

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Docket No. _____

Petition of EMDC, LLC d/b/a East Haven Windfarm)
for a Certificate of Public Good pursuant to)
30 V.S.A. sections 231 and 248, authorizing it to construct)
a 6 MW wind electric generation facility, and)
associated transmission and interconnection facilities,)
in East Haven, Vermont, and operate the same.)

**PREFILED DIRECT TESTIMONY OF
MATHEW RUBIN
ON BEHALF OF EAST HAVEN WINDFARM**

November 17, 2003

Summary:

Mr. Rubin provides a detailed description of the wind generating project that East Haven Windfarm is proposing to build and operate on East Mountain. He discusses the wind resources and siting of the project, project economics, and the project's compliance with the criteria of 30 V.S.A. § 248.

Prefiled Direct Testimony of Mathew Rubin

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1 **General Background**

2 **Q Please state your name and position, relative to this project.**

3 Response: My name is Mathew Rubin, and I am the President of EMDC, LLC
4 d/b/a East Haven Windfarm (hereafter “EMDC” or “East Haven Windfarm”). I
5 reside in Montpelier, Vermont.

6
7 **Q What is EMDC, LLC d/b/a East Haven Windfarm?**

8 Response: EMDC is a Vermont limited liability company, based in Montpelier. It
9 was formed in 2001, for the purpose of acquiring property on and near East
10 Mountain in East Haven, Vermont, and exploring the development of a wind
11 generation project at that location. EMDC is now the entity that is developing the
12 project that is the subject of this section 248 petition. Dave Rapaport is the Vice
13 President of EMDC. East Haven Windfarm is a registered trade name of EMDC.

14
15 **Q Please describe your qualifications and experience in the development of**
16 **electric generation projects.**

17 Response: I have been involved in the development, construction and operation of
18 hydroelectric generating projects for over 20 years. I am a partner in and operator of
19 three hydroelectric projects in Vermont with a rated capacity of 1% of Vermont’s
20 electric load. In addition, my operating company, Spruce Mountain Design, has been
21 responsible for the rehabilitation of more than a dozen hydroelectric projects in New
22 England. The manner in which my other projects were constructed and are
23 operated, and the mitigation measures and enhancements that have been

1 implemented, demonstrate a proven track record and my strong commitment to
2 projects that include environmental, social, and other benefits to the local
3 community. For example, at the Winooski One hydroelectric project on the
4 Winooski River between Burlington and Winooski, the city park which the project
5 created and enhanced has become an important recreational asset in Winooski. At
6 the Wrightsville hydroelectric project in Montpelier (formerly known as the
7 Montpelier Hydroelectric Project), my company proposed a new beach at the
8 Wrightsville Reservoir. The project received its CPG and the beach was built, and it
9 has become a valuable recreational resource to the local community.

10 I am a Board member of: the Vermont Independent Power Producers
11 Association; the Vermont Electric Power Producers, Inc; Renewable Energy
12 Vermont; Vermont Businesses for Social Responsibility; the Vermont Public Interest
13 Research Group; and the Kellogg-Hubbard Library.

14
15 **Q Have you previously testified before the Public Service Board?**

16 Response: Yes, I have testified in the section 248 proceedings concerning the
17 Winooski One Hydroelectric Project, the Winooski 8 Hydroelectric Project, and the
18 Springfield Hydroelectric Project. I have also testified in Dockets 4801, 4933, 5877
19 and several others in connection with independent power producer issues.

20
21 **Q What is the purpose of your testimony?**

22 Response: The purpose of my testimony is to provide a detailed description of the
23 East Haven Wind Demonstration Project that East Haven Windfarm is proposing to

1 build and operate on East Mountain. My testimony discusses the wind resources
2 and siting of the project, project economics, and the project's compliance with the
3 criteria under Title 30 section 248.

4
5 ***Project Overview***

6 **Q What are the basic elements of the proposed project?**

7 Response: The project consists of the construction and operation of 4, 1.5 megawatt
8 wind turbines on the summit of East Mountain. Each turbine will have an
9 associated transformer, and a 34.5 kv transmission line will be built to deliver the
10 energy from the summit to the Burke Mountain substation in Burke. The
11 transmission line will be underground at the summit, and then run above ground
12 along the right-of-way of Radar Road until it joins the route of a Lyndonville Electric
13 Department distribution line. Additional maintenance and telecommunication
14 equipment will be located in an existing building at the summit. In addition, future
15 plans call for the development of an Interpretive Center in an existing building at the
16 summit.

17 I note that Lyndonville Electric will be applying for a separate certificate of
18 public good for the upgrade of its existing distribution line to accommodate and co-
19 locate East Haven Windfarm's transmission line. That petition should be filed in the
20 near future.

21

22

23

1 **Q. Please describe the project site, including its former uses.**

2 Response: In November 2001, EMDC purchased the property and property rights
3 previously held by the U.S. Government while it operated the North Concord Air
4 Force Station on the summit and a lower area of East Mountain. Construction and
5 operation of the radar base took place between 1955 and 1961.

6 The property includes: (i) approximately 17 acres at the summit of East
7 Mountain (elevation 3400' msl); (ii) approximately 30 acres at a lower point on East
8 Mountain 2 miles from the summit (elevation 2500' msl); and (iii) an exclusive
9 easement to maintain and use Radar Road, for ingress and egress, power lines, water
10 and sewer lines, and other reasonable and necessary uses. Radar Road begins 1.7
11 miles from Route 114 (at the end of Mountain Road – TH6) and runs 8.2 miles to
12 the summit. The road is paved and generally in very good condition, other than
13 needing minor resurfacing work in a few locations. The parcels are depicted on a
14 location map and site map, *Exhibits EHWF-MR-1* and *EHWF-MR-2*. East
15 Haven Windfarm owns additional property in the vicinity of the former radar base
16 that is not the subject of this petition. All of East Haven Windfarm's parcels that are
17 involved in this project are surrounded by commercial forest land owned by Essex
18 Timber Company of Ipswich, Massachusetts.

19 East Haven Windfarm also holds easements allowing for the use of the so-
20 called Gallup Mills Road, which runs from the Victory Road in Victory to the
21 intersection with Radar Road, which is approximately 4 miles from the summit of
22 East Mountain.

23

1 The U.S. Air Force radar base ceased operations in the early 1960s, and
2 closed in 1962. During construction and operation of the base, most if not all of the
3 summit land owned by the government appears to have been cleared of trees.
4 Although portions of the radar base facilities were occupied for some periods of time
5 between the early 1960s and the present, it is generally in decrepit condition. There
6 are several large steel buildings at the summit, in various stages of decay. The tallest
7 of the structures is approximately 64 feet. There are large areas of concrete and
8 asphalt paving covering the summit, as well as empty fuel storage tanks and other
9 smaller structures. Trees and other vegetation have grown up between buildings and
10 along the access road. Photographs of the summit in its present condition are
11 included as *Exhibit EHWF-MR-3*.

12 The 30 acre lower elevation parcel (the so-called cantonment area) includes a
13 number of decaying Quonset huts, maintenance buildings, and other structures.
14 There are no activities related to the proposed project at the cantonment area.

15

16 **Q. Why did East Haven Windfarm focus on this site for the development of a**
17 **wind electric generation facility?**

18 Response: First, because the site was previously developed and utilized by the U.S.
19 Government, it has infrastructure (roads, cleared areas, buildings) that can be re-used
20 with very little new disturbance to the natural environment and at a lower cost than
21 developing a new site. Second, the site was one of a number of summits in Vermont
22 identified as having high potential for the development of its wind resources. See

1 the Department of Public Service's website, www.state.vt.us/psd/ee/wind/ee-
2 [wind.htm](http://www.state.vt.us/psd/ee/wind/ee-wind.htm), and wind resource maps prepared under for the U.S. Department of
3 Energy -- www.northeastwind.com/PERI/index.asp.

4
5 **Q. Has East Haven Windfarm received any prior approvals from the Public**
6 **Service Board concerning this site?**

7 Response: Yes, the Board granted a CPG for the installation of wind measurement
8 equipment on the summit of East Mountain, including a 60 meter free standing
9 tower and equipment on the tallest radar base structure (Docket 6748, 10/4/02).
10 Since that time, East Haven Windfarm has been continuously collecting data
11 concerning wind direction, wind speed (at various elevations), humidity, and
12 temperature.

13
14 **Q. Please describe the wind resources available at this site.**

15 Response: EMDC and its consultants, AWS Scientific, Inc., have correlated the East
16 Mountain data with data available from Burke Mountain (1998 to the present), and
17 with long term records from Mount Mansfield and Mount Washington. Over 15,000
18 hours of wind data are available from East Mountain. The data indicates a long term
19 mean wind speed at a 65 meter hub height of 8.36 meters per second, or 18.7 miles
20 per hour. The prevailing wind direction is from the southwest. AWS Scientific's
21 report is provided as *Exhibit EHWF-MR-4*.

22
23

1 **Q. What is the expected capacity factor and energy output of the project?**

2 Response: Based upon the estimation of wind speed, and accounting for energy
3 losses due to blade icing/fouling (8%), cold temperature shutdown (1%), turbine
4 availability (3%), array losses (3.7%) and high wind factors (1%), AWS Scientific
5 estimated the net energy production to be approximately 21,000 MWh, and a net
6 capacity factor of nearly 40%. See AWS Scientific's report, *Exhibit EHWF-MR-4*.

7 I have further adjusted these figures to account for electrical losses (3%) and
8 a margin for uncertainty (5%), resulting in a net annual energy production of 19,300
9 MWh and a net capacity factor of 37%.

10 Based upon my discussions with consultants at AWS Scientific, the project
11 will generate full power approximately 11% of the time over the course of a year;
12 partial power approximately 78% of the time; and no power 11% of the time.

13

14 **Q. How will the power output of the project be sold?**

15 Response: East Haven Windfarm is in the process of negotiating a Power Purchase
16 Agreement (PPA) with Lyndonville Electric Department (LED), and related
17 agreements, pursuant to which 100% of the project's net output will be sold to LED
18 and delivered to LED at the Burke Mountain substation on the LED system. East
19 Haven Windfarm and LED are in substantial agreement on the terms of those
20 agreements, but it may be a few weeks before final, binding documents are executed
21 by the parties. We will supplement our filing with final documents, as appropriate,
22 when they are available. The principles of the arrangement, which the parties have
23 agreed upon, are that (1) East Haven Windfarm will pay for the design, permitting

1 and construction of the transmission line conveying power to the Burke Mountain
2 substation, for which LED will secure permits, (2) East Haven Windfarm will pay
3 on-going maintenance costs associated with the transmission line, and (3) East
4 Haven Windfarm will sell the entire net output of the project to LED for 5% less
5 than the market price established by ISO-New England, and will convey to LED
6 10% of any Renewable Energy Certificates (RECs) created by the project.

7

8 **Project-Related Equipment and Site Plan**

9 **Q. Please describe in greater detail the turbines and other project-related**
10 **equipment, the physical layout of the project, and the changes to the summit site**
11 **that will be needed.**

12 Response: *Exhibit EHWF-MR-5* is a site plan of the summit that shows the
13 following: the property boundaries; the existing structures; an indication of which
14 buildings and structures will be removed; the wind turbines; the transformers; the
15 summit access road; the underground and above ground transmission lines; and the
16 so-called laydown/blade assembly areas where the turbine components will be
17 placed prior to erection.

18

19 **Wind turbines.** A representative turbine is depicted in *Exhibit EHWF-MR-6*.
20 The turbines will be spaced approximately 900 feet apart. Each turbine will be 220
21 feet in height to the hub, or nacelle, which contains the bearings, gearbox, generator,
22 and ancillary equipment. The three rotor blades are each 110 feet in length, and the
23 rotor diameter is 231 feet. The total height of the turbine is 329 feet when the rotor

1 blade is in the vertical position. The rotor speed is variable, from 11 to 22
2 revolutions per minute depending upon wind conditions.

3 Each turbine will be mounted on a reinforced concrete foundation, 32 feet
4 by 32 feet in dimension. Although much of the summit was previously cleared,
5 some secondary growth will need to be cleared to excavate the ground for the
6 foundations. The turbine towers are conical tubular steel with a pale blue-gray
7 coating. The towers will be brought to the site in sections of 70 feet each. The rotor
8 blades are made of carbon fiber reinforced fiberglass and have a black coating in
9 order to minimize winter ice on the blades. The interior of the towers can be
10 accessed in order to maintain turbine components in the nacelle. A turbine
11 manufacturer has not been finally selected, although GE Wind Energy's model 1.5
12 MW-S has been used as the base case design. Photographs from the manufacturer
13 are provided in *Exhibit EHWF-MR-7*.

14 The turbines will be erected using a crane with a hydraulic boom. The crane
15 is approximately 10 feet wide and 60 feet long, and runs on tires rather than tracks.

16
17 **Transformers.** Each turbine will have an associated 1,750 KVa pad-mounted
18 transformer. The pad will be a poured concrete foundation about 8 feet by 8 feet.
19 The transformer will be approximately 15 feet from the turbine base. Each
20 transformer will contain about 500 gallons of cooling oil. This volume of oil is less
21 than that prescribed in the ANSI/IEEE Standard 980 for systems that require
22 integral oil retention. However, oil containment and control in the event of an
23 accidental release will be accomplished via a concrete berm on the foundation pad.

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Emergency generator. A backup generator with a 150 kw capacity will be located at the summit in an existing building for emergency situations. Emergency use could arise in the rare circumstances where the station needs electricity to meet its own needs and the transmission line that will connect the project to the Burke Mountain substation is unavailable due to lines being down or other equipment failure. The generator will likely be diesel-fired, although East Haven Windfarm is also considering whether biodiesel fuel can be feasibly used.

Transmission line. A 34.5 kV transmission line will run between each of the transformers, buried under the existing summit access road. The line will rise above-ground close to where Radar Road begins its descent off of the summit, adjacent to turbine site #1 as depicted on ***Exhibit EHWF-MR-5***. The line will run within the right-of-way of Radar Road for approximately eight miles to a point just beyond the first gate, where it will be co-located with an existing Lyndonville Electric distribution line that the utility is planning to upgrade. The power line will follow a route that skirts the most populous part of East Haven, and then travel within Lyndonville Electric's existing corridor along Route 114 and cross country for approximately 4.3 miles, where it will then interconnect with the Burke Mountain substation. The route of the transmission line is depicted in ***Exhibits EHWF-MR-8 and -9***. Pole heights along Radar Road will average 35 feet above grade, with a 250 foot span between poles; pole heights for the joint line with Lyndonville Electric will average 45 feet above grade, with 250 foot spans. The wire will be 477 kcmil,

1 using a spacer (Hendrix) configuration where the line runs along public roads (to
2 improve serviceability). Cross arm construction will be used elsewhere.

3

4 **Laydown and blade assembly areas.** These areas will be used to unload and store
5 the turbine blades, towers, etc. prior to erection, and to pre-assemble the three rotor
6 blades of each turbine. The areas and extent of tree clearing are shown on ***Exhibit***
7 ***EHWF-MR-10.*** No excavation work will be needed to prepare these areas. Trees
8 and other vegetation will be cut to a height of one foot. Wood cribbing will be
9 placed on the ground to provide a level surface for the equipment to rest on. After
10 construction activities are complete, laydown and assembly areas will be allowed to
11 naturally revegetate.

12

13 **Other buildings and equipment.** As depicted in ***Exhibit EHWF-MR-5,*** all of
14 the existing buildings at the summit will be demolished with the exception of two
15 buildings located on the north side of the summit access road. The foundations of
16 the demolished buildings will remain in order to maintain an historical record, as
17 recommended by the Vermont Department of Housing and Community Affairs,
18 Division for Historic Preservation (commonly known as “SHPO”). As for the
19 buildings that will remain, the building adjacent to turbine #3 will be used for storage
20 of spare parts, maintenance, and housing the emergency generator.

21

22 Telecommunications antennas will be located on the flat roof of the maintenance
23 building. The round building will be used for the future Interpretive Center. The
meteorological tower will remain at its present site.

1

2 **Q. What is the Interpretive Center?**

3 Response: The Interpretive Center would utilize one of the former radar buildings
4 (repaired and partially rehabilitated) to provide a permanent record of the site's
5 history. An interpretive exhibit will be constructed to provide a detailed
6 documentation of the site's history, significance, and association with the Cold War.

7 The Interpretive Center will also provide information on wind energy and
8 technology, and a viewing platform for 360 degree views of the surrounding
9 landscape. The Interpretive Center would not be constructed and operated until
10 after the wind turbines are running, once East Haven Windfarm resolves a number
11 of logistical details such as who will run the center, the provision of sanitary facilities,
12 etc. To advise the company on the range of issues that relate to opening the summit
13 to public access, East Haven Windfarm has created a Public Access Committee. The
14 Committee will include representatives of East Haven Windfarm, the local
15 community, Essex Timber Company, the Agency of Natural Resources, and the
16 Vermont Land Trust. At the point at which East Haven Windfarm is ready to go
17 forward with the Interpretive Center, it will seek an amendment to its CPG.

18

19 **Q. Will there be other operational equipment, aside from the transmission line,
20 at locations other than the summit?**

21 Response: No.

22

1 **Q. Will the turbines requiring lighting, and if so, how?**

2 Response: Because the turbines are over 200 feet in height, guidelines issued by the
3 U.S. Department of Transportation, Federal Aviation Administration (FAA), call for
4 some form of lighting. See *Exhibit EHWF-MR-11*. East Haven Windfarm has
5 filed the required notice with the FAA, and has received a preliminary determination
6 from the FAA that each turbine should be lit with a white strobe light during days,
7 and a red strobe light at night. The lights are contained in a single fixture (white on
8 bottom, red on top) which would be located on top of the turbine nacelle. See FAA
9 letter, *Exhibit EHWF-MR-12*. The lights would operate 24 hours/day. The FAA
10 has made exceptions at a number of other wind turbine projects to allow for a
11 different lighting protocol that provides an adequate level of safety for aircraft while
12 minimizing the visual impacts of lighting. This might include lighting only two or
13 three of the towers. East Haven Windfarm continues to work with the FAA to
14 resolve these issues.

15 The lighting at night will utilize the FAA standard L-864 Dual Red/White
16 Medium Intensity Strobe Beacon. This fixture flashes once every three seconds
17 (about 20 flashes per minute), with an “on” time of about one second. The peak
18 intensity of the light between zero degrees elevation (horizontal) and +3 degrees
19 above horizontal is 2,000 candelas for the nighttime red strobe. It is significant to
20 note that the lights will be mounted on top of the turbine nacelle(s) at an average
21 elevation of 3616 feet msl. The nearest residence with a clear view of the lights is on
22 Darling Hill (the viewpoint), which is 7.6 miles away at an elevation of 1700 feet msl.
23 Thus a viewer would be 40,100 feet away and –3 degrees below the horizontal site

1 line. FAA specifications call for a reduction in intensity in the downward direction.
2 My discussions with two manufacturers of FAA-approved lighting have indicated
3 that the nighttime fixture output at -3 degrees would be about 350 candelas, or
4 about one sixth the nominal brightness of 2,000 candelas.

5 A depiction of the standard FAA L-864 fixture and the FAA specifications
6 are attached as *Exhibit EHWF-MR-13*.

7 **Access to the Site**

8 **Q. How will the site be accessed and cleared for construction and operation, and**
9 **what changes or improvements, if any, are needed to any public or private roads?**

10 Response: Construction vehicles will access the site starting from the Gallup Mills
11 Road. This road has been used for logging operations by the Essex Timber
12 Company and the prior owners. It is well-maintained and of sufficient width so as
13 not to require any improvements or alterations.

14 At the end of Gallup Mills Road (presently gated), construction vehicles will
15 continue to the summit along approximately four miles of Radar Road. Radar Road
16 has several switchbacks between the cantonment area and the summit. Limited road
17 work may be needed in a few of the curves to ensure that the largest vehicles – the
18 crane and the transport trucks for the turbine blades – can negotiate the turns. No
19 more than 10,000 square feet (less than 0.25 acres) of additional road is expected to
20 be created. This work may include removal of existing guardrails, soil and/or ledge
21 removal, and the creation of new road bed.

22 Access to the site may also be from Route 114 onto School Street (TH1) in
23 East Haven, then Mountain Road (TH6) to Radar Road (private). Radar Road was

1 built and paved by the U.S. Air Force and is in very good condition. Only minor
2 resurfacing and repair work is needed in a few locations (e.g., potholes, washouts).
3 The road width is more than adequate to accommodate project-related traffic.

4 Trees and other vegetation have substantially filled in along many portions of
5 the roadsides in the past 40+ years, and thus encroach on the original right-of-way
6 width of Radar Road and the access road on the summit. In order to re-establish the
7 right-of-way and construct the new transmission line, trees and other vegetation will
8 be cut back along the roads where necessary, up to 15' feet on each side. No
9 grubbing will be necessary.

10 With respect to the work areas on the summit, much of the summit is already
11 cleared and paved (or has concrete foundations). Some clearing of secondary growth
12 (i.e., trees and shrubs that have grown since the Air Force abandoned the site) will
13 need to occur at turbine, transformer, and laydown/blade assembly locations. The
14 total of new clearing needed (areas of trees/shrubs and areas where only shrubs and
15 smaller vegetation are present) is estimated to be between 1.0 and 1.3 acres. This
16 figure is based upon the field work of East Haven Windfarm's consultants, and the
17 1999 orthophotograph of the summit with the project site plan superimposed over
18 it. See *Exhibit EHWF-MR-10*.

19

20 **Q. What is the sequence of construction activities and the construction schedule?**

21 Response: A preliminary project schedule was prepared by Pizzagalli Construction
22 and is provided as *Exhibit EHWF-MR-14*. It contemplates a six month
23 construction schedule, with work occurring in the spring, summer and fall of 2004.

1 Each milestone concerning the access roads, power lines, demolition of existing
2 structures, concrete foundations, turbine installation, and site restoration are outlined
3 in the schedule.

4
5 **Q. How will the wind turbines and other equipment be maintained?**

6 Response: The project does not require full-time staffing at the site. Instead, turbine
7 performance and operational instructions will be monitored and controlled remotely
8 via the internet by the turbine supplier. Part-time employees, amounting to three
9 full-time equivalents, will maintain the site and equipment (visiting it on average a
10 few times each week), as well as managing business operations.

11

12 **Q. Will the public have access to the site?**

13 Response: Yes. The two existing gates on Radar Road will be open to allow for use
14 by hunters, snowmobilers, cross country skiers, snowshoers, hikers and mountain
15 bikers. A new automatic gate will be installed close to the summit that will control
16 access at times during the winter when conditions may pose safety concerns, i.e.,
17 winter ice on the turbines. Until an access plan is developed in conjunction with the
18 future Interpretive Center, the new gate will remain closed to the public. As noted
19 above, the Interpretive Center will provide Vermonters and tourists with the
20 opportunity to visit the site in order to learn its history as a radar base, to experience
21 360 degree views of the area, and to learn more about wind power.

22

1 **Q. What is the expected useful life of the project? Will the project require**
2 **decommissioning, and if so, how?**

3 Response: According to the manufacturer, the turbines have an expected useful life
4 of 20 years. As with any other type of electric generation facilities, when major new
5 investments in equipment are required, a decision will be made whether the costs are
6 justified by the revenues that the project can produce. Because wind facilities do not
7 have the fluctuating variable costs associated with fossil-fuel fired generating plants,
8 and given the strong downward trend in the capital costs of wind generation, I fully
9 expect that this project will remain cost effective into the indefinite future and will
10 not require decommissioning. This would be true whether East Haven Windfarm
11 remains in existence or if a different entity were to operate the facility. Regardless of
12 who owns the turbines, low cost power will find a market and will be delivered to the
13 regional power pool.

14 It is extremely unlikely that once this site is developed for wind generation, it
15 will not continue to be used as a wind farm into the foreseeable future. This would
16 be true whether the proposed 1.5 MW wind turbines are maintained and refurbished
17 as needed, or whether a future generation of wind turbines eventually replace them.
18 Experience with other generation sources, such as hydroelectric projects,
19 demonstrates just how long-lived projects with little or no variable costs are.

20 Even in the remote event that these 4 turbines need to be decommissioned,
21 the towers may be reusable at other turbine projects. With the current cost of
22 turbines at \$1.2 million, and with thousands expected to be installed over the next

1 several years, the four project turbines will have a market value well into the future
2 for use at another site or for replacement parts.

3 Under a worst case scenario, the turbines could also be sold for scrap value.
4 A letter from Ben Stark at Pizzagalli Construction provides an estimate of the scrap
5 value of high quality steel, and the cost of removing the turbines from the site. See
6 *Exhibit EHWF-MR-15*. The net removal costs of the 4 turbines in this project,
7 after accounting for the scrap value of steel, are approximately \$300,000.

8 Given the reasonable likelihood that the project turbines will have a market
9 value that far exceeds the removal costs, and in light of the other factors noted
10 above, I do not believe a decommissioning fund is necessary.

11

12 **Section 248 Criteria**

13 **Q. Have you assessed the project's compliance with the criteria of 30 V.S.A. §**
14 **248?**

15 Response: Yes, in conjunction with other witnesses I have assessed the project's
16 compliance with 30 V.S.A. § 248(b)(1)-(10). The project complies with all relevant
17 criteria. My specific responses are noted below.

18

19 **30 V.S.A. § 248(b)(1) – Orderly Development of the Region**

20 **Q. Will the project unduly interfere with the orderly development of the region?**

21 Response: No, for several reasons the project will not unduly interfere with the
22 orderly development of the region. Likewise it will not cause any direct impacts on
23 the capacity of the region to develop. The project will not cause an undue burden on

1 public roadways, or other types of municipal or state services or infrastructure. Nor
2 will the project utilize land or resources that are otherwise needed or planned for
3 other forms of development within the region. The project site is a previously
4 developed parcel that contains most of the resources and infrastructure needed for
5 the project – roads and cleared areas, buildings, a power line right-of-way, and the
6 wind resource itself. The project will also not hinder the predominant activity taking
7 place on thousands of acres of surrounding lands – private commercial forestry and
8 traditional recreational uses (hunting, fishing, snowmobiling, hiking, etc) that are
9 guaranteed under the Champion Lands Working Forest Easement and Public Access
10 Easement. See letter from Essex Timber Company, *Exhibit EHWF-MR-32*.

11

12 **Q. Is the project consistent with any applicable local planning or development**
13 **review process, and if so, how?**

14 Response: Yes it is. The Town of East Haven does not have a planning
15 commission, zoning regulations, or a Town Plan. Under section 248's 45 day notice
16 requirement, East Haven Windfarm notified the Town Selectboard of the project.
17 East Haven Windfarm also conducted a public meeting in East Haven, and the
18 Town Selectboard mailed a questionnaire to all property owners concerning their
19 opinion of the proposed project. Approximately 50% of all recipients responded to
20 the questionnaire, with over 86% in support of the project and agreeing that it will
21 benefit the Town. Thereafter, the Town Selectboard voted unanimously to support
22 the project and submitted a letter to the Public Service Board. The questionnaire

1 and results (as tabulated by the Town Clerk), and the letter to the Board, are
2 provided in *Exhibit EHWF-MR-16*.

3 The responses of the townspeople and the Selectboard are direct indicia that
4 the project is consistent with local norms for development, and that it will not be a
5 detriment to the future of the town, but rather will make a positive contribution.

6

7 **Q. Is the project consistent with the Regional Plan, and if so, how?**

8 Response: Yes it is. East Haven is in Essex County, and is covered by the *Regional*
9 *Plan for the Northeast Kingdom (Caledonia, Essex, and Orleans County)*, prepared by the
10 Northeastern Vermont Development Association (effective on November 3, 2000)
11 The Regional Plan is provided as *Exhibit EHWF-MR-17*. This Regional Plan
12 describes an overall vision for the region; identifies the existing natural resource and
13 infrastructure base; identifies major housing and transportation needs; describes
14 existing land uses with recommendations; defines five districts to categorize future
15 land use; and provides development considerations to guide future development and
16 to aid local planners and decisionmakers. It is worth noting at the outset that there
17 are no absolute prohibitions or mandatory requirements in the Regional Plan that
18 would prohibit a wind energy project at this site. Each of the relevant sections of the
19 Regional Plan are discussed below.

20 Section III. Overall Vision, emphasizes maintaining the environment and
21 the traditional uses of the land (hunting, fishing, snowmobiling), and maintaining
22 compact village centers surrounded by open land of working forests and farm land,
23 while at the same time accommodating well thought out development that is

1 associated with second homes, businesses, and recreational pursuits of the many
2 nonresidents who come to the region. The project will in no way hinder that vision,
3 in that: (i) it will not impact compact village centers or open forest and farm land and
4 there will be no project construction in those areas; (ii) new power lines will travel
5 along existing corridors and will avoid the center of the village; and (iii) traffic will
6 not significantly increase. Instead, the project will enhance and protect traditional
7 uses of the land. For example, East Haven Windfarm will now make available an 8
8 mile stretch of Radar Road for public access. Moreover, as the testimony of Todd
9 Comen demonstrates, the project will not hinder development associated with
10 seasonal residents and tourism. In fact, the future Interpretive Center will
11 complement existing tourism opportunities, and is expected to attract six thousand
12 or more visitors per year. See prefiled testimony of Todd Comen.

13 Section VI. Energy Issues, provides: *“The region’s energy needs are met by a*
14 *variety of resources including electricity, oil, gas, coal wood and solar radiation . . . The amount of*
15 *solar and other alternative sources of energy used in the region is unknown. These small scale*
16 *attempts at energy independence and production are encouraged to help diversify the region’s capacity*
17 *to produce energy.”* The project will increase regional power production by 19,300
18 MWh (approximately 30% of Lyndonville Electric’s load), and will directly result in
19 the region having a more diversified energy portfolio and greater energy
20 independence, particularly given the long term power contract between East Haven
21 Windfarm and Lyndonville Electric.

22 Section IX. Land Use Plan, contains a number of relevant provisions.
23 Section IX.B. divides the region into five districts for purposes of future land use

1 planning. The *Rural Agricultural/Forest Areas* include all lands that are not in a
2 *Principal Activity Center* (population greater than 5,000), *Secondary Activity Center*
3 (population greater than 1,000), *Recreational Activity Center*, or *Village Center*. The
4 project site falls within the Rural Agricultural/Forest Area District. For this district
5 the Plan provides “*These areas should receive very little commercial or industrial development*
6 *unless it occurs in an established industrial park . . .*” Commercial and industrial uses are
7 undefined terms in the Regional Plan, but it is fair to assume that an energy project
8 would fall into one of these categories (although a wind energy project is more akin
9 to activities that rely upon the natural resource base of the region such as farming
10 and logging). To the extent the above-quoted language applies, the project will be in
11 a previously-developed industrial site – the former radar base. It will be a much less
12 intensive use of the site in terms of buildings, wastewater and water supply, etc.
13 Moreover, the project will not require the type of infrastructure that the Regional
14 Plan associates with new commercial and industrial activities, such as municipal
15 water and sewer.

16 Section IX.C. Development Considerations, provides factors to consider for
17 future land uses, in order to “*ensure a fair and comprehensive review occurs for each*
18 *development. . . [and] as a checklist available for local planning commissions and selectboard when*
19 *reviewing development proposals.*” Section IX.C.3. focuses on the “Character of the Area
20 Affected”, and includes many of the same factors assessed under the so-called
21 Quechee Analysis that is used in reviewing criterion 8 under Act 250. I note that the
22 language in this section is advisory rather than mandatory, for example: “*The proposed*
23 *project, by its nature scale, appearance or operation should not significantly alter or adversely change*

1 *the character of the potentially affected area . . . Consideration should be made with respect to the*
2 *proposed development's effect on aesthetics, open spaces, and the scenic and historic integrity of the*
3 *area affected.”* The testimony of Terrence Boyle and Peter Owens analyze these types
4 of considerations in detail, and conclude that the project will not have an undue
5 adverse effect on the character or scenic or natural beauty of the area.

6 Section IX.C.3. of the Regional Plan also recommends that historic sites and
7 buildings “should be retained when feasible.” As discussed in more detail later in my
8 testimony under Historic Sites, the project has been designed to maintain some of
9 the radar base buildings, to preserve the footprint of demolished buildings, and to
10 create an Interpretive Center to document the history of a Cold War era radar base.
11 The State Historic Preservation Officer has confirmed that these measures will
12 mitigate the adverse effects of the project on the historic resource, and that the
13 adverse effect is reasonable and not undue under the circumstances. See ***Exhibit***
14 ***EHWF-MR-29.***

15 Section IX.C. 6 and 7 identifies the development considerations related to
16 air, water, noise and light pollution, soil erosion, wildlife habitat, and agricultural and
17 forest resources. The Plan seeks to avoid adverse impacts due to these forms of
18 pollution, and to preserving critical habitat and minimizing damage and loss of
19 endangered species habitat. These provisions substantially overlap with Act 250's
20 environmental criteria, including Criteria 1 (and its subcriteria), 4, and 8(A), and are
21 dealt with in greater detail later in my testimony and in the testimony of Jeffrey
22 Parsons and Paul Kerlinger. That testimony demonstrates that the project will not
23 cause any water, air or noise pollution, and will not cause any undue light pollution.

1 The placement of power lines in Class II wetlands will be avoided. Critical wildlife
2 habitat will be preserved with only a minimal amount of forest clearing required.

3 Finally, Section X – Definition of Substantial Regional Impact – defines
4 particular activities in each of the five districts that may have a substantial regional
5 impact. *“It is important that [these] projects be evaluated carefully, and planned so as to create
6 both the maximum benefit and minimum detriment to the region and the local community.”*

7 Section X.D.8. (Energy) provides that the construction of a new commercial power
8 plant or other generating facility (cogeneration), high voltage transmission line, or
9 pipeline is the type of activity in the Rural Agricultural/Forest Area that may have a
10 substantial regional impact. The Plan provides no additional criteria, planning
11 standards or requirements for projects that may have a substantial regional impact.
12 For all of the reasons noted throughout my testimony and the testimony of the other
13 East Haven Windfarm witnesses, this project has been designed to have the
14 “maximum benefit and minimum detriment” to the region and local community.
15 Benefits include lower power costs, energy diversity and independence, jobs, tax
16 revenues, avoided air emissions, public access and recreational opportunities, and the
17 Interpretive Center. Traffic, ecological impacts, pollution, and visual impacts have
18 been minimized and will not be significant detriments.

19

20 **Q. Are there any other aspects of the project that will have a positive impact on**
21 **the development of the region?**

22 Response: Yes. East Haven Windfarm has agreed to sell the entire net energy
23 output of the project to LED for the life of the 4 turbine project. The net output is

1 estimated to be 19,300 MWh per year, which equates to about 30% of LED's current
2 load. As discussed later in my testimony under Economic Benefits to the State, the
3 power contract should result in Lyndonville Electric having a lower cost of service,
4 which should translate into lower rates for utility customers. The value of LED's
5 savings is estimated to be close to \$100,000 per year. Residential, commercial and
6 industrial customers in LED's service territory would be able to use these savings for
7 other purposes, acting as a positive stimulant to the regional economy and
8 development.

9

10 **30 V.S.A. § 248(b)(2) – Need for the Project**

11 **Q. Is the project required to meet the need for present and future demand for**
12 **service, which could not otherwise be provided in a more cost effective manner**
13 **through energy conservation programs and measures and energy efficiency and load**
14 **management measures?**

15 Response: Yes, the project complies with this criterion.

16 First, it is arguable whether this criterion strictly applies to a merchant plant
17 that is not owned and operated by one of Vermont's regulated electric utilities. The
18 primary purpose of this criterion appears to be the protection of ratepayers by
19 ensuring that the utilities are making sound investments that are needed and cost
20 effective. The financial risks of a merchant plant are borne by its owners, and not
21 ratepayers.

22 However, even if this criterion does apply to a project of this type, traditional
23 notions of "need" for the project to meet present and future demand simply do not

1 fit within the current regional market structure. Even if there were no contract to
2 sell the power to LED, the power would nonetheless be sold in the regional power
3 market. In this case, the power will be sold to LED for less than the prevailing
4 market price (and less than a number of LED's existing power supply contracts).
5 Consequently, it is economically beneficial for LED to buy this power, even if it
6 means that LED will act as a net seller of power back to the market.

7 East Haven Windfarm does not run any energy conservation or efficiency
8 programs, and it is not required to under state law. Nor does East Haven Windfarm
9 have the ability to implement load management measures as it does not provide
10 electricity at retail to customers within a defined service territory. However, to the
11 extent that LED's DSM programs are relevant because the project is located in its
12 service territory and/or because it will purchase the project's net energy output, the
13 Board has previously held that Efficiency Vermont is delivering DSM throughout
14 the State at an appropriate level.

15

16 **30 V.S.A. § 248(b)(3) – System Stability and Reliability**

17 **Q. Will the project adversely affect system stability and reliability?**

18 Response: The project will not adversely affect system stability and reliability; in fact
19 it will enhance local stability and reliability.

20 First, the wind turbines, transformers, and power lines will utilize the
21 following systems to isolate the project from the power grid in the event of
22 equipment failure: The wind turbines will be disconnected from the transmission
23 line in the event of ground faults, phase faults, over-current, under and over voltage,

1 under and over frequency, and system imbalance. In addition, the turbines have
2 power electronics which provide soft-start capability to reduce starting surges, to ride
3 thru short term voltage dips, and to provide or consume reactive power to improve
4 voltage regulation on the 34.5 kV system.

5 The interconnection between the project and the Burke Mountain substation
6 is depicted on ***Exhibit EHWF-MR-18***.

7 Second, East Haven Windfarm has received the advice of Allan Rice, P.E., of
8 PLM, a consulting firm specializing in electrical engineering. ***Exhibit EHWF-MR-***
9 ***19*** is a letter from Mr. Rice in which he explains that the project will not adversely
10 affect system stability and reliability, either locally or regionally. Mr. Rice reviewed
11 the project with respect to thermal capability, voltage regulation, short circuit
12 protection, worker safety, and interconnection with the CVPS system.

13

14 **30 V.S.A. § 248(b)(4) – Economic Benefit to the State**

15 **Q. Will the project result in an economic benefit to the state and its residents?**

16 **Response:** Yes, as explained below the project will provide: (i) property tax revenues
17 to the State and the Town of East Haven; (ii) clean air benefits that have a monetary
18 value; (iii) power to Lyndonville Electric at a favorable rate; an increase in potential
19 tourism in the region; and (iv) other direct and indirect benefits to the economy.

20 **Power Sale to Lyndonville Electric.**

21 Under the Power Purchase Agreement, East Haven Windfarm will sell the
22 entire net output of the project (19,300 MWh) to LED for 5% less than the average
23 market clearing price established by ISO-New England, and will convey to LED

1 10% of any Renewable Energy Certificates (RECs) created by the project. In other
2 words, East Haven Windfarm is selling LED power at sub-market rates, and
3 conveying a commodity (10% of the RECs) that has value. LED could thus simply
4 resell the power to the market, without making any changes to its existing power
5 supply portfolio.

6 LED will gain an economic benefit that can be calculated by estimating the
7 dollar value of the 5% spread between LED's purchase price and the market price,
8 and adding to that the estimated value of 10% of the RECs. This economic benefit
9 will accrue to LED ratepayers. LED or its agents are in a position to perform this
10 calculation with a greater degree of certainty, but a rough calculation is as follows:

11	Avg. market clearing price:	$\pm \$40/\text{MWh}$
12	5% discount:	$\$2/\text{MWh} \times 19,300 \text{ MWh} \approx \$39,000$
13	Average price for RECs:	$\pm \$30/\text{MWh} \times 1,930 \text{ MWh} \approx \underline{\$58,000}$
14	Total projected benefit to LED	\$97,000

15 Note that the figure used for the market clearing price for energy is based
16 upon the average over the past 24 months. The average price for RECs is based
17 upon my knowledge and experience in the industry. While it is impossible to say
18 with any certainty what prices will be in the future, I believe this is a reasonable
19 scenario in today's market.

20 The agreement will thus result in LED having close to \$100,00 per year in
21 lower energy costs. This represents 1.5% of LED's total annual costs, based upon
22 LED's \$6.6 million in annual revenues (revenue figure from VPPSA website). This
23 reduced cost of service should translate into lower rates for utility customers, or at a

1 minimum postpone the need for future rate increases. Residential, commercial and
2 industrial customers in Lyndonville Electric's service territory will be able to use
3 these savings for other purposes, which will have a positive impact on the economy.

4 **Clean Air Benefits.**

5 The project is a renewable energy project that will not produce air emissions
6 from the generation of electricity. Energy production at this project will likely
7 displace (avoid) higher cost power that is supplied by a fossil-fueled generation plant
8 that does emit pollutants. As the Board recognized in Docket No. 5270 (4/16/90),
9 it is appropriate to account for environmental externalities when evaluating the
10 energy costs of generation resources. In that docket the Board established a
11 rebuttable 5% adder to the costs of sources that have air emissions (or conversely, a
12 5% credit for the power costs of a source that avoided air emissions). In the
13 Searsburg wind case, the Board stated: *"To the extent that electricity produced from this*
14 *project displaces fossil fuel-fired generation, air quality will be improved . . . This is a significant*
15 *benefit of this project. We do not adopt the DPS's specific externality values used in this Docket;*
16 *however, we do acknowledge the appropriateness of estimating those values as a way of identifying the*
17 *potential benefits of this project."* Docket No. 5823, Order dated 5/16/96, at 40.

18 In estimating the monetary value of the air emissions avoided by the
19 proposed project, I have used the same methodology as DPS witness David Lamont
20 in the current Vermont Yankee case (prefiled direct testimony, August 19, 2003,
21 Docket 6812). This entailed using the externality adjustments agreed to by the
22 distributed utility collaborative in the Memorandum of Understanding (MOU) filed
23 in Docket No. 6290, and approved by the Board on January 15, 2003. See *Exhibit*

1 ***EHWF-MR-20.*** Attachment A-3 of the MOU provides the costs of emissions from
2 a large gas-fueled combined cycle power plant, which is the likely source of energy
3 that would be avoided if the proposed wind project were operating. The combined
4 value for all air emissions (NO_x, SO₂, PM-10, CO₂, CO, and UHC) is \$7.86 per
5 MWh. This emissions value is then multiplied by the project's anticipated annual
6 energy production of 19,300 MWh, for an annual value of approximately \$152,000 in
7 clean air benefits. Based on a market price of \$40/MWh for the net output, this is
8 close to a 20% benefit.

9 I would also like to point out additional findings the Board made in the
10 Searsburg case that would apply equally here: “[B]y diversifying GMP’s generation
11 resources, and by utilizing a clean renewable resource, long-term economic risks to ratepayers are
12 decreased (i.e., the risk of future, more costly environmental regulations that may affect fossil fuel
13 generation resources and potential risks that are generally alleviated through a diversified portfolio).”
14 (Docket 5823, 5/16/96, Order at 16). Although that case involved a regulated utility
15 as the project developer, similar benefits will accrue to Vermonters as a whole, and
16 Lyndonville Electric customers, as a result of the proposed project.

17 **Property Tax Revenues.**

18 The cost of project construction is expected to be about \$10 million dollars,
19 and the revenue stream of the project in 2005 will be in the range of \$1.25 million
20 per year. Based upon the income method of property valuation, the project will
21 generate about \$75,000 in annual real property taxes. Over a twenty year planning
22 horizon, the net present value of the property taxes would be about \$940,000.

1 **Tourism.**

2 The future Interpretive Center will provide an additional tourist destination
3 and as a result could generate additional economic activity within the region. The
4 testimony of Todd Comen discusses projections for the number of tourists who may
5 visit an Interpretive Center. In addition, Mr. Comen presents information on how
6 tourists in Vermont might react to the presence of wind turbines (based upon
7 surveys and studies done for this and other projects), and demonstrates that the
8 project will result in a gain, not a loss, to the tourist economy of the region.

9 Irrespective of the future Interpretive Center, opening Radar Road to public
10 access (including snowmobiling) should have at least a localized positive benefit.

11 **Other Economic Benefits.**

12 As many as 24 workers will be employed at the site during construction, a
13 number of whom will likely be from outside the area. These workers will generate
14 local economic activity through rooms, meals and other expenditures. Once the
15 project is operational, part-time workers amounting to 3 full time equivalents will
16 maintain the project. These workers will likely be drawn from the local work force.

17

18 **30 V.S.A. § 248(b)(5) and (8) – Environmental Considerations**

19 **Q. Will the project have an undue adverse effect on esthetics, historic sites, air**
20 **and water purity, the natural environment, and the public health and safety, with due**
21 **consideration begin given to the criteria specified in 10 V.S.A. § 1424a(d) and §**
22 **6086(8a)(1) through (8) and (9)(K)?**

1 Response: No, it will not have an undue adverse effect on those resources, for the
2 reasons discussed below.

3

4 **Outstanding Resource Waters**

5 There are no Outstanding Resource Waters on the project site or in any
6 adjacent areas, based upon the list published by the Water Resources Board.

7

8 **No Undue Air Pollution**

9 Construction: The project will only involve approximately 10,000 square feet (or
10 less than 0.25 acres) of earth disturbance at the summit to excavate for the
11 foundations and bury the underground power line. Likewise, to the extent work is
12 needed on Radar Road, it will be limited to adding fill to the inside of a few turns
13 between the cantonment area and the summit. Because there are no homes or public
14 facilities within 5 air miles of the site, fugitive dust emissions will not be an issue.
15 Nonetheless, the general contractor will design and conduct construction operations
16 so as to minimize fugitive dust emissions (e.g., when and if appropriate, through the
17 use of water or calcium chloride).

18 Operations: The wind turbines will not generate any air pollutants. The only
19 potential source of air emissions is the 150 kw backup generator that will be used for
20 emergency situations. Emergency use could arise in the rare circumstances where
21 the project needs electricity to power on-site equipment that runs continuously, and
22 the transmission line that will connect the project to the Burke Mountain substation
23 is unavailable due to lines being down or other equipment failure. The generator will

1 be fueled by diesel or biodiesel. Using very conservative assumptions, total hours of
2 operation are expected to be 100 hours per year or less (5 outage events x 20 hours
3 per outage). This would result in 600 gallons of fuel being burned per year.

4 Under the Department of Environmental Conservation's (DEC) Air
5 Pollution Control Regulations (effective 11/29/01), section 5-401(6)(c), a generator
6 with a rating of less than 450 hp is not an *air contaminant source* and thus does not
7 require an air permit for construction or operation. This exemption applies
8 regardless of the number of hours that a generator that is less than 450 hp is run
9 annually, and regardless of whether it is being used for emergencies or some other
10 purpose (other than feeding power back to the grid for resale). In terms of this
11 project, a generator with an output of 100-150 kw would have a horsepower rating
12 substantially less than 450 hp.

13 DEC has confirmed that neither the construction nor operation of this
14 project requires an air pollution control permit. See ***Exhibit EHWF-MR-20***.
15 Avoided Air Emissions: The energy produced by this project will, all other things
16 being equal, displace the equivalent energy from out-of-state fossil-fuel fired plants.
17 This would most likely be large gas combined cycle units. To the extent that such
18 plants are running less of the time, fewer air pollutants will be emitted and less
19 pollution will migrate into Vermont. Using the emission values agreed to by the
20 distributed utility collaborative in Docket No. 6290 (see ***Exhibit EHWF-MR-21***),
21 and applying the wind project's annual energy production of 19,300 MWh, the
22 following annual emissions from a large gas combined cycle plant could be avoided
23 by this project:

	<u>Pollutant</u>	<u>lbs/MWh</u>	<u>Avoided Emissions (lbs/yr)</u>
1			
2			
3	NO _x	0.060	1158
4	SO ₂	0.004	77
5	PM-10	0.040	770
6	CO ₂	776.000	14,976,800
7	CO	0.100	1930
8	UHC	0.05	965
9			

10 Noise: According to GE Wind Energy, each turbine will generate a noise level of
11 104 dB(A) at one foot from the nose cone. A comparable turbine from NEG Micon
12 is 104.5 dB(A). I have taken the figure for the GE turbine, and using a number of
13 conservative assumptions, estimated the sound levels produced by the turbines at
14 locations away from the site. My assumptions are as follows: (i) the 4 turbines were
15 operating in phase, i.e., the rotor blades were turning in precisely the same position
16 at the same time, thus creating a cumulative sound level of 110 dB(A) (4 identical
17 sources increase the sound level by 6 dB(A)); (ii) no temperature gradients and clear
18 weather; (iii) no wind (recall that the average wind speed at the site is 18.6 miles per
19 hour, coming from the southwest); and no sound attenuation from trees and other
20 vegetation.

21 Given these very conservative assumptions, and applying the established
22 principle that sound levels decrease by approximately 6 dB(A) for every doubling of
23 the distance, turbine-generated noise from the project will be:

24 38 dB(A) at 0.8 miles from the turbines

25 32 dB(A) at 1.6 miles from the turbines

26 26 dB(A) at 3.2 miles from the turbines

27 The sound levels and distances are depicted on a site map attached as ***Exhibit***

28 ***EHWF-MR-22***. For comparison purposes, the normal range of human speech is

1 50-70 dB(A), and an average whisper is 40 dB(A). Note that only a handful of
2 hunting camps are within a few miles of the summit (by air), and permanent
3 residences are 5 miles or more away. At those distances, noise levels from the
4 turbines will be at or below background.

5 I am not aware of any local, state, or federal regulations that prescribe
6 numeric noise limits for the operation of a wind generation project.

7 In light of the above, the wind turbines will produce a low level of sound that
8 will not cause impacts to humans or the environment.

9

10 **No Undue Water Pollution (incl. headwaters, waste disposal and soil erosion)**
11 **Stormwater from Construction and Operations**

12 The entire summit, and Radar Road down to a point that is approximately 2
13 miles from the summit, are above 2,500 feet msl. Under state law (10 VSA § 1253),
14 all waters above 2,500 feet msl are designated as Class A waters.

15 There are no waters of the state (perennial or intermittent streams, rivers,
16 lakes or ponds) within or near the limits of construction on the summit. There are no
17 waters of the state within or near the limited road work that may occur on upper
18 Radar Road where the road makes several switchback turns. All areas within several
19 hundred feet of the summit and the road switchbacks were investigated in the field
20 by East Haven Windfarm witness Jeffery Parsons, as noted in his testimony.

21 There are no existing stormwater structures on the summit or on Radar Road
22 that collect, convey, and/or discharge stormwater to waters of the state. The project
23 will not change the current manner in which stormwater sheet flows from

1 impervious surfaces (roads, buildings, foundations, exposed bedrock) into
2 surrounding forested lands and infiltrates to the ground.

3 Road work, if needed on the inside turns on upper Radar Road, will not
4 involve the creation of stormwater structures to collect and convey stormwater to
5 waters of the state. Best management practices will be employed where necessary
6 (water bars, for example) to disperse stormwater into the adjacent forests and to
7 prevent the creation of any scour areas or channels that lead to streams.

8 In order to trigger the need for coverage under the state stormwater permit
9 for construction sites, the construction activities must result in disturbance of
10 between 1 and 5 acres of land area. The following estimates were made regarding
11 project construction:

12	Undergrounding of summit power line :	2400' x 1.5'	=	3,600 sq feet
13	Excavation for 4 turbine foundations:	(40' x 40') x 4	=	6,400 sq feet
14	Excavation for 4 transformer pads:	(10' x 10') x 4	=	400 sq feet
15	Work on several turns on Radar Road:			<u>10,000 sq feet</u>
16				
17	Total area of disturbance			20,400 sq feet
18				or 0.5 acres

19
20 Note that the figures for the foundations and pads are higher than the finish
21 dimensions to account for work areas during excavation.

22 In order to determine whether any other state stormwater permit is needed
23 for the discharge of collected stormwater runoff from new impervious surfaces at
24 the site, the following estimates were made:

25	Turbine foundations:	6,400 sq feet
26	Transformer pads:	400 sq feet
27	Road work:	<u>10,000 sq feet</u>
28		
29	Total new impervious surface	16,800 sq feet or 0.4 acres

30

1 I should note that the figure for total impervious surface is conservative (i.e.,
2 high), because a substantial portion of the turbine and transformer locations are
3 already impervious surface from the former radar base operations.

4 The laydown and blade assembly areas will not result in the creation of new
5 impervious surface. They will be cleared of trees and bushes down to the one foot
6 level during construction but will not be grubbed or stumped. These areas will be
7 allowed to revegetate.

8 Based upon the above, the project will not require a stormwater construction
9 permit nor a stormwater permit for the operation phase of the project. See letter
10 from DEC, *Exhibit EHWF-MR-23*.

11

12 Waste Disposal

13 Excavated rock and organic debris will be disposed of on-site, and inorganic
14 materials at an approved off-site landfill.

15 Both the cantonment area and the summit have been the subject of
16 investigation and cleanup activities by the federal government due to the presence of
17 surface soil, subsurface soil, and groundwater contamination caused by the former
18 radar base operations. These activities are described in the U.S. Army Corps of
19 Engineers' (USACOE) *Final Inventory Letter Report* (Stone & Webster, 1995) and *Final*
20 *Proposed Removal Action Plan* (Stone & Webster, March 2001). The investigation and
21 cleanup work focused on underground storage tanks and a maintenance facility at
22 the cantonment area, and one above-ground storage tank at the summit. Soil
23 samples were also collected from other locations at the cantonment and summit.

1 The VTDEC, following a review by the Vermont Department of Health, stated
2 at the time that its primary concern was polynuclear aromatic hydrocarbon
3 contamination in surface and subsurface soil and the extent to which it potentially
4 contributes to human health risk.

5 [Because the wind project as proposed will not involve use of the
6 cantonment area, I have limited my discussion to focus on the summit area only]

7 In the Fall of 2001, the USACOE contracted for the removal of the top 1.5
8 feet of surface soil in the vicinity of a former above-ground storage tank used by the
9 radar base (AST-12). This work was done in accordance with DEC's earlier
10 recommendations (DRAFT Removal Action Closure Report, Coastal
11 Environmental, December 4, 2001). AST-12 is located adjacent to the last radar
12 tower along the summit access road (approximately equidistant between proposed
13 turbines 2 and 3). Excavated soil was staged at the cantonment area on poly sheeting
14 to avoid cross contamination of the site. Licensed hazardous waste haulers were
15 utilized to transport all wastes. All excavations were backfilled with clean material
16 and the grade was restored to its original condition. No further cleanup activities
17 were proposed at that time.

18 The VTDEC has advised East Haven Windfarm that it continues to work
19 with the USACOE on another former radar base, in St. Albans. Given its work on
20 the St. Albans site, as well as other higher priority contaminated sites that pose a
21 more immediate risk to human health or the environment, VTDEC has not made a
22 final determination regarding whether the East Mountain site can be deleted from
23 the state hazardous sites list.

1 Based upon the prior investigations and removal work that have occurred at
2 the site, we have determined that the proposed construction of this wind project will
3 not occur in areas of known or suspected contamination.

4
5 **No Undue Water Pollution – Other Issues**

6 Although state stormwater permits are not required, East Haven Windfarm
7 will ensure that its contractor follows best management practices during the
8 construction phase to prevent undue soil erosion and discharges to any waters of the
9 state. There are no site constraints such as inadequate space or proximity to
10 watercourses that would prevent the contractor from implementing standard erosion
11 control measures during construction (silt fencing, hay bales, etc.), where necessary.

12 In the future when the Interpretive Center is established within an existing
13 building, sanitary facilities will be provided, either at the summit or possibly at the
14 cantonment area. The wastewater system would be designed to meet DEC
15 requirements, if applicable, under the wastewater/water supply permit program.

16

17 **Water Conservation**

18 Construction and operation of the project will use a minimal amount of
19 water. Water for construction will be brought on site by the contractor, unless one
20 of the existing wells at the summit or cantonment area can be redeveloped. No
21 running water is needed to maintain the wind turbines and other equipment, and
22 maintenance staff will bring water to the site if necessary.

1 For the future Interpretive Center, low flow fixtures will be used on all
2 faucets and sanitary facilities.

3

4 **Floodways**

5 The project is at the summit of a mountain, approximately 3400 feet in
6 elevation. It is not within a floodway or floodway fringe based upon the National
7 Flood Insurance Inventory Maps.

8

9 **Streams, Shorelines, Wetlands**

10 There will be no project activities conducted in or near streams. Based upon
11 the discussion above under Water Pollution, and the prefiled testimony of Jeffrey
12 Parsons, the project will not impact any streams on or near the summit or Radar
13 Road. The project will maintain the natural condition of streams.

14 There will be no project activities on or near the shoreline of any lake, pond,
15 or river.

16 There are two Class II wetlands immediately adjacent to Radar Road. See
17 testimony of Jeff Parsons and ***Exhibit EHWF-JP-2***. No project activities will be
18 conducted in the wetlands or their fifty foot buffer zones with the exception of
19 removing a few existing power poles and lines (left over from the site's use as a radar
20 base). The new transmission line along the Radar Road right-of-way will be designed
21 to span the wetlands entirely by using taller poles at that location. If needed, the
22 power line can be located on whichever side of the road creates the least impact to
23 the wetlands. Based upon the testimony of Jeffrey Parsons, the project will not

1 cause an undue adverse impact to the protected functions and values of the Class II
2 wetlands, does not require a Conditional Use Determination, and otherwise meets
3 the requirements of the Vermont Wetland Rules.

4
5 **Sufficiency of Water and Burden on Existing Water Supply**

6 Water for construction activities will be brought on-site, unless an existing
7 well at the summit or cantonment area can be redeveloped and utilized. No
8 additional water will be needed until the future Interpretive Center is opened. Given
9 the low water demands of the project -- estimated to be 500 gallons per day during
10 construction and 10 gallons per day during for project operation and maintenance --
11 any wells that may be located on other properties should not be impacted or
12 burdened in any way. The closest year-round residence is over 7 miles away (by
13 land). The closest hunting camp is several 4 miles away (by land).

14
15 **Soil Erosion**

16 The project will not cause unreasonable soil erosion or a reduction in the
17 capacity of the land to hold water such that a dangerous or unhealthy condition
18 results. As noted in my testimony above, no state stormwater permit is required for
19 either the construction or operational phase of the project. See letter from the DEC,
20 ***Exhibit EHWF-MR-23***. The summit area is already largely cleared and paved, and
21 less than one-half acre of earth disturbance will occur during construction (including
22 limited work on Radar Road).

1 There are no existing stormwater structures on the summit or on Radar Road
2 that collect, convey, and/or discharge stormwater to waters of the state. The project
3 will not change the current manner in which stormwater sheet flows from
4 impervious surfaces (roads, buildings, foundations, exposed bedrock) into
5 surrounding forested lands and infiltrates to the ground.

6 Road work, if needed on the inside turns on upper Radar Road, will not
7 involve the creation of stormwater structures to collect and convey stormwater to
8 waters of the state. Best management practices will be employed where necessary
9 (water bars, for example) to disperse stormwater into the adjacent forests and to
10 prevent the creation of any scour areas or channels that lead to streams.

11 East Haven Windfarm will ensure that its contractor follows best
12 management practices during the construction phase to prevent undue soil erosion
13 and discharges to Class A waters or other waters of the state. There are no site
14 constraints such as inadequate space or proximity to watercourses that would
15 prevent the contractor from implementing standard erosion control measures during
16 construction (silt fencing, hay bales, etc.), where necessary.

17

18 **No Unreasonable Congestion or Unsafe Conditions with Respect to the Use**
19 **of Highways, Waterways, Railways, Airports, and Airways**

20 Highways

21 Route 114 and Radar Road can handle the expected volume of construction
22 and post-construction traffic without creating congestion or unsafe conditions.

1 All portions of the summit to be used for this project are accessible via
2 existing paved or gravel roads. There are two routes that can provide access to the
3 project site: (1) From Route 114 in East Haven: School Street (TH1) to Mountain
4 Road (TH6) to Radar Road (private) up to the summit – a distance of about 10
5 miles; and (2) From Victory Road (TH5) in Victory: Gallup Mills Road (private) to
6 its intersection with Radar Road, then Radar Road to the summit– a distance of
7 about 9 miles.

8 The Gallup Mills Road will be used by construction vehicles and to transport
9 large equipment to the summit (such as the crane and the turbine rotor blades).
10 Construction activities will occur in phases, with the turbine components, power
11 lines and poles, concrete, and other equipment being brought to the site over a
12 number of months. The total construction period will last six months, over one
13 construction season. No changes or improvements to any public roads are needed in
14 order to construct the project. A maximum of 24 construction-related workers will
15 work at the site at any one time. Adequate space for worker parking and
16 construction vehicles is available on the summit, at the cantonment area, or on other
17 private land or roads.

18 The wind turbines will be operated remotely, and thus no employees will be
19 permanently stationed at the site. Maintenance staff will visit the site on an as
20 needed basis for routine and emergency repairs and maintenance.

21 AOT Access Permit

22 No permit is needed, because there are existing public and private roads that
23 provide access to the project site. A letter from the Agency of Transportation

1 confirms that the project does not adversely affect the State highway right-of-way,
2 and that a permit is not required. See ***Exhibit EHWF-MR-24***

3 Traffic Volumes

4 According to data from the Vermont Agency of Transportation's 2002
5 Annual Average Daily Traffic Route Logs (June 2003), there are 1300 vehicle trips
6 per day on Route 114 in East Haven (AOT estimate), and 4,000 vehicle trips per day
7 on Route 114 through East Burke (actual). Although a breakdown between truck
8 and car trips is not available for East Haven, AOT has reported that 20% of the
9 traffic on Route 114 in Newark is from trucks (2001 Automatic Vehicle
10 Classification Report). Excerpts from the AOT reports are attached as ***Exhibit***
11 ***EHWF-MR-25.***

12 Traffic related to six months of construction and subsequent operation of
13 the project are estimated as follows:

- 14 • Delivery of turbines and other major components: 30-40 truck trips over several
15 weeks.
- 16 • Delivery of concrete: 20-30 truck trips over several weeks
- 17 • Delivery of other equipment: 20-30 truck trips over several months
- 18 • Delivery of utility poles, wires, etc: 20-30 truck trips over several weeks
- 19 • Commuting of workers to site: 30 trips per day (this number should be less if
20 some of the workers carpool, which is expected)
- 21 • Once the project is operational, traffic related to routine maintenance visits to
22 the site is estimated to be 3-5 trips per week.

1 Access to the Site by the Public

2 At present, there are two gates on Radar Road that prevent the public from
3 accessing the site. East Haven Windfarm plans to allow winter use by snowmobilers
4 and others, consistent with any necessary safety precautions at the summit, i.e, during
5 extreme weather conditions, an automatic gate will close off access to the summit.

6 East Haven Windfarm is also proposing to develop a visitor's Interpretative
7 Center in one of the existing buildings at the summit. The Interpretive Center would
8 not be constructed and operated until after the wind turbines are running, once East
9 Haven Windfarm has worked out the many logistical details. East Haven Windfarm
10 will seek an amendment of its CPG for the review and approval of the Center at that
11 time.

12 Airways -- FAA Lighting

13 Because the turbines are over 200 feet in height, guidelines issued by the U.S.
14 Department of Transportation, Federal Aviation Administration (FAA), call for
15 some form of lighting. See ***Exhibit EHWF-MR-11***. East Haven Windfarm has
16 filed the required notice with the FAA, and has received a preliminary determination
17 from the FAA that each turbine should be lit with a white strobe light during days,
18 and a red strobe light at night. The lights are contained in a single fixture (white on
19 bottom, red on top) which would be located on top of the turbine nacelle. See FAA
20 letter, ***Exhibit EHWF-MR-12***. The lights would operate 24 hours/day. The FAA
21 has made exceptions at a number of other wind turbine projects to allow for a
22 different lighting protocol that provides an adequate level of safety for aircraft while
23 minimizing the visual impacts of lighting. This might include lighting only two or

1 three of the towers. East Haven Windfarm continues to work with the FAA to
2 resolve these issues.

3

4 **Educational Services**

5 The construction phase of the project will occur over a six month period
6 during one construction season. During that time, we anticipate a maximum of 24
7 construction-related workers. These temporary workers will be hired by contractors
8 and subcontractors from throughout the local community, the larger region, and
9 potentially from out-of-state. It is unlikely that construction workers and their
10 families would move to the area due to the project. Once the wind turbines are
11 operational, part-time workers will be hired for project operation and maintenance,
12 amounting to 3 full-time equivalents. These workers will probably be hired from the
13 existing local workforce. Again, it is highly unlikely that new families with school age
14 children would move to East Haven or a surrounding community as a result of these
15 part-time jobs.

16 Based upon the above, the project should not result in additional students in
17 the public school system, and thus will not place an unreasonable burden on the
18 ability of East Haven or the Caledonia North Supervisory Union to provide
19 educational services to East Haven or surrounding communities. This has been
20 confirmed by the Superintendent of the Caledonia North Supervisory Union, on
21 behalf of the East Haven School Board. See *Exhibit EHWF-MR-26*.

22

1 **Municipal Services**

2 For the reasons detailed below, the project will not create an unreasonable
3 burden on the ability of the municipality to provide municipal services.

4 Radar Road is a private road and thus does not require municipal
5 expenditures for maintenance. School Street and Mountain Road are town highways
6 located in and near the center of East Haven. These roads will not be altered by the
7 project, and will not be used by construction-related traffic. The traffic associated
8 with project operations (3-5 trips per week) will be minimal; thus additional
9 maintenance of the town highways should not be necessary.

10 Construction-related traffic will be spread out over 6 months, and will utilize
11 Gallup Mills Road, a private road.

12 Waste disposal will be handled through private haulers, and will create no
13 burden on local government.

14 East Haven Windfarm sent notice of the proposed project to the East Haven
15 Selectboard. The Selectboard supports the project, and does not anticipate any
16 unreasonable burdens on local government. See letter, *Exhibit EHWF-MR-16*.

17 East Haven Windfarm sent notice to the State Police -- St Johnsbury Station,
18 the Essex County Sheriff's Department, the East Haven Fire Department, and
19 Lyndon Rescue, describing the project and issues that relate to their respective
20 services. Responses received thus far -- from Lyndon Rescue and the East Haven
21 Fire Department -- are attached as *Exhibit EHWF-MR-27*. Each of these entities
22 reports that they do not anticipate any burdens or hardship in serving this project
23 and in continuing to serve East Haven and the surrounding communities.

1 Lyndon Rescue did note in its response that it would be unable to respond to
2 emergencies at the summit during the winter unless Radar Road was plowed and
3 sanded. East Haven Windfarm has since notified Lyndon Rescue that no
4 construction will occur during the winter. During other times, both Gallup Mills
5 Road and Radar Road are maintained and passable by emergency vehicles.
6 Moreover, during the construction phase the contractor will have a health and safety
7 plan and will maintain appropriate safety and emergency first aid equipment in the
8 event of a worker injury. Communications equipment consisting of cell phones, land
9 phone lines, and internet links will be located at the site that will allow maintenance
10 staff to request assistance in the event of an injury or other emergency.

11 Finally, the project will provide a net benefit to the town and surrounding
12 communities, in that it will generate local property taxes but require very little in the
13 way of municipal services. In addition, East Haven Windfarm will be offering
14 facilities for radio repeaters for use by police, fire, and rescue services that serve the
15 region.

16

17 **Aesthetics**

18 The project will not cause an undue adverse effect on the scenic or natural
19 beauty of the area. East Haven Windfarm witnesses Peter Owens and Terry Boyle
20 provide extensive testimony, including visual simulations, on the visual impact of this
21 wind project and wind projects generally.

22 As discussed above in the Air Pollution section, each wind turbine will
23 produce a noise level of 104 dB(A) at one foot from the nose cone. Using the

1 conservative assumptions previously mentioned, the 4 turbines will produce a
2 cumulative sound level of 38 dB(A) at 0.8 miles, 32 dB(A) at 1.6 miles, and 26 dB(A)
3 at 3.2 miles. See *Exhibit EHWF-MR-22*. These sound levels will not be
4 discernable above background levels at the closest seasonal or year-round residences.
5 In addition, these levels are far below the restrictions imposed by the 55 dB(A) that
6 the Environmental Board has generally established in cases that involve potential
7 aesthetic impacts due to noise. For example, in a case involving a rock quarry in
8 Sheffield, a rural community not unlike East Haven and other surrounding towns,
9 project-generated noise was limited to 55dB(A) outside any home or area of frequent
10 human use.

11

12 Historic and Archaeological Sites

13 East Haven Windfarm has worked with consultant Chris Quinn and the State
14 Historic Preservation Office (SHPO) to evaluate the historic value of the project site
15 and the project's impact on the historic resource, and to develop mitigation measures
16 that will ensure that adverse impacts are reasonable and not undue.

17 Description of Historic Resource.

18 The project site was formerly known as the North Concord Air Force
19 Station. The U.S. Government began construction of the facility in 1955, and closed
20 the facility in 1962.

21 The cantonment area contains the remains of a dozen steel Quonset huts for
22 housing, a large prefabricated metal mess hall, officers quarters, a generator building,
23 headquarters, a recreational hall, dispensary and guardhouse. Although most of

1 these buildings retain their original location and utilitarian exterior characteristics,
2 they are all severely deteriorated due to nearly forty years of being salvaged for
3 materials and due to vandalism.

4 The summit area contains the remnants of five towers ranging in height from
5 30 to 65 feet tall, in addition to a few ancillary buildings. Constructed of
6 prefabricated metal and concrete, the radar towers originally contained white
7 inflatable domes that protected the radar antennas inside (with the exception of the
8 tallest tower which was not completed before base closure). At present, the radar
9 towers only contain their steel beam structures, corrugated metal sheathing, concrete
10 foundations and cantilevered observation decks. The structures have been
11 deteriorated due to materials salvaging, vandalism, and the harsh weather conditions.
12 The radar towers are essentially empty shells of metal today.

13 Evaluation of Historic Resource.

14 The site is considered a good example of a Cold War historic property, and is
15 one of only two such resources in the State. SHPO has concluded that the site is
16 eligible for the National Register of Historic Places at the national and state levels
17 because it is of *exceptional importance*. SHPO further notes that the site:

18 retains a high degree of integrity in its overall composition which includes its
19 unique remote location, mountain top setting, prefabricated materials, and
20 most importantly the feeling the site evokes. The composition of the
21 deteriorating cantonment area and summit station juxtaposed to the remote
22 mountaintop setting provokes any witness to ponder the circumstances
23 which could have led to such an expansive, once sophisticated outpost. The
24 collection of buildings, high-quality mountaintop road, power lines, and radar
25 towers instill a feeling that only prior circumstances of grave importance
26 could have inspired such an undertaking. Just as their prefabricated steel
27 construction is illustrative of the time and circumstances [in which] they were
28 built, their abandonment is illustrative of evolving political, social and
29 military history.

1
2 June 24, 2003 SHPO Letter, quoting consultant's report. See *Exhibit*
3 *EHWF-MR-28*.

4
5 The consultant and SHPO also agreed that demolition of most of the summit
6 structures would have an adverse effect on the historic resources under the
7 applicable criteria, because it involves: (i) physical destruction of or damage to all or
8 part of the property; (ii) removal of the property from its historic location; and (iii)
9 change to the character of the property's use or of physical features within the
10 property's setting that contribute to its historical significance.

11 Mitigation Measures.

12 SHPO has concluded that the adverse effect of the project "is reasonable and
13 not undue given the circumstances," provided that the following mitigation measures
14 are undertaken:

15 Prior to demolition or relocation, the contributing historic properties and
16 associated landscape features shall be recorded in accordance with SHPO's
17 "Photographic Standards for Historic Structures." Recorded materials shall
18 be archived at SHPO and at an appropriate local archive to be agreed upon.

19
20 One of the summit tower structures will be repaired and partially
21 rehabilitated to provide a permanent record of the site's history. In addition,
22 an interpretive exhibit will be constructed that provides a detailed
23 documentation of the site's history, significance and association with the
24 Cold War. Details of the tower rehabilitation and interpretive exhibit will be
25 refined at a later date and made available for SHPO's review.

26
27 Efforts will be made to retain building footprints where feasible to serve as a
28 permanent record of the site's history and facilitate future interpretation.

29
30 Although not exclusively a mitigation effort, the proposed plan includes
31 provisions for public access to the site, which has not been permitted since
32 government ownership.

33
34 See *Exhibit EHWF-MR-29*.

1 East Haven Windfarm has agreed to implement each of the proposed mitigation
2 measures.

3 Archeological Resources

4 The survey archeologist for SHPO has reviewed the project for its potential
5 effect on archeologically-sensitive areas and has determined “that the project area
6 will not likely yield information important to prehistory. Further archeological
7 studies are not necessary. Therefore, it is our opinion that the project will have no
8 effect to archeological resources.” See *Exhibit EHWF-MR-30*.

9

10 Rare and Irreplaceable Natural Areas, Necessary Wildlife Habitat, and
11 Endangered Species

12 East Haven Windfarm witnesses Kerlinger and Parsons provide testimony
13 that the project will have no undue adverse effect on rare and irreplaceable natural
14 areas, and will not destroy or significantly imperil necessary wildlife habitat (including
15 endangered species habitat).

16

17 Development Affecting Public Investments

18 The project site at the summit of East Mountain is not adjacent to any
19 publicly-owned lands or facilities. The project’s transmission line from lower Radar
20 Road to the Burke substation will be collocated with a Lyndonville Electric
21 distribution line, and is being designed with Lyndonville Electric to enhance the
22 stability and reliability of their system.

1 The vast majority of lands surrounding Radar Road, and all of the lands
2 surrounding East Haven Windfarm's parcels at the summit, are private forest lands
3 owned by the Essex Timber Company (ETC). ETC's lands were part of the former
4 Champion lands, and are covered by a public access easement held by the Agency of
5 Natural Resources and the Vermont Housing and Conservation Board. The purpose
6 of the public access easement is to afford the public the opportunity to engage in
7 recreational activities on the Essex Timber lands including hunting, hiking, skiing,
8 snowmobiling, and other traditional uses. Among other things, the easement
9 required the preparation of a Long Term Access Plan. That Plan was issued on
10 January 3, 2002.

11 There are no established trails or roads on ETC lands up to the East
12 Mountain summit, and Radar Road is not identified as a primary or secondary
13 recreation corridor in the Long Term Access Plan. See *Exhibit EHWF-MR-31*. In
14 addition, views of the turbines from the surrounding ETC lands will be obscured by
15 trees and the topography except from a few vantage points. Thus it is unlikely that
16 members of the public who are utilizing the adjacent ETC lands will see the project.

17 Project activities at the summit will not detrimentally impact the ETC lands,
18 directly or indirectly. The project's only physical effect on the ETC lands will be the
19 falling of ice from the turbines in certain weather conditions. There is little industry
20 experience on ice fall from wind turbines, and I am unaware of any field studies.
21 However, because the ETC lands that surround the summit are thickly wooded and
22 have no trails, it appears unlikely that ice fall would pose a risk to members of the
23 public. Nonetheless, East Haven Windfarm intends to monitor operations closely to

1 determine if any additional safety measures are needed, including limiting public
2 access to the summit at certain times during the winter.

3 The testimony of East Haven Windfarm witnesses Boyle and Owens
4 regarding aesthetics, and Parsons and Kerlinger regarding wildlife habitat and natural
5 resources, further confirm that the project will not materially jeopardize or interfere
6 with the public's use or enjoyment of the ETC lands.

7 Wil Merck, President of Essex Timber Company, has provided a letter
8 concerning the relationship of the proposed project to ETC's lands. See *Exhibit*
9 *EHWF-MR-32*.

10 In sum, the public's use and enjoyment of the lands will not be impaired by
11 the project, because it will not physically alter ETC lands, will not significantly
12 impact wildlife habitat, and will not be seen from ETC lands where trails and roads
13 are already established (or are planned under the Long Term Access Plan).

14

15 **30 V.S.A. § 248(b)(6) – Integrated Resource Planning**

16 **Q. Is the project consistent with the principles for resource selection expressed**
17 **in that company's approved least cost integrated plan?**

18 Response: This criterion is not applicable to this project or other merchant plants,
19 because East Haven Windfarm is not required under state law to prepare an IRP.

20

21 **30 V.S.A. § 248(b)(7) – Comprehensive Energy Plan**

22 **Q. Is the project in compliance with the Department of Public Services'**
23 **approved Electric Energy Plan?**

1

Agricultural Lands

2 **Q. Will this project affect agricultural lands?**

3 Response: There are no agricultural lands involved in, or affected by, this project.

4

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

6 Response: Yes it does.