriate decommissioning trigger would be that if the actual output of the project falls below 65 % of the projected output over a two-year period, a decommissioning review would commence. Our goal in establishing a trigger for the decommissioning review is to prevent a situation where the Project continues to impose aesthetic impacts when it is not producing sufficient benefit to the state. We adopt the Department's recommendation that, if actual production falls below 65 % of projected production during any consecutive two-year period, a decommissioning review will be initiated.[104] UPC would have the

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103. Cowan Panel reb. pf. at 12-13.

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

opportunity to demonstrate during this review that there are sufficient reasons for the decline in production and the project should not be removed.

In this Order we accepted a stipulation between UPC and ANR, whereby UPC agrees to stop production during certain conditions to reduce potential bird and bat mortality. Pursuant to the stipulation, UPC agrees to shut down the facility for up to 120 nights per year. As stated earlier, we are requiring UPC to develop a post-certification filing that describes an appropriate decommissioning plan. As part of the plan we are requiring that a decommissioning review commence if the Project 's actual production falls below 65 % of projected production for any two consecutive years. This production number shall not include voluntary shut down due to the terms of the UPC-ANR stipulation.

Finally, as noted above in the section of this Order addressing economic benefit to the state, we are willing to consider a lower threshold for commencing a decommissioning review if UPC enters into stably priced power contracts with Vermont's electric distribution utilities.

VII. LESSORS

Earlier in these proceedings, UHS and RPI moved to join, as necessary parties, the lessors of the land UPC has leased for the Project. We denied that motion on the basis that the Board has sufficient jurisdiction over UPC to ensure that any conditions imposed by the Board would be met. However, we developed a process to ensure that lessors were not only fully aware of any conditions that might impact their land, but also that UPC has sufficient agreements in place to ensure that the conditions can be fully satisfied

In an Order dated September 8, 2006, we stated:

> If the Board issues a CPG in this Docket, the Board will hold a compliance hearing that lessors must attend to ensure that they understand the conditions contained in the CPG and agree that the leases they have entered into require compliance with the conditions. . . . The Board will require UPC to demonstrate that its agreements with landowners are adequate to ensure compliance with all conditions of any certificate of public good, should one be issued. . . . Such agreements must, at a minimum, ensure that decommissioning can effectively occur in the event of UPC's insolvency or dissolution, or UPC's breach of the lease, and allow access to the impacted land for purposes of fulfilling any CPG condition, including access by representatives of the Department, the Board, and the Agency of Natural Resources. If the Board issues a CPG in this Docket, it would likely include a

> requirement that UPC provide a compliance filing demonstrating that the terms of the lease agreements contain reasonable assurance of compliance with conditions contained in the CPG.[105]

UPC must provide the necessary compliance filing prior to commencement of construction. Parties will have three weeks, from the date the filing is made with the Board, to comment on the filing.

VIII. 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. UPC 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.

IX. CERTIFICATE OF PUBLIC GOOD UNDER 30 V.S.A. § 231

341. UPC has submitted a self-certification for the Project seeking qualifying facility ("QF") status under federal law (PURPA) from the Federal Energy Regulatory Commission. Exh. UPC-CRV-9 provides UPC's QF application materials. Cowan Panel pf. at 11.

342. The Project would produce electric energy for sale to load-serving utilities solely by the use of wind resources. Cowan Panel pf. at 11.

343. The Project would sell electricity at wholesale only, and none of the Project's output would be sold directly to consumers for their use. Cowan Panel pf. at 11.

344. The Project would be owned by UPC Vermont Wind, LLC, an entity not primarily engaged in the generation or sale of electric power, other than the electric energy the Project would produce. Cowan Panel pf. at 12.

345. The Project would have a production capacity not greater than 80 megawatts. Cowan Panel pf. at 12.

346. UPC is not seeking approval of a mandatory power purchase agreement pursuant to Board Rule 4.100 for any of the Project's power capacity. Cowan Panel pf. at 12.

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105. Docket 7156, Order of 9/8/06 at 8.

Discussion

Pursuant to 30 V.S.A. § 231, a corporation such as UPC, "which desires to own or operate a business over which the public service board has jurisdiction under the provisions of this chapter shall first petition the board to determine whether the operation of such business will promote the general good of the state . . . ."[106] However, Board Rule 4.109 provides that qualifying facilities that fall under the scope of Rule 4.100 "and which sell electricity only at wholesale shall be exempt from all regulation under Title 30 except under 30 V.S.A. §§ 202, 209(a)(8), 214 and 248." Rule 4.102(A) provides that Rule 4.100 "applies to Vermont electric utilities and to those qualifying facilities that fall within the definitions contained in 30 V.S.A. § 209(a)(8) or 18 C.F.R. §§ 292.207(a)(1)."

UPC has not provided any information that it has received qualifying facility status from the Federal Energy Regulatory Commission. Absent such confirmation, we cannot state affirmatively that UPC is exempt from the Section 231 requirements. Prior to operation of the Project, UPC must either submit confirmation that it has received qualifying facility status or submit a petition for a certificate of public good pursuant to Section 231.

X. 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.

XI. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that the 16-turbine wind generation facility and related facilities proposed by UPC Vermont Wind, LLC ("UPC"), will promote the public good of the State of Vermont subject to the following conditions:

106. 30 V.S.A. § 231(a).

1. UPC shall file, for the Board's approval, final design plans for all components of the Project, including access roads, turbine placement, collector line placement, and the substation.

2. UPC must receive permission from the Board if UPC seeks to use a turbine other than the Clipper Liberty Class IIB 2.5 MW turbines it proposes.

3. UPC shall make all reasonable efforts to enter into diverse, long-term, stably priced power contracts with Vermont utilities. UPC shall provide an update of any negotiations with Vermont utilities 90 days after the date of this Order. Prior to commencement of construction, UPC must produce copies of such contracts entered into with Vermont utilities for Board review and approval. If, after good-faith negotiations on the part of UPC and the utilities, UPC cannot reach an agreement, it may file a statement explaining why an agreement cannot be reached and why the Board should modify or remove this requirement.

4. 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.

5. All blasting shall be carried out by licensed and certified blasting technicians. All blasting shall 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 sage levels. Noise and air blast effects shall be limited through application of proper techniques and blasting mats shall be used where needed to limit the occurrence of flyrock.

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

7. In the event surrounding landowners express concern regarding the impacts of blasting on wells or other structures on their property, UPC shall remediate any damage caused by blasting activities.

8. UPC shall construct and operate the Project so that it emits no prominent discrete tones pursuant to the American National Standards Institute (ANSI) standards at the receptor locations,

and indoor sound levels at any King George School structure and any surrounding residences do not exceed 30 dBA(Ldn).

9. In the event noise from operation of the Project exceeds the maximum allowable levels, UPC 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.

10. UPC 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.

11. UPC must file the FAA-approved lighting plan prior to the commencement of construction. Parties will have two weeks to file comments on the approved lighting plan.

12. UPC shall submit to the Board its National Pollutant Discharge Elimination System (NPDES) Stormwater Permit for Construction Sites for the Project, prior to the commencement of any earth-disturbing construction activities.

13. UPC shall submit to the Board its Vermont operational phase stormwater permit, prior to the creation of any new impervious surfaces at the site.

14. UPC must use only biodegradable fluids in the turbines' transformers.

15. UPC shall submit to the Board its wastewater permit for sanitary facilities at the operations and maintenance building, prior to commencement of construction on that building.

16. UPC shall comply with all provisions of the UPC-ANR Stipulation (exhibit ANR/UPC-1).

17. UPC shall execute a conservation easement, or other similar legal means, to secure the rights necessary for the conservation of the so-called "King George Parcel" for the life of the Project. Furthermore, it shall be the responsibility of UPC to ensure that any successors in interest to the parcel abide by the commitments made in the Stipulation.

18. UPC shall establish and maintain a 15-meter buffer zone around the site of the foundation for the historic barn and house, located along the route of the feeder line to the substation for the Project, shown on exhibit UPC-CRV-Reb7a. Placement of utility poles and soil disturbance are not allowed within the site or the buffer. Heavy equipment is not allowed within the site.

19. UPC shall bear the costs of any road alteration, improvements, repairs, traffic control and other activities necessitated by the Project and its construction and maintenance.

20. UPC shall submit to the Board any necessary Agency of Transporation ("AOT") right-of-way permit(s) no less than 30 days prior to any road work approved under such permit. UPC shall also be responsible for obtaining all necessary Department of Motor Vehicle oversized load permits, and shall make them available for inspection upon request by the Board. No further action shall be required by the Board, unless the activities approved by AOT under the permit are materially different than UPC's prior representations to the Board or would materially impact any of the substantive criteria under 30 V.S.A. § 248(b).

21. UPC shall develop and file with the Board a transportation plan for transport of project components and access by construction vehicles. The plan will be subject to review and comment by parties with standing on the issue and must be approved by the Board prior to the commencement of any significant vehicular traffic to the site and transport of any project components. In developing its plan, UPC shall account for traffic control and insure unimpeded emergency vehicle access to all areas of the town and village of Barton at all times. UPC's plan must also address transport of turbine components and construction vehicles through Barton town and village streets and roads in a manner that avoids undue disruption of municipal services, local businesses and travelers during times of expected increased traffic flows, such as rush hours, holiday periods, and municipal events.

22. UPC shall, to the extent commercially practicable, route construction and maintenance traffic in a manner that avoids the streets in the town and village of Barton, for example, by accessing New Duck Pond Road from the south via Route 5.

23. UPC may not use Dareios Road to access the Project site during construction, except in the case of emergencies.

24. UPC shall pay all costs associated with road improvements necessitated by the Project.

25. UPC shall make good-faith efforts to receive confirmation from the Sheffield/Wheelock Fire Department, the State Police, and the Caledonia County Sheriff's Department that the Project will not pose an undue burden on their ability to provide services. Prior to the commencement of construction, UPC shall provide all relevant communications with these entities.

26. UPC shall provide periodic seminars to local and regional first responders on fighting turbine fires and dealing with turbine-related emergencies.

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

28. UPC 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.

29. UPC shall submit for comment by the parties and review and approval by the Board, a proposal to place educational signage at Crystal Lake State Park. Any necessary permits must be identified and obtained by UPC and submitted to the Board prior to placement of the signage.

30. Prior to commencement of construction, UPC must provide a compliance filing demonstrating that the terms of the lease agreements with the owners of the land upon which the Project will be built contain reasonable assurance of compliance with conditions contained in the CPG.

31. UPC shall submit the final ISIS study (Interconnection System Impact Study) and interconnection and substation plans to the Board and parties prior to construction. Parties shall have two weeks to file comments on the ISIS study. UPC shall implement any changes determined necessary by ISO-NE or VELCO to ensure system stability and reliability, and shall pay for any costs associated with measures designed to ensure that the Project does not adversely affect system stability and reliability.

32. UPC shall file a decommissioning plan with the Board and parties prior to commencement of construction. 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. In addition, the decommissioning plan must include a description of how the fund would be secured and why that mechanism is appropriate; and if UPC elects to utilize a corporate guarantee to secure the fund, it must demonstrate how such a guarantee would be bankruptcy remote. If actual production falls below 65% of projected production during any consecutive two-year period, a decommissioning review is initiated; however, if UPC 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%.

Dated at Montpelier, Vermont, this 8th day of August, 2007.

s/James Volz)
)
) Public Service
)
s/David C. Coen) Board
)
) of Vermont
s/John D. Burke)

OFFICE OF THE CLERK

FILED: August 8, 2007

ATTEST: s/Susan M. Hudson
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.

Appendix A — Appearances

John Cotter, Esq.
for the Vermont Department of Public Service

Andrew N. Raubvogel, Esq.
John B. Kassel, Esq.
Geoffrey H. Hand, Esq.
Shems Dunkiel Kassel & Saunders PLLC
for UPC Vermont Wind, LLC

David Englander, Esq.
Catherine Gjessing, Esq.
for Vermont Agency of Natural Resources

John W. Kessler, Esq.
Julie F. Kelliher, Esq.
for Vermont Agency of Natural Resources

Richard H. Saudek, Esq.
Cheney, Brock & Saudek, P.C.
for Town of Sheffield

Vincent Illuzzi, Esq.
Pro Se and for Frank Illuzzi

Barbara G. Ripley, Esq.
Barclay T. Johnson, Esq.
Downs Rachlin Martin PLLC
for Ridge Protectors, Inc., UHS of Sutton, Inc. and Universal Health Services, Inc.

Arthur B. Sanborn, Town Administrator
for Town of Lyndon

Andrew Perchlik, Executive Director
for Renewable Energy Vermont

Kenneth Sanderson, Jr., Selectman
for Town of Burke

Michael & Marsha Burrington
Donald W. Gregory
C. Daniel Hershenson, Esq.
Hershenson Carter Scott & McGee, PC
for Town of Sutton, Vermont

Brian Woods
for Marilyn Pastore and the Inn at Mountain View Farm

Marilyn Pastore, Owner
Inn at Mountain View Farm

Rob Roy Macgregor
for Fairwind Vermont

Jack Simons, Advisory Board Member
for Clean Power Vermont

Thomas A. Girard, Chair Selectboard
for Town of Newark

Kenneth Hayes, Chair Selectboard
for Town of Kirby

Byron Savoy
Pro Se

John Alexander, Selectboard Chair
David Stevens, Selectboard Member
Nancy Mallary, Selectboard Member
for Town of Westmore

William R. May, Esq.
May & Davies
for Barton Village, Inc., and Town of Barton