New Hampshire Site Evaluation Committee

Docket No. 2006-01

Application of Lempster Wind, LLC
For Certificate of Site and Facility

Lempster Mountain Wind Power Project
Lempster, New Hampshire

August 28, 2006

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EXECUTIVE SUMMARY

This Application to the New Hampshire Site Evaluation Committee (SEC) represents the request for a "certificate of site and facility" to construct and operate the Lempster Mountain Wind Power Project, in the Town of Lempster, Sullivan County, New Hampshire.

This Executive Summary provides information summarizing the full contents of the Application and its Appendices, including information about the Applicant and its affiliates, site information, facility information, potential health and environmental effects and mitigation plans, impacts on local land use, economy and employment, and impacts during construction and mitigation plans.

Applicant Information

Lempster Wind, LLC, a Delaware Limited Liability Company registered to do business in New Hampshire with the New Hampshire Secretary of State, proposes to develop the Lempster Mountain Wind Power Project (the Project) in the Town of Lempster, Sullivan County, New Hampshire. Lempster Wind, LLC is wholly-owned by Community Energy, Inc. (CEI), a Delaware Corporation based in Wayne, Pennsylvania and a national leader in the marketing of renewable energy and development of wind power projects. CEI is wholly-owned by Iberdrola, S.A., an international energy company based in Madrid, Spain that is engaged in the generation, transmission, distribution and marketing of electricity and natural gas. Iberdrola, with over 3,494 MW of wind power, is the world leader in wind power generation, and employs more than 500 employees worldwide in the area of renewable energy.

Iberdrola's extensive experience in wind energy project construction, ownership, operation and management combined with CEI's leadership in renewable energy marketing and development in the U.S. constitute adequate, if not superior, financial, managerial and technical capabilities to assure construction and operation of the facility.

The managerial capabilities of the CEI team includes a wide range of knowledge and experience from team members' work as public utility regulators, environmental leaders, corporate managers, wind project developers, and attorneys. The management resources of Iberdrola, including more than 500 personnel worldwide working on renewable energy, will provide depth and experience to the already substantial abilities of CEI.

Iberdrola will arrange for the financing of the Lempster Project, through various potential structures to provide the expected $30 to $40 million in capital for construction, equipment and operation of the Project. Investment in the Project by Iberdrola or others will be secured by long-term contracts for the purchase of power and renewable energy credits from the Project, as well as by the federal 1.8 cent/kilowatt-hour "production tax credit" for wind power, which

is set to expire at the end of 2007. The Project, its investors and construction contractors will carry adequate insurance to provide coverage against liability or damage resulting from the construction or operation of the wind Project.

Site Information

The proposed Project site is located on privately-owned property along the ridge line of Lempster Mountain, which is located in the Town of Lempster, in Sullivan County approximately 20 miles north of Keene and 5 miles south of Mount Sunapee. The Project site will include approximately 35-40 acres, including Project access roads and 12 wind turbine sites. The site is rural and remote, located on land parcels that are set back from residences, roads, and other public areas. The land proposed for the site was predominantly used for timber and agricultural operations in the past, and contains a number of existing logging roads and trails. Wetlands and surface waters have been identified by a NH-certified wetlands scientist, and other natural features such as wildlife, plant species, soils, and historic/cultural locations have been thoroughly documented in ongoing surveys and permit applications with state agencies.

The site and proposed Project will fall under the regulatory permitting authority of the New Hampshire Department of Environmental Services, Water Division (Wetlands Bureau, Site Specific Program, and Water Management Bureau), and the New Hampshire Department of Transportation. Applications for required permits that have been filed in association with the SEC Application include:

- Standard Dredge & Fill Application, Submitted to NH DES Wetlands Division on March 24, 2006, including responses to follow-up information requests of June 19, 2006. (covering wetlands impacts)

- Site Specific Application, Submitted to NH DES Water Division on April 14, 2006. (covering stormwater, soil erosion and sediment control impacts)

- Request for 401 Water Quality Certification, Submitted to NH DES Water Division on August 11, 2006 (analyzing potential impacts to surface water quality)

Facility Information

The proposed Project will be powered by twelve wind turbine generators, each rated 2.0 megawatts (MW) in capacity, for a total capability to produce 24 MW of power. The Project will use no fuel, only the wind, to turn rotor "blades" and power generating units. The Project has collected actual wind speed/direction data at the Project site for over 3 years, from two 50-meter test towers instrumented with measurement equipment, finding annual average wind speeds of between 7 and 8 meters/second (15 and 18 mph) – indicating excellent year-round potential for energy production. Based on wind data, energy production is anticipated in the range of 70,000,000 to 80,000,000 kWh per year. Based on an average household electrical usage of 550 kWh per month, the Project could provide power equivalent to that used by 10,000 to 12,000 homes.

The specific wind turbine generator technology proposed for use in the Project is G87 turbine, manufactured by Spanish company Gamesa. The major components of each Gamesa G87 wind turbine include a "rotor" measuring 285 feet in diameter, made up of three individual blades of 139 feet in length each; a "nacelle" that attaches to the rotor and contains the gearbox, low- and high-speed shafts, generator, and other controls; and a tower made of tubular structural steel in four sections, with a height of 256 feet. Other features of the state-of-the-art Gamesa G87 turbine include: a remote control system with real-time monitoring of the unit's operation, electric system interface, and safety systems; a braking system for controlling rotors in extreme weather or safety situations; and lightning protection systems that meet international electrical standards for "total lightning protection."

Power will be collected and transported on-site using a system of underground power cables, consolidated into one cable and running down Bean Mountain Road to the Project metering point at the intersection of Bean Mountain Road and Nichols Road. At the Project metering point, the power will be taken from the Project's underground facilities and interconnected with the 34.5 kV overhead distribution lines of PSNH at the street. The Project requires no high-voltage transmission lines, and connects to PSNH at the voltage standard for distribution systems that run throughout communities in the State.

Proposed construction start date is May 2007, with a completion date by November 1, 2007, to achieve an in-service date before December 31, 2007.

The Project conforms with the "orderly development of the region," balancing increasing energy demand with environmental protection and economic growth. As very few generating units are planned for New England, the Project addresses the growing demand for electricity within New Hampshire, and the New England electric power grid to which New Hampshire and the other New England states are all connected. The Project adds to the diversity of the power generation portfolio in New England and New Hampshire, which currently utilizes renewable energy sources including wind for less than 1% of its power generation. At 24 MW, the Project is the right size for the demonstrating the viability of wind power technology in New Hampshire – with a relatively small size and project footprint, but the ability to make a significant contribution to power needs.

The Project is also consistent with New Hampshire's state energy policy laws and goals as articulated by agencies and officials at all levels of government. New Hampshire Department of Environmental Services has actively indicated support for wind energy development, renewable energy "portfolio" standards for electric use, and wind energy's significant role in clean air and greenhouse gas emissions prevention. Other agencies have supported the development of renewable energy, promotion of clean air policy, and financial incentives for new energy sources and economic development that are consistent with the goals of the Project.

The Project is also consistent with the State's goals for energy facility siting. With significant environmental benefits and low impacts that are well-planned and mitigated, the Project balances environmental impacts with need for new power sources. With a single phase

construction schedule that can be completed in less than one year, the Project can be constructed on a timely basis and avoid undue delay in bringing a new clean energy source on-line. While lower than the SEC's 30 MW size threshold, the Project has provided a full disclosure of plans, studies, data and analysis for consideration by the SEC in an integrated fashion.

The Project is consistent with the goals for economic development in Sullivan County, as well as the energy goals articulated by the Upper Valley Lake Sunapee Regional Planning Commission -- to achieve a sustainable energy supply and encourage the use of local, rather than imported, fuels while balancing environmental and social impacts.

The Project will be a safe and reliable contributor to the electric system. PSNH and power grid operator ISO-New England performed a detailed system impact study and determined that the addition of the Project has no significant system impact to the stability, reliability, and operating characteristics of the New England bulk power transmission system. In general, modern wind energy technology is widely recognized for its potential to maintain the reliability and integrity of the electric system without impacting system operating costs, as found by the nation's largest and most-respected utility groups.

The size of the Project is consistent with system requirements of the interconnecting utility, Public Service of New Hampshire, which identified 25 MW as the maximum project size given system considerations in the area. The final number of wind turbine units utilized in the Project design is based on siting and access considerations, landowner agreements, meteorology and energy production estimates for various locations throughout the site, and the Gamesa specifications. A number of alternatives were considered for turbine locations within the current site, as well as on properties in Lempster not contained in the final proposed site, but were ruled out due to siting considerations. The current wind turbine sites chosen by the Project represent the best locations out of all the alternatives in terms of siting, keeping the site as insulated as possible from residences and public roads while maintaining project interconnection and design considerations.

Potential Health and Environmental Effects and Mitigation Plans

Air Quality and Climate Change

With no fuel and no emissions, the Project will have no adverse impact on air quality and climate change and will provide an environmental benefit to the state and region in terms of air quality or climate change. The Project adds a new electric generating source without adding air emissions or greenhouse gases, which the NH DES has recognized as having "significant environmental benefits that would be achieved by meeting future electricity demand growth with non-emitting wind energy rather than with energy from higher emitting fossil fuel-fired plants." Wind projects also have the potential to displace power produced by "dirtier" facilities, thereby reducing air emissions and consumption of fuels. The Project will have a long-term beneficial impact on climate and air quality, which is mitigation not only for other potential environmental impacts associated with the Project, but also mitigation for the air

quality and climate change impacts that would occur if other non-renewable sources of energy were developed in its place.

Water Impacts

The Project will generate power without any water intake or discharge that requires study, mitigation or permitting. The Project will avoid all environmental problems associated with the intake and discharge of cooling water, which is mitigation not only for other potential environmental impacts associated with the Project, but also mitigation for the water quality impacts that would occur if other non-renewable sources of energy were developed in its place.

Due to the alteration of terrain required for the construction of new roads and wind turbine facilities, the Project will have temporary impacts related to stormwater, soil erosion and sediment control. However, due to the placement of the Project along the highest points of the ridgeline, and the fact that the disturbance is very small when compared to the area of the watershed, there will be negligible increases to runoff as a result of this Project.

Stormwater runoff, erosion and sediment control have been addressed in the detailed plans and mitigation measures as submitted in the Standard Dredge & Fill Permit Application and Site Specific Application to NH DES. Civil engineering design of the Project was based on extensive on-site investigations of wetlands and other surface waters, soils, forests, and wildlife, research with environmental agencies, and best practices used in constructing similar roads and facilities.

Due to the location of wetland areas on Lempster Mountain, and the alteration of terrain required for the construction of new roads and wind turbine facilities, the Project will have impacts related to wetlands, mostly in the form crossing of intermittent streams and proximity to vernal pools and bogs. The Project was able to avoid and mitigate wetlands impacts through design of the Project facilities around wetland areas to the greatest extent possible, resulting in wetlands impacts of only approximately 4,375 square feet (one-tenth of one acre of impact) -- less than one percent of the 35-40 acres total used for the Project. A "Standard Dredge and Fill" application was submitted to NH DES to seek approval for wetland impacts, and the Project and NH DES have exchanged information and conducted a detailed site visit.

With a very minimal impact on wetlands that are not classified as major surface water bodies or major tributaries to surface water bodies, no water intake or pollution discharge, and detailed soil erosion and sediment control measures in place to mitigate stormwater discharge, the Project's impact on water quality is expected to be very minimal.

Noise

The Lempster Project has taken local concerns over potential wind turbine noise very seriously, and has worked to analyze and address potential impacts. In general, modern wind plants are not noisy and good neighbors, overcoming many issues associated with older forms of wind turbines that are still circulated as mis-information by wind power detractors. At Community Energy's 24-MW Bear Creek, PA wind project, using the same Gamesa 2.0MW

turbines as proposed for Lempster, noise has not been a complaint. Noise impacts at the Lempster Project are anticipated to be minimal based on equipment data for the Gamesa G87 wind turbines and the siting of the proposed turbines, which is on land that is rural and insulated from the community. The Project has performed a noise survey specific to the Project area, and has included a version updated as of August 2006. The noise assessment showed minimal noise impact (45-50dBA) beyond the range of 500 to 1,000 feet from the wind turbines, without taking into consideration any noise absorption by landscape features.

Hazardous Wastes

The Project will produce no hazardous waste streams as part of the power generation process, and involves only minimal disposal, storage, or transportation of wastes such as lubricant oil and hydraulic fluids. The Project conducted a "Phase I" Environmental Site Assessment, finding no environmental impact insofar as the existence of hazardous materials, underground tanks, or other hazardous wastes that would be in violation of environmental laws or pose a risk to public health or safety.

Public Health and Safety

In general, modern wind turbines are extremely safe, and have public health benefits due to their positive environmental attributes. However, issues have been raised about potential safety impacts such as ice shedding, risk from lightning strikes, tower collapse or blade throw, stray voltage, fire, and risk to air navigation.

The predominant mitigating factor in all these potential safety risks is the siting of the Project's turbines away from roads, public places, residences and property lines, as well as adequate public notice, warnings and public education efforts used to discourage unauthorized access to wind turbine areas.

Ice shedding impacts will be mitigated by technological advancements, such as remote detection of ice accumulation by equipment sensors, and by operation and maintenance practices that automatically or manually switch off turbines during extreme weather events.

Turbines will be equipped with a state-of-the-art "total lightning protection" system that conducts the lightning from both sides of the blade tip down to the root joint and from there to the nacelle, tower and earthing system. If a problem is detected, the turbine will shut down automatically, or at a minimum, be inspected to assure that damage has not occurred.

Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have largely eliminated occurrences of tower collapse or blade throw. State-of-the-art braking systems, pitch controls, sensors, and speed controls on wind turbines have greatly reduced the risk of such safety impacts. Also, design of electrical collection lines to be located underground with shielded cables and multiple ground points eliminates the potential for stray voltage.

Since the public typically does not have access to the private land on which the turbines are located, risk to public safety during a fire event would be minimal. Also fire situations at a wind turbine site or substation that are beyond the capabilities of the local service providers will be the responsibility of the project owner/operator. Fire or emergency incidents would generally not expose local emergency service providers or the general public to any public health or safety risk.

In terms of risks to air navigation, the Project applied for "determination of no hazard to air navigation" rulings from the Federal Aviation Administration for all 12 proposed wind turbine structures. The FAA performed an aeronautical study for each and determined "that the structure does not exceed obstruction standards and would not be a hazard to air navigation."

Aesthetics & Visual Impacts

No environmental, health, or safety impacts will occur related to the visual impacts of the Project, but the prospect of seeing wind turbines in a previously un-developed area has created aesthetic concerns by members of the community. To address visual impacts, the Project has worked to provide the community with actual photos of wind turbines in operation at similar projects, and photo-simulations of wind turbines. The Project also anticipates holding a "photo-simulation tour" for the public and SEC members on the same dates as the SEC's local public hearings, and hosting an opportunity for members of the community to travel to Community Energy wind farms to see wind turbines first-hand.

The Project performed an analysis of potential shadow flicker impacts, using data on proposed locations and turbine specifications, wind speed and directional data, and data on sunrise/sunset and weather factors in the Lempster area to indicate the area and extent of potential impacts. The analysis concludes that the Project will comply with accepted norms for shadow flicker, which suggest that impacts remain below 30 hours per year. All the areas that would experience 30 hours or more of shadow flicker impact are located in the vicinity of the wind turbines and on the associated ridge – remote from buildings or residences.

"Strobing" from flashing lights at night is also expected to be mitigated by the insulated siting of the turbines and through work with the Federal Aviation Administration to minimize intensity and number of lights required.

Historic & Cultural Resources

Under a memorandum of understanding with the New Hampshire Division of Historical Resources, the Project is currently conducting an archaeological survey of all areas of potential disturbance on the proposed site, to search for sites of cultural or historical significance. The Project is also conducting an historic viewshed impact survey to document Project visibility from existing and potential historic sites within a 3-mile radius of the Project.

Plant Life

In collaboration with the New Hampshire Natural Heritage Bureau, the Project is currently conducting a plant survey to document site specific findings and assess potential impacts, if any. Based on the characteristics and location of the site, it is not expected that rare or significant plant species will be found.

Wildlife

Wildlife including various species of birds, bats, mammals and aquatic life are potentially present throughout the site, and their presence has been documented and will continue to be documented by a number of wildlife surveys, including avian breeding and migratory surveys, bat surveys, and surveys of other wildlife. While no endangered or threatened species have been identified at the site, the Project has collaborated with New Hampshire Fish & Game Department as well as the U.S. Fish & Wildlife Service on wildlife surveys, and has worked to address their concerns and comments throughout the permitting and review process.

The Project's wildlife surveys are ongoing – while surveys have collected a significant amount of data and shown a low potential impact on species of concern, efforts to study wildlife use of the site will continue throughout development as well as once the Project is in operation in order to serve the public interest.

Mitigation for impacts related to permanent habitat loss and fragmentation will be accomplished through careful site design (i.e., avoiding wetlands and minimizing the permanent footprint of project components to the extent practicable) and restoration of all temporarily disturbed areas.

In general, issues related to wind power facility impacts on birds have been addressed by comprehensive analyses that the wind industry has undertaken over the last 2 decades, by technological improvements like rotation speeds, tower designs and by proper siting practices. The wind industry record is very positive in this area; bird deaths are extremely low when compared to most other man-made and natural causes. The impact of wind turbines on bat communities is a relatively new area of inquiry and research, with interest peaked by a few isolated collision incidents. The wind industry is working with the governmental and environmental community to study the reasons for these unique bat-related events, conduct proper studies related to turbine siting, and plan for future mitigation.

Impacts on local land use, economy, and employment

The land comprising the site will be leased from private landowners, and totals approximately 35-40 acres out of the more than 1,500 acres comprising the total land holdings of these individuals. The Town of Lempster currently has no zoning or land use ordinances, and other land uses in the Town include communication towers on the Lempster Mountain ridgeline, gravel and sand pits, timber operations, single-family home development, and seasonal recreational uses. During Project operation, landowners will be able to continue ongoing use of their land for timber, agriculture, and authorized recreation. In case decommissioning of the

Project becomes necessary, a plan that details the process, estimated cost, salvage value, and site restoration will be put in place with the Town prior to Project operation.

The proposed Lempster Wind Project represents a unique economic development opportunity for the Town of Lempster. The Project will provide significant property tax revenues but will not burden the local economy – with only 3 or 4 full time employees, a burden will not be placed on local schools, and with all facilities located on private property, no Town services are expected to support the Project. As a clean energy facility, the Project will not impose environmental or heath impacts that carry costs to the town, region or state.

The Project will provide landowner payments to local property owners for leases of land for the site, and will generate substantial revenues for the Town of Lempster in the form of local property taxes. In addition to local taxes, the Project will generate state tax revenues in the form of the state utility property tax.

The construction phase of the Project will provide approximately 150 jobs, with some lasting 2 to 3 months and some lasting 6 to 9 months. It is expected that 3 or 4 longer term, full-time jobs will be created relating to Project operation and maintenance. Raw materials and services for the construction of the Project will be purchased locally to the extent possible.

Owners of seasonal and year-round properties in Lempster have expressed concern about the impact of the Project on future property values, however there is no local data to support this claim. Recent studies of property values in communities with wind farms show no devaluation of property after construction of new wind farms.

The Project is not anticipated to have a negative impact on tourism in the area, and could provide tourism benefits to the Town itself. There is no evidence to indicate that the presence of wind turbines will have a negative impact on tourism. Based on information from other areas that are home to wind power projects, negative impacts on tourism have not been found – in fact projects have resulted in a significant increase in visitation from tourists interested in the projects.

Impacts during construction and mitigation plans

Wind project construction can take 6-12 months, depending on the size of the project and site-specific factors. Project construction in Lempster is anticipated to occur in a single phase, which will begin in the spring of 2007 and be completed by December 31, 2007.

Steps in the wind farm construction process will include:

- The wind farm layout and soil erosion and sediment control plan design was completed in March and April of 2006 to complete planning to avoid wetlands impacts and apply for permits with NH DES.
- Procurement and delivery of materials will follow design activities and will commence during early 2007. However, should approvals for the Project be delayed into 2007, turbine availability may become an issue for the Project.

- Transportation permits for access to public roads and access road construction will be obtained and the work will be started in the spring when appropriate (April-May, depending on local road restrictions and site conditions).
- Site clearing and access road construction, summer 2007.
- Foundation excavation and collection system excavation, foundation pouring and curing, metering point and operations & maintenance building construction, and foundation and collection system backfilling, summer to fall 2007.
- Concurrently, and throughout April to August, foundation conduit and grounding, underground and aboveground collection system and collection and interconnection metering point equipment will be installed.
- Wind turbine tower, nacelle, and rotor assembly, as well as permanent meteorological tower erection will be accomplished in the late fall of 2007.
- Mechanical completion and turbine wiring, as well as energization will be performed through November followed by commissioning of the Project by the end of 2007.

Impacts from construction will include traffic and road closures, movement of oversize or overweight loads, damage to state and local roads, dust and temporary air emissions, construction noise, and impacts to wetlands and soil erosion. These impacts will be addressed by various permits, as well as agreements and detailed construction plans put in place with the Town.

Conclusion

Lempster Wind, LLC respectfully requests expedited consideration of this under 30-MW clean energy facility that can be constructed quickly to meet growing energy demands in New Hampshire and New England while maintaining a positive impact on the environment and public safety.

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August 28, 2006

Based on DRAFT Site 201 Rules for Application Procedures and RSA 162-H:7 Application for Certificate

Lempster Wind, LLC respectfully submits this Application to the New Hampshire Site Evaluation Committee (SEC) and requests that the Committee issue a "certificate of site and facility" to construct and operate the Lempster Mountain Wind Power Project, in the Town of Lempster, Sullivan County, New Hampshire.

As a form of application, the Project has utilized the SEC's draft rules as provided by the Committee and available on the SEC website (Draft Administrative Rules, Chapter Site 100-400), in particular Part Site 201, Application Procedures. The Project has also complied with all relevant provisions of RSA 162-H, Energy Facility Evaluation, Siting, Construction and Operation, including RSA 162-H:7 Application for Certificate.

Site 201.04 Application for Certificate of Site and Facility. Each applicant for a certificate of site and facility for an energy facility or a bulk power supply facility shall file an application providing the following information:

(a) Applicant Information

(1) Name of Applicant

Lempster Wind, LLC

(2) Mailing Address, Telephone, Fax and E-Mail Contacts

Lempster Wind, LLC
c/o Community Energy, Inc.
724 Boston Post Road, Suite 205
Madison, CT 06443
(203) 245-0757 phone
(203) 779-1003 fax
jeff.keeler@newwindenergy.com e-mail contact

www.lempsterwind.com project web site
www.communityenergy.biz company web site
www.iberdrola.com parent company web site

(3) Franchise Area

N/A

(4) Name and Address of Parent Company, Association or Corporation, if Applicant is a Subsidiary

Community Energy, Inc.
150 Strafford Avenue
Wayne, PA 19087
www.communityenergy.biz website

Iberdrola Renewable Energies USA, Ltd.
1660 Tysons Boulevard, Suite 814
McLean, VA 22102
www.iberdrola.com website

(5) If applicant is a corporation, the state of incorporation and address of its principal place of business, and the names and addresses of its principal directors, officers and stockholders

Lempster Wind, LLC is a Delaware Limited Liability Company, registered to do business in New Hampshire with the New Hampshire Secretary of State. Community Energy, Inc. is a Delaware Corporation. Principal place of business for Lempster Wind, LLC and Community Energy, Inc. is:

Community Energy, Inc.
150 Strafford Avenue
Wayne, PA 19087

Names of principal officers, directors & shareholders:

Officers:

R. Brent Alderfer, President & Chief Executive Officer
Eric A. Blank, Executive Vice President
Pablo Canales, Treasurer & Vice President
Ana Buitraga, Secretary

Directors:

R. Brent Alderfer
Eric A. Blank
Patrick Longmire
Pablo Canales

Principal Shareholder:

Iberdrola Renewable Energies USA, Ltd.
1660 Tysons Boulevard, Suite 814
McLean, VA 22102
(owns 100% of Community Energy, Inc.)

(6) If an association, the names and residences of the members of the association

N/A

(7) The location or locations where applicant proposes to conduct business in New Hampshire

The proposed Project and the business location of Lempster Wind, LLC will be located in the Town of Lempster, Sullivan County, New Hampshire.

(8) Whether applicant is the owner, lessee or other; and

Applicant Lempster Wind, LLC is the developer of the wind power project, and will be the owner and operator of the wind power project.

(9) A statement of assets and liabilities of the applicant and other relevant financial information;

Applicant Lempster Wind, LLC is a Delaware Limited Liability Company formed for the development of, and eventual ownership and operation of the Project. Unaudited financial statements for Lempster Wind, LLC are included as part of **Appendix 1**.

Lempster Wind, LLC is currently wholly-owned by Community Energy, Inc., a Delaware Corporation which markets renewable energy and develops, owns, and operates wind power projects. The most recent audited financial statements, as well as most recent un-audited financial statements for Community Energy, Inc. are included as part of **Appendix 1**.

As of June 1, 2006, Community Energy, Inc. is wholly-owned by Iberdrola, S.A., and all funding and financing for the Project is now provided by Iberdrola. Financial information for Iberdrola has also been included as part of **Appendix 1.**

(10) Identification of any requests for waivers from the information requirements of any state agency or department whether represented on the committee or not;

The Project has not requested waiver from any information requirements related to this Application.

(11) Applicant's financial, technical and managerial capability for construction and operation of the proposed facility.

a. Technical Capability

Lempster Wind, LLC, as a wholly-owned subsidiary of Community Energy, Inc. and affiliate of Iberdrola, S.A., possesses the experience in the wind power and renewable energy industry needed to develop, construct and operate the Lempster Project.

Community Energy, Inc. (CEI) is a developer, marketer and supplier of renewable energy. Founded in 1999 with a mission to "ignite the market and supply the demand for fuel-free, emission-free energy," CEI provides wind energy and other renewable energy products to end-use customers nationwide, and develops, constructs, owns and operates wind power projects throughout the U.S. CEI is headquartered in Wayne, Pennsylvania and has offices in New York, Connecticut, New Jersey, Illinois and Colorado. Additional background information on CEI is attached as part of **Appendix 2** and is available at www.communityenergy.biz.

As a marketer of renewable energy, CEI has more than 3 billion kilowatt-hours of wind energy sales under contract with residential, business and institutional customers nationwide. Through its ability to obtain renewable energy contracts and assist with project finance, CEI participated in the development of six wind farms totaling 250 MW of wind energy in the Mid-Atlantic, New York and Illinois, creating a new market for wind energy by bringing projects on-line where there were none before.

As a project developer, CEI developed a one of the first wind projects in Illinois at Crescent Ridge (54 MW), New Jersey's first wind farm and the first coastal wind farm in the United States in Atlantic City (7.5 MW), and the first project to erect 2 MW scale wind turbines in the

United States at Bear Creek, Pennsylvania (24 MW). CEI is responsible for more than 2,000 MW of wind energy under development in 12 states.

CEI constructed the wind power projects at Bear Creek, PA and Atlantic City, NJ. The Bear Creek Wind Power Project – utilizing 12 of the 2 MW turbines for a total of 24 MW in mountainous terrain – is very similar to the proposed Project in Lempster.

In 2006, CEI merged with Iberdrola, S.A., an international energy company based in Madrid, Spain that is engaged in the generation, transmission, distribution and marketing of electricity and natural gas. In addition to operating in Spain and other European countries, Iberdrola operates in South America and the United States. Iberdrola, with over 3,494 MW of wind power, is the world leader in wind power generation, and employs more than 500 employees worldwide in the area of renewable energy. Iberdrola's extensive experience in wind energy project construction, ownership, operation and management will bring resources to CEI's technical capabilities that are unmatched throughout the world. Additional background information on Iberdrola is attached as part of **Appendix 2** and is available at www.iberdrola.com.

CEI will own and operate the Lempster Mountain Wind Power Project through Lempster Wind LLC, which is wholly-owned by CEI. CEI currently operates the Bear Creek, PA and Atlantic City, NJ wind projects with its project partners, Babcock & Brown, a world leading investor in wind power projects. Iberdrola's experience in project operations and maintenance will be incorporated into all new CEI projects. Iberdrola will oversee the construction as well as the operation and maintenance of the Lempster Project.

b. Managerial Capability

Lempster Wind, LLC, as a wholly-owned subsidiary of CEI, is currently managed by the management team of CEI. Biographies of key CEI personnel involved in the management of the Project are attached as **Appendix 3**.

CEI's management team involved with the management of Lempster Wind, LLC and the Project includes: Brent Alderfer, co-founder of CEI and its current President and Chief Executive Officer, Eric Blank, Executive Vice President and head of CEI's project development division, Ana Buitraga, Secretary of CEI and legal counsel for Iberdrola, and Brent Beerley, Vice President, Business Development.

The development team for the Lempster project includes Jeff Keeler, the New England Director for CEI and Project Manager for the Lempster

Wind Project, and David Shadle, managing director for project development at CEI.

The managerial capabilities of the CEI team includes a wide range of knowledge and experience from team members' work as public utility regulators, environmental leaders, corporate managers, wind project developers, and attorneys. CEI's management has successfully built a small company into a national leader in renewable energy marketing and wind power development, and has successfully merged that company with Iberdrola, the world leader in wind power and renewable energy construction, ownership, operation and management.

The management resources of Iberdrola, including more than 500 personnel worldwide working on renewable energy, will provide depth and experience to the already substantial abilities of CEI in developing the Lempster Project and other projects in the U.S.

c. Financial Capability

Lempster Wind, LLC is wholly-owned by CEI, which currently provides all funding for the Project's development, and is backed by the financial resources of Iberdrola, S.A. Financial information about CEI and Iberdrola has been provided as part of section (a)(9) above

Iberdrola, S.A. will arrange for the financing of the Lempster Project, through various potential structures to provide capital for construction, equipment and operation of the Project. The Project is currently estimated to require in the range of $30 to $40 million in capital, depending on final equipment costs and construction pricing.

Investment in the Project, from Iberdrola or its other partners or investors, will be secured by long-term contracts for the purchase of power and renewable energy credits from the Project. The Project has executed a term sheet with Public Service of New Hampshire for the long term purchase of all power and renewable energy credits from the Project, and is working to finalize the contract.

Investment in the Project will also be secured by the federal "Production Tax Credit" for wind power, which provides a 1.8 cent per kilowatt-hour tax credit for 10 years following the in-service date of the Project. Typical wind power project finance structures in the U.S. include "tax investors," who have substantial tax liabilities and can be allocated the Project's tax credit benefits as part of the return on their capital investment. A "tax investor" structure has not yet been finalized for the Lempster project, but is an option available to CEI and Iberdrola.

The federal wind production tax credit is currently set to expire on December 31, 2007. While Congress has re-authorized the tax credit in the past, and the wind power industry is working to have the tax credit re-authorized beyond 2007, there are no guarantees that the tax credit will be available to Lempster Wind, LLC if the Project is not in service by December 31, 2007.

The Project, its investors and construction contractors will carry adequate insurance to provide coverage against liability or damage resulting from the wind Project.

During the construction phase of the Project, the selected contractor will be required to carry contractor's insurance including worker's compensation insurance, commercial general liability insurance, automobile liability insurance, excess liability insurance and professional liability insurance for liability arising out of any negligent act, error or omission resulting from Contractor's engineering, design and commissioning services, such coverage to remain in effect for not less than three (3) years following completion of the Project. The contractor shall also require each of its major subcontractors performing services at the Project site to carry and maintain liability insurance. Contractors also are required to carry a builder's "all-risk" insurance policy covering the risk of physical loss or damage to wind turbine equipment.

During the operation phase, the Project will carry insurance including: worker's compensation insurance, commercial general liability insurance, automobile liability insurance, excess liability insurance and professional liability insurance

(b) Site information

(1) Location and address of site of proposed facility;

The proposed site for the Lempster Mountain Wind Power Project is located on privately-owned land in the Town of Lempster, Sullivan County, in Southwestern New Hampshire. The Town of Lempster is located about 20 miles north of Keene, NH and 5 miles to the south of Newport, NH, and is surrounded by the towns of Washington, Goshen, Unity, Marlow and Acworth. The site in relation to the surrounding area is illustrated in the map contained in **Appendix 4**.

The Project site is located along the ridge line of Lempster Mountain, which runs for several miles from Northeast to Southwest parallel to Route 10. The site is bounded by the Goshen town border to the North and Lempster Mountain Road to the South. The Project site will be located on privately-owned land, with the land parcels identified on the maps contained as **Appendix 5**.

(2) Travel directions to site;

Access to the Project site is available via the current access entrance to the property of landowners Kevin & Debra Onnela, 107 Bean Mountain Road in Lempster. From Route 10 North, turn right on School Road (at the sign for the Goshen-Lempster School) and continue straight for approximately ¾ of a mile. Bear right at the split with Nichols Road. At the sign "Private road – town maintenance ends" bear to the left and continue straight up Bean Mountain Road (private). At the top of Bean Mountain Road, turn left toward the house (107 Bean Mountain Road.). A map with directions to the site is included as **Appendix 6**.

(3) Site acreage (attach property map and locate site by scale on U.S. Geological Survey or GIS map);

The Project site will include approximately 35-40 acres, including project access roads and 12 wind turbine sites. A map including property boundaries, project roads and turbine locations, and USGS features has been included as indicated in subsection (1) above, as **Appendix 5**.

(4) Location of residences, industrial buildings, and other structures and improvements in vicinity of site by description and on plan;

The location of structures in the vicinity of the site is provided in the descriptions and aerial photograph maps included as **Appendix 7**.

(5) Identification of wetlands and surface waters of the state at site;

Identification of wetlands, as delineated by a certified NH wetlands scientist, and other surface waters of the state at the site are described in detail in the application forms, design plans, and maps provided in conjunction with the NH DES Standard Dredge & Fill Permit Application, NH DES Site Specific Application, and NH DES 401 Water Quality Certification Application, discussed in section (e)(2)a., below, and attached as **Appendices 8, 9 and 10**.

(6) Identification of natural and other resources at site;

Information on natural resources at the site, including soil, trees, water bodies and other features are discussed in detail in documents including the "Phase I Environmental Site Assessment," discussed in section (e)(5) below and **Appendix 9,** NH DES Standard Dredge & Fill Permit Application, NH DES Site Specific Application, and NH DES 401 Water Quality Certification Application, discussed in section (e)(2)a., below, and attached as **Appendices 8, 9 and 10**. The presence of wildlife at the site is discussed in section (e)(7)e., below, and **Appendix 26 and 27**.

(7) Statement concerning the proposed facility's compliance with municipal land use regulations;

The Town of Lempster currently has no zoning laws, so the compliance with such regulations is not applicable. The Town of Lempster does require construction projects to obtain building permits, which the Project applied for and obtained from the Town in July 2005. The Project will comply with local building regulations and occupancy standards.

(8) Statement that the proposed facility site was selected from among those sites included in the 5-year inventory of sites identified in the applicant's long-range plans or statement showing good cause why this prerequisite should be waived; and

N/A. This prerequisite should be waived since the proposed facility is an independent, merchant generator, and not subject to long range plan filings with the NH PUC.

(9) Other application and permits to be included:

a. State agencies having jurisdiction, under state or federal law, to regulate any aspect of the construction or operation of the proposed facility;

1. New Hampshire Department of Environmental Services, Water Division, Wetlands Bureau (authority under state and federal law over wetlands impacts)

2. New Hampshire Department of Environmental Services, Water Division, Site Specific Program (authority under state and federal law over alteration of terrain and pollutant discharge)

3. New Hampshire Department of Environmental Services, Water Division, Water Management Bureau (authority under federal law related to U.S. Army Corps of Engineers individual wetlands permit)

4. New Hampshire Department of Transportation (authority under state law over highway safety)

b. Information satisfying the application requirements of such agencies;

Information satisfying the application requirements of such agencies has been included as part of the actual application forms as submitted to the agencies under subsection c. below.

While the New Hampshire Department of Transportation will have authority to regulate oversize/overweight transport vehicles associated

with the Project's construction, the "Special Permit to Move a Load In Excess of Legal Limit" is submitted by the trucking contractor, as discussed in section (g)(2), below, once Project permits are issued and turbine equipment is ordered. Transport information relevant to the requirements of New Hampshire Department of Transportation has been provided in section (g)(2) below.

c. Each agency's completed application forms;

Please see attached the following completed application forms:

Appendix 8: Standard Dredge & Fill Application, Submitted to NH DES Wetlands Division on March 24, 2006, including responses to follow-up information requests of June 19, 2006.

Appendix 9: Site Specific Application, Submitted to NH DES Water Division on April 14, 2006

Appendix 10: Request for 401 Water Quality Certification, Submitted to NH DES Water Management Bureau on August 11, 2006

(c) Facility Information

(1) Name of unit

Lempster Mountain Wind Power Project (the "Project")

(2) Capacity

a. Designed for operation at 24.0 MW

b. Capable of operation at 24.0 MW (Rated power factor of 1.0)

(3) Type of unit

The proposed Project will be powered by twelve (12) wind turbine generator units, each rated 2.0 MW in capacity. Wind turbine generators utilize a three-blade rotor, turned by the wind, to spin shafts and gears that connect to a standard induction generator to produce electricity. Information on wind turbine technology, as described by the National Renewable Energy Laboratory, is attached as **Appendix 11**. A specific description of the wind turbine units proposed for the Project is included in subsection e., below.

a. Fuel utilized

N/A – The Project utilizes the wind to power generator units (no fuel).

b. Method of cooling condenser discharge

N/A

c. Whether the unit is proposed to serve base, intermediate or peaking loads;

The Project is proposed to serve base loads. While wind power plants do not operate continuously, because they have zero fuel cost they always run whenever available.

d. Unit efficiency

The Project has collected actual wind speed/direction data at the Project site for over 3 years, from two 50-meter test towers instrumented with measurement equipment, finding annual average wind speeds of between 7 and 8 meters/second (15 and 18 mph). Wind speed/direction data has also been correlated with long-term state and regional data, including the most updated wind mapping from the New England Wind Maps and U.S. Department of Energy, and historical and current data collected at a 40-meter meteorological tower at nearby Mount Sunapee. Wind mapping information and average wind speed data for the Lempster site are included as **Appendix 12**.

Based on wind speed/direction data and performance data on the Gamesa G87 wind turbines, the projected annual net "capacity factor" for the Project is in the 37% to 40% range.

(*Note:* "Capacity Factor" refers to the plant's actual production over a given period of time with the amount of power the plant would have produced if it had run at full capacity for the same amount of time. Modern utility-scale wind turbines typically operate 65% to 90% of the time, but they often run at less than full capacity. With a very large rotor and a very small generator, a wind turbine would run at full capacity whenever the wind blew and would have a 60-80% capacity factor—but it would produce very little electricity. The most electricity per dollar of investment is gained by using a larger generator and accepting the fact that the capacity factor will be lower as a result. Wind turbines are fundamentally different from fueled power plants in this respect.)

Based on a projected capacity factor in the 37% to 40% range, energy production from the Project is anticipated in the range of 70,000,000 to 80,000,000 kWh per year. Based on an average household electrical

usage of 550 kWh per month, the Project could provide power equivalent to that used by 10,000 to 12,000 homes.

With no fuel utilized in the power generation process, the Project will be extremely energy efficient.

e. Description of Specific Technology

The specific wind turbine generator technology proposed for use in the Project is Gamesa G87 turbine; each individual unit having a 2.0 MW rated capacity. Detailed technical information and specifications for the Gamesa G87 turbine is attached as **Appendix 13**.

The major components of each Gamesa G87 wind turbine include:

- Rotor measuring 87m (285 ft) in diameter, made up of three individual blades of 42.5m (139 ft) in length each.
- A "nacelle" that attaches to the rotor and contains the gearbox, low- and high-speed shafts, generator, and other controls.
- A tower made of tubular structural steel in four sections, with a height of 78m (255.9 ft)
- The total weight of the turbine unit in this configuration is 303 tons, including the rotor and hub (38 tons), nacelle (65 tons) and tower (200 tons).

Features of the Gamesa G87 wind turbine also include:

- Doubly-fed generator of 2.0 MW rated capacity, generating at 690 volts a/c
- Remote control system that ensures real-time monitoring of the unit's operation and communication with weather measurement equipment and electrical controls at the metering point and utility substations from a central and/or remote site.
- Predictive maintenance system for the early detection of wear and faults in the wind turbine's main components, integrated with the control system.
- A transformer in the nacelle to convert 690 volt power into 34.5 kV power for collection and interconnection.
- A braking system, including aerodynamic braking capability by feathering blades, and a mechanical emergency disc brake hydraulically activated and mounted on the high-speed shaft.
- Lightning protection, meeting international electrical standards for "total lightning protection," that conducts lightning from both sides of the blade tip down to the nacelle, tower, and earthing system.
- A "yaw drive," designed to keep rotor into the wind, and blade pitch controls, for optimizing energy production as well as safety features.

- Cut in speed of 4 m/s (8-9 mph) and a cut out speed of 25 m/s (50-55 mph)
- Rotational speed at the rotor of 9 to 19 rpm (depending on wind)

f. Project design and turbine layout

The Project has been designed to include 12 wind turbine generator units, for a total rated capacity of 24 MW. The size of the Project is consistent with system requirements of the interconnecting utility, Public Service of New Hampshire, which identified 25 MW as the maximum project size given system considerations in the area. The number of wind turbine units utilized in the Project design is based on siting and access considerations, landowner agreements, meteorology and energy production estimates for various locations throughout the site, and the Gamesa specifications. A number of alternatives were considered for turbine locations within the current site, as well as on properties not contained in the final proposed site. The proposed wind turbine locations for the Project are included as **Appendix 14**.

g. Project interconnection

Power will be produced by the individual wind generator units at 690 volts a/c, and converted by transformers in the nacelle of each unit to 34.5 kV d/c. Power will be collected and transported on-site using a system of underground power cables following project roads, and running down Bean Mountain Road to the Project metering point at the intersection of Bean Mountain Road and Nichols Road.

At the Project metering point, the power will be taken from the Project's underground facilities and interconnected with the 34.5 kV overhead distribution lines of PSNH at the street. The metering point will contain metering equipment, switch gear, and other equipment needed to transfer the power to the PSNH distribution system.

As the power from the Project is transported at 34.5 kV on site and interconnected to 34.5 kV distribution lines owned by PSNH, no transformer equipment will be needed to convert power for transportation off site.

Information on the proposed interconnection to PSNH is contained in the Project's application to grid operator ISO-New England for a system impact study, as discussed in section (c)(5) h., below and included as **Appendix 16.** Upon approval of the System Impact Study by ISO-New England, an executive summary of the results of the study will be provided to the Committee as an addendum to this application.

(4) Construction schedule

a. Start

Proposed construction start date is May 2007. Some site clearing work could be performed at an earlier date in the winter of 2006-2007.

b. Completion.

Proposed construction completion date is by November 1, 2006, to achieve an in-service date before December 31, 2007.

(5) Need for proposed generating unit to meet the present and future need for electricity

a. Orderly development of the region

1. Meeting the need for electricity

The Project addresses the growing demand for electricity within New Hampshire, and the New England electric power grid to which New Hampshire and the other New England states are all connected.

The regional system operator, ISO-New England, has encouraged new investment in power generation, citing the fact that demand for electricity continues to grow across New England, while construction of new generating resources has stagnated. The ISO has also stated that a more diverse portfolio of electricity generating resources will help the region achieve a more secure energy future. A statement from ISO-New England on regional electric demand is included in **Appendix 15**.

The Project adds to the diversity of the power generation portfolio in New England and New Hampshire, which currently utilizes renewable energy sources including wind for less than 1% of its power generation (see **Appendix 15**, NEPOOL GIS System Mix by Fuel). At 24 MW, the Project is the right size for the demonstrating the viability of wind power technology in New Hampshire – with a relatively small size and project footprint, but the ability to make a significant contribution to power needs.

2. Consistency with the State energy policy

The Project is consistent with New Hampshire's state energy policy contained in RSA 378:37. The Project will contribute to meeting the energy needs of the state and will help to diversify the state's portfolio of energy resources. It will not consume fuel, create air or water emissions or otherwise burden the state's physical environment or endanger the health or safety of the public. As indicated below, the Project is also consistent with the energy policy as articulated in a number of documents and statements made by officials at all levels of government.

Note: All policy documents cited in the following section(s) have also been included in **Appendix 16**.

a) Renewable Energy Policies

New Hampshire has promoted the use of renewable energy and clean power through a number of policies and initiatives.

The New Hampshire DES has supported the development of "Renewable Portfolio Standards" (RPS) to provide incentives for the development of renewable energy generation projects in the state. https://www.des.state.nh.us/testimony/archive/2006/HB1146.3706.pdf

In the 2006 legislative session, NH DES joined a number of environmental groups in promoting RPS legislation, including the Audubon Society of New Hampshire, Clean Air-Cool Planet, Clean Water Action, Conservation Law Foundation, New Hampshire Sustainable Energy Association, Sierra Club, Society for the Protection of New Hampshire Forests, Union of Concerned Scientists. Representatives of the New Hampshire governor's office, NH DES, NH Office of Energy & Planning, and NH PUC were involved in the drafting of RPS legislation. Legislation passed the House but was not passed by the Senate in 2006, and is expected to return for consideration in the 2007 session.

During consideration of legislation on creation of a study committee to examine wind power development in New Hampshire, NH DES issued statements in support of the

construction of wind power facilities in New Hampshire "because of the significant environmental benefits that would be achieved by meeting future electricity demand growth with non-emitting wind energy rather than with energy from higher emitting fossil fuel-fired plants." https://www.des.state.nh.us/testimony/archive/2006/HB1568.pdf

The New Hampshire Office of Energy & Planning has promoted policies to support the development of renewable energy sources. OEP provides information resources on the benefits of renewable energy Information, renewable energy incentives and programs and has included statements in support of renewable portfolio standards and increasing New Hampshire's fuel diversity in the 2002 New Hampshire Energy Plan. http://www.state.nh.us/oep/programs/energy/renewableenergy.htm http://www.state.nh.us/oep/programs/energy/RenewableEnergyIncentives.htm http://www.state.nh.us/oep/programs/energy/StateEnergyPlan.htm

New Hampshire has also provided incentives for the development of renewable energy sources, by providing the opportunity for renewable energy sources such as wind, hydropower and biomass to voluntarily enter into "payment in lieu of taxes" agreements with towns that provide important stability and certainty of tax valuation revenues for towns and renewable projects. The legislature passed and the governor signed HB 1758 in 2006, with the support of renewable energy groups, the New Hampshire Municipal Association, and several towns. http://www.gencourt.state.nh.us/legislation/2006/HB1758.html

b) Air Quality and Clean Air Policies

New Hampshire is a leader in the New England region and in the U.S. on policies to promote clean air and improved air quality standards. The use of renewable energy to meet electricity demand without producing emissions is a critical component of New Hampshire's clean air strategies and goals, and the development of the Lempster Project is consistent with those policies. As

discussed in subsection a), above, NH DES has played an active role in promoting renewable energy as a key element to addressing air quality issues.

In 2002, New Hampshire issued the "Clean Power Action Plan" and subsequently the Clean Power Act was passed by the legislature and signed into law. As referenced in the Plan, the power generation sector is responsible for 81% of all sulfur dioxide emissions (which cause acid rain), 20% of nitrogen oxide emissions (which cause ozone, smog and asthma problems), 40% of mercury emissions (which pollute lakes and streams, harm wildlife and endanger public health), and 30% of carbon dioxide emissions (which lead to global climate change and long term environmental and health problems). By adding power generation with no emissions, the Project is consistent with the goals of offsetting or reducing growth in these air pollutants.
http://www.des.state.nh.us/ard/pdf/NHCPS.pdf
http://www.des.state.nh.us/ard/CleanPowerAct.htm

c) Climate Change Policy

New Hampshire is also a leader in climate change policy, with a number of initiatives and policies in place to reduce greenhouse gases that cause global climate change. New Hampshire's participation in such groups as the Regional Greenhouse Gas Initiative and the Conference of New England Governors and Eastern Canadian Premiers, and its initiation of programs such as the Climate Challenge and Greenhouse Gas Inventory all include support for renewable energy as a solution to climate change.
http://www.des.state.nh.us/factsheets/ard/ard-23.htm
http://www.des.state.nh.us/ard/climatechange/challenge.pdf
http://www.des.state.nh.us/ard/climatechange/rggi.htm

As discussed in section (e)(1) below, the Project will not emit greenhouse gases, and will have a positive impact on global climate change, consistent with the State's climate change policies.

d) Energy Facility Siting Policies

The Project is also consistent with the Declaration of Purpose contained in the NH Site Evaluation Committee

statute (RSA 162-H:1). "The legislature, accordingly, finds that the public interest requires that it is essential to maintain a balance between the environment and the need for new power sources; that electric power supplies must be constructed on a timely basis; that in order to avoid undue delay in construction of needed facilities and to provide full and timely consideration of environmental consequences, all entities planning to construct facilities in the state should be required to provide full and complete disclosure to the public of such plans; … that the siting of electric generating plants and high voltage transmission lines should be treated as a significant aspect of land-use planning in which all environmental, economic and technical issues should be resolved in an integrated fashion, so as to assure the state an adequate and reliable supply of electric power in conformance with sound environmental utilization.

The Project is consistent with the State's goals for energy facility siting. With significant environmental benefits and low impacts that are well-planned and mitigated, the Project balances the environment with need for new power sources. With a single phase construction schedule that can be completed in less than one year, the Project can be constructed on a timely basis and avoid undue delay in bringing a new clean energy source on-line. A single phase of construction will also minimize the impacts of temporary construction issues like traffic, noise, and dust. While lower than the SEC's 30 MW size threshold, the Project has provided a full disclosure of plans, studies, data and analysis for consideration by the SEC in an integrated fashion.

3. Consistency with Economic Development and Regional Planning Goals

The Project is consistent with the goals for economic development in Sullivan County, as well as the energy goals articulated by the Upper Valley Lake Sunapee Regional Planning Commission.

a) Economic Development

The Project will provide economic development to Lempster and Sullivan County in the form of a clean, environmentally friendly source of energy production that provides economic benefits

without placing a burden on local or regional economies. Initial referrals to landowners in Lempster came from Sullivan County Economic Development Council authorities.

b) Regional Planning & Energy Goals

The Project is consistent with the energy goals of the Upper Valley Lake Sunapee Regional Planning Commission. As stated in its Regional Plan, the general goal to "maintain or improve air quality in our region" is met by several specific energy goals, including: achieving a sustainable energy supply; encouraging the use of local, rather than imported, fuels; promoting least-cost planning, or life cycle costing, which considers all costs of energy production and use, including environmental and social costs; evaluating all energy alternatives and choosing those with the least adverse environmental, aesthetic, economic and social impacts; and encouraging and promoting wise management of locally-developed renewable energy sources which create local jobs, stimulate investment in the region and have minimal environmental impact.
UVLSRPC Regional Plan "Energy Goals, Policies & Recommendations" http://www.uvlsrpc.org/files/pdf/Ch1.pdf

b. – g. Aesthetics, Historic Sites, Air Quality, Water Quality, the Natural Environment, Public Health and Safety

Please see below, section "(e) Potential health and environmental effects and mitigation plans."

h. System stability and reliability factors

The Project, Public Service of New Hampshire/Northeast Utilities, and ISO New England entered into a System Impact Study Agreement in June 2005. PSNH and ISO-NE performed the system impact study over the past 12 months and a final draft of the study has determined that the addition of the Project has no significant system impact to the stability, reliability, and operating characteristics of the New England bulk power transmission system. Information contained in the application for System Impact Study is attached as **Appendix 17,** and upon approval of the System Impact Study by ISO-New England, an executive summary of the results of the study will be provided to the Committee as an addendum to this application.

In general, wind power has been found to maintain the reliability and integrity of the electric system without impacting system operating costs.

According to a comprehensive analysis released May 22, 2006 by the Utility Wind Integration Group (UWIG), Edison Electric Institute, American Public Power Association, and National Rural Electric Cooperative Association -- groups representing nearly 100 percent of the utilities in the United States – there are not "any fundamental technical barriers at the present time to wind penetrations of up to 20 percent of system peak demand, which is far beyond where we are today." The UWIG study focuses on wind's impacts on the operating costs of the non-wind portion of the power system and on wind's impacts on the system's electrical integrity and concludes that "the consensus view is that wind power impacts can be managed with proper design and operation of the system." An executive summary of the UWIG study is attached as **Appendix 18**.

i. Economic factors

The Project will be a new, clean, environmentally low-impact source of energy that will be a significant contributor to the state and local economy without burdening the town or school budgets or adding societal costs related to the environment or public health. A more detailed discussion of economic impacts is contained in section (f)(2), below.

(6) Available alternatives

In its initial search of potential wind power project sites in New Hampshire, Community Energy did not find any alternatives in the area that contained key characteristics needed for a wind project that were found in Lempster – significant wind resources as identified by state and regional wind data; landowners with suitable property (high elevation, insulated/rural acreage) willing to lease lands for a project; and ability to interconnect cost-effectively to the distribution or transmission system.

Community Energy began in 2003 investigating potential wind turbine locations within the general area of the Lempster Mountain ridgeline, including locations along South Road in Lempster to Silver Mountain, and in additional areas on Bean Mountain. Some of the potential alternatives are shown on earlier versions of maps used for land acquisition and initial turbine layout, a December 2004 version of which is included as **Appendix 19.** A number of wind turbine locations were initially identified and investigated with landowners and lease option agreements were signed, but due to interconnection limitations (limiting the project size to 25MW in the area), siting best practices based on industry and other model zoning standards (proximity to residences, public roads, communication towers), and project design considerations, some of the alternatives for turbine locations in Lempster were not pursued for the final site.

The current wind turbine sites chosen by the Project represent the best locations out of all the alternatives in terms of siting, keeping the site as insulated as possible from residences and public roads while maintaining project interconnection and design considerations.

(d) Transmission Line Information

N/A – the Project does not entail construction of new transmission lines – it will be interconnected at the distribution level, as described in Section (c) 3. e. above.

(e) Potential health and environmental effects and mitigation plans

(1) Air and Climate Change

Background & Impacts: The Project will have no adverse impact on air quality and climate change and will provide an environmental benefit to the state and region in terms of air quality or climate change. The Project adds a new electric generating source without adding air emissions or greenhouse gases, which the NH DES has recognized as having "significant environmental benefits that would be achieved by meeting future electricity demand growth with non-emitting wind energy rather than with energy from higher emitting fossil fuel-fired plants." (**Appendix 16**, NHDES HB 1568 Testimony)

Note: documents associated with internet links contained in this subsection are included as **Appendix 20**.

Wind projects also have the potential to displace power produced by "dirtier" facilities, thereby reducing air emissions and consumption of fuels. The Project's operation has the potential to reduce current emissions from existing power plants in the regional power grid.

Wind farms emit no carbon dioxide. A 2-MW turbine displaces nearly 3,600 tons of carbon dioxide each year (equivalent to planting nearly 2 square miles of forest), based on the current average U.S. utility fuel mix. Fossil fuel power plants account for about 34% of the carbon dioxide emitted by the United States, itself the largest emitter of CO2 worldwide. Carbon dioxide is the leading global warming pollutant, threatening habitats for wildlife and air quality for humans worldwide. A scientific study published in *Nature* (January 2004) estimated that global warming may lead to the extinction of one million species by 2050 (BBC news report at http://news.bbc.co.uk/1/hi/sci/tech/3375447.stm).

New Hampshire DES has stated that the effects of climate change on New Hampshire could include serious impacts such as:

- Impacts on the New Hampshire ski industry at a loss of $42 million to $84 million in direct and indirect spending in the state

- Impacts on New Hampshire forests including the ecological collapse for several tree species, including beech, maple, and hemlock (an important species for deer during the winter); widespread tree mortality, including spruce and others; decreases in vegetation density of 25 - 75 percent; extensive wildfires; large increases in pest and pathogen outbreaks; and a lag in the establishment of new forests for several decades; northern movement of other local tree species from 100 - 300 miles; potential large-scale die-offs of sugar maple, on average a $3 - $3.5 million dollar industry.
- Impacts on New Hampshire Coasts including a sea level rise of 12 - 20 inches, causing large scale alteration of Great Bay, reduction of coastal estuaries and flooding of rivers, as well as potentially large revenue losses from coastal tourism, a $484 million revenue generator for New Hampshire.
- Impacts on New Hampshire foliage, including dulling and browning of foliage season due to tree die-offs, species substitution, and "climate stressed" unhealthy trees; New Hampshire foliage travelers on average spend a total of $292 million annually.
- Impacts on New Hampshire fishing including loss of cold water fishing, 50 - 100 percent eradication of rainbow, brook, and brown trout fishing, a $150 million New Hampshire industry.
- See: **Appendix 16**, *Climate Challenge* and NHDES ARD Fact Sheet

- Wind farms emit no hazardous or toxic air pollutants. To generate the same amount of electricity as a single 2-MW turbine using the average U.S. utility fuel mix results in the emissions of 18 tons of sulfur dioxide and 8 tons of nitrogen oxide each year. As referenced above in section (c)(5)a.2.b), the power generation sector is responsible for 81% of all sulfur dioxide emissions (which cause acid rain), 20% of nitrogen oxide emissions (which cause ozone, smog and asthma problems), 40% of mercury emissions (which pollute lakes and streams, harm wildlife and endanger public health), and 30% of carbon dioxide emissions (which lead to global climate change and long term environmental and health problems). (See **Appendix 16**, Clean Power Strategy).

In comparison to fossil fuel consumption and combustion, to generate the same amount of electricity as a single 2-MW wind turbine for 20 years would require burning 58,000 tons of coal (a line of 10-ton trucks 22 miles long) or 184,000 barrels of oil – for a 24 MW project, that equates to 700,000 tons of coal or 2.2 million barrels of oil. To generate the same amount of electricity as today's U.S. wind turbine fleet (over 6,000 MW) would require burning more than 9 million tons of coal (a train of coal cars 750 miles long) or 28 million barrels of oil each year. (information from American Wind Energy Association and Natural Resources Defense Council study 2002, See **Appendix 39 AWEA Appendix**, *Wind Energy & Wildlife: The Three C's* and **Appendix 20** http://www.nrdc.org/air/pollution/benchmarking/)

Study & Mitigation: The Project has no air or greenhouse gas emissions that require study or mitigation. The Project will have a long-term beneficial impact on climate and air quality, which is mitigation not only for other potential environmental impacts associated with the Project, but also mitigation for the air quality and climate change impacts that would occur if other non-renewable sources of energy were developed in its place.

(2) Water

a. Water Intake or Pollution Discharge

Background & Impacts: The Project does not involve any water intake or discharge.

Other forms of conventional power generation use water for cooling, up to a billion gallons each day. As this water is discharged back to water bodies, thermal (heat) pollution occurs, which can create environmental problems in the winter, creating ice-free pockets which can attract and then trap many species when the flow slows or stops, or in summer, when the hot water can add to eutrophication (oxygen-deficiency) in the river, choking fish and aquatic life. Heavy metals and chlorine in cooling water discharges are also having a negative effect on water bodies and aquatic life.

Study & Mitigation:

The Project has no water intake or discharge requiring study, mitigation or permitting. The Project will avoid all environmental problems associated with the intake and discharge of cooling water, which is mitigation not only for other potential environmental impacts associated with the Project, but also mitigation for the water quality impacts that would occur if other non-renewable sources of energy were developed in its place.

b. Stormwater, Soil Erosion and Sediment Control

Background & Impacts: Due to the alteration of terrain required for the construction of new roads and wind turbine facilities, the Project will have impacts related to stormwater, soil erosion and sediment control. Total alteration of terrain by the Project will entail the creation of approximately 5 linear miles of gravel access roads and conduit for underground electrical collection system, and disturbance of 35-40 acres total for turbine locations. The site is currently a wooded mountainside, with predominantly rocky soil groups as based on Natural Resources Conservation Service (US Dept. of Agriculture) soils maps and on-site investigations.

Peak runoff from the site will increase as a result of the Project due to the increased impervious area created by gravel access roads and wind turbine sites. The existing mountainside may already have increased runoff characteristics due to the steep slopes and rocky soils. However, due to the placement of the Project along the highest points of the ridgeline, and the fact that the disturbance is very small when compared to the area of the watershed, there will be negligible increases to runoff as a result of this Project.

Erosion and sediment control will be particularly important during construction activities at the Project site due to the presence of wetlands, as delineated by a NH certified wetlands scientist (discussed in wetlands subsection c., below).

Study & Mitigation: Stormwater runoff, erosion and sediment control have been addressed in the detailed plans and mitigation measures as submitted in the Standard Dredge & Fill Permit Application and Site Specific Application to NH DES**.** (Attached as **Appendices 8 and 9**.) The Site Specific Application contains a detailed set of Project plans, as well as a Stormwater Pollution Prevention Plan that details civil engineering measures that will mitigate soil erosion and sediment control from stormwater related to the Project roads and turbine locations. Civil engineering design of the Project was based on extensive on-site investigations of wetlands and other surface waters, soils, forests, and wildlife, research with environmental agencies, and best practices used in constructing similar roads and facilities.

c. Wetlands Impacts

Background & Impacts: Due to the location of wetland areas on Lempster Mountain, and the alteration of terrain required for the construction of new roads and wind turbine facilities, the Project will have impacts related to wetlands. Wetlands in the Project area have been delineated by a NH Certified Wetlands Scientist. The wetlands impacted by the Project as currently designed total 4,375 square feet, and include: six intermittent headwater streams scattered along ridge sides, two bogs associated with streams located on saddles between mountain peaks, and three cattle watering holes located on the sides of existing roads. These types of wetlands are not rare, and are considered common in this part of the state. There is one direct impact on a stream crossing, which is on Cold Brook, where trenching for underground cable conduit will cause a temporary impact. There are also nearby wetlands, mostly situated in the saddles between mountain ridge peaks, and surface waters including Beaver Brook, Cold Brook, and Richardson Brook.

In its letter to the Project of June 19, 2006, NH DES indicated that while the square footage of wetlands is small enough for a "minor impact" permit, that the application would be considered a "major impact" project due to its significant attention in the community and state.

Study & Mitigation: As part of the submission of its Standard Dredge and Fill Permit Application (Attached as **Appendix 8**) the Project has submitted road and turbine location plans to NH DES along with detailed information about wetlands in the vicinity of the Project site and the impacted wetland areas. The Project was designed using aerial photography, detailed digital topographic mapping, extensive on-site survey and civil engineering work, and wetlands delineation by a certified NH wetlands scientist.

The Project was able to avoid and mitigate wetlands impacts through design of the Project facilities around wetland areas to the greatest extent possible, resulting in wetlands impacts of only approximately 4,375 square feet (one-tenth of one acre of impact) -- less than one percent of the 35-40 acres total used for the Project.

The wetlands application also discusses Project impacts on plants, fish and wildlife, commerce and recreation, public health, safety and well being, and cultural and historic resources (issues addressed in various separately in sections of this application). Abutters to the Project were notified of the wetlands application, and the Lempster Conservation Commission was provided a copy of the application for review.

The Project received an information request from the NH DES on June 19, 2006 asking for additional information and has provided the information requested related to the NH DES and related agencies. The DES information request and follow up information sent is included as part of **Appendix 8**.

The Project conducted a site visit on July 27, 2006 that was attended by representatives of NH DES Wetlands Bureau and Water Division, NH Fish & Game, US Fish & Wildlife Service and the Lempster Conservation Commission. Participants walked along proposed road alignments and examined proposed wetlands impacts in detail.

Due to concerns raised by the U.S. Fish & Wildlife Service about the potential "secondary impacts" of the Project on migratory birds and endangered due to the fill of wetlands, the U.S. Army Corps of Engineers has requested an "individual" wetlands permit review of the Project, requiring an additional federal review of wetlands and related environmental issues. The Project is consulting with the Army Corps before filing an individual permit application.

d. Surface Water Quality

Background & Impacts: Under the NH DES wetlands permitting process, a certification of water quality is not required, but since the U.S. Army Corps of Engineers has requested an "individual" wetlands permit review, the federal process requires the Project to obtain a "401 Water Quality Certification" through the NH DES Water Division, Watershed Management Bureau.

Impacts on surface water quality from the Project include potential stormwater runoff and erosion from Project roads and facilities, as discussed in subsection b., above. Surface waters potentially impacted by the Project include the wetlands (intermittent streams and pools) directly impacted by the Project, as discussed in subsection c., above.

Because of the intermittent nature and minimal water levels in the small headwater streams that are present, uses of these water bodies are likely to be limited to aquatic life, wildlife, and limited recreational purposes. Aquatic life and wildlife uses may be impacted in the immediate area of the culvert placement at each stream due to the altered nature of the new environment (within the culvert). A culvert is a modified environment that may limit stream usage by some aquatic and wildlife species; however a culvert may create habitat for other species. Recreational purposes will not be affected because the property is privately owned and because of their small, intermittent nature, the stream channels do not offer much recreational opportunity. The proposed activities should have no effect on the opportunity for these streams to be used, after treatment, as water supplies.

Study & Mitigation: The Project has submitted the required 401 Water Quality Certification application to NH DES (attached as **Appendix 10**) as part of this Site Evaluation Committee application. With only 4,375 square feet of wetlands (one-tenth of an acre) impact on wetlands that are not classified as major surface water bodies or major tributaries to surface water bodies, no water intake or pollution discharge, and detailed soil erosion and sediment control measures in place to mitigate stormwater discharge, the Project's impact on water quality is expected to be very minimal.

The proposed construction activities were designed based on best management practices used in constructing similar roads, and activities such as the placement or replacement of culverts may temporarily affect but will not permanently affect water quality. During construction, sedimentation and erosion control measures will be incorporated to prevent water quality impacts. No other discharges are anticipated that would impact/alter water quality standards.

(3) Noise

Background & Impacts: Noise is among the most frequently raised issues of local concern in connection with the operation of wind power facilities. In general, impacts related to noise produced by the operation of wind turbines have been addressed by the industry through significant technological and design advancements over the past 20 years, as well as proper siting practices. Additional information on wind turbines and noise from the American Wind Energy Association has been attached as **Appendix 39 AWEA Appendix** *Facts About Wind Energy and Noise.*

The Lempster Project has taken local concerns over wind turbine noise very seriously, and has worked to analyze and address potential impacts.

In the construction phase of the Project, noise from construction activities will occur. This can include truck traffic, use of heavy equipment for site preparation and construction, and blasting for foundations or access roads. Construction impacts and mitigation are discussed in more detail in section (g), below.

There are several types of noise that have been raised as issues with the operation of wind power projects, including Lempster. Aerodynamic broadband sound, which originates from the flow of air around the blades, is typically the largest component of wind turbine acoustic emissions. Mechanical noise, which originates from the relative motion of mechanical components like the gearbox and generator, is less of a concern with modern wind turbines. As indicated in a 2006 paper by the University of Massachusetts Renewable Energy Research Laboratory (UMass RERL), summary attached as **Appendix 21**, "the sound produced by wind turbines has diminished as the technology has improved. As blade airfoils have become more efficient, more of the wind energy is converted into rotational energy, and less into acoustic energy. Vibration damping and improved mechanical design have also significantly reduced noise from mechanical sources."

Another noise concern frequently raised is that of "infrasound" or low-frequency vibration from wind turbines. This concern is mainly associated with older machines with "downwind" (2-blade) rotors. Modern wind turbines with "upwind" (3-blade) rotors emit broadband sound emissions, which include low frequency sound and some infrasound. However, the "swish-swish" sound from wind turbine blade rotation is aerodynamic noise that does not contain low frequencies. As the UMass RERL paper indicates, "the magnitudes of these are below the perception limits of humans" and that "there is no evidence that infrasound below human perception level produces physical or psychological effects." (**Appendix 21,** p. 13, p. 10)

In general, modern wind plants are not noisy and are good neighbors. At Community Energy's 24-MW Bear Creek, PA wind project, which uses the same Gamesa 2.0MW turbines as proposed for Lempster, noise has not been a complaint. Noise impacts at the Lempster Project are anticipated to be minimal based on equipment data for the Gamesa G87 wind turbines and the siting of the proposed turbines, which is on land that is rural and insulated from the community.

Study & Mitigation: The Project commissioned Superna Energy LLC, a qualified consultant in wind power engineering, to perform a noise assessment based on the Lempster site, noise data for the Gamesa G87 wind turbine, and international noise standards and models. The initial assessment was performed in August 2005, and updated in July 2006. The noise assessment showed minimal noise impact (45-50dBA) beyond the range of 500 to 1,000 feet from the wind turbines, without taking into consideration any noise absorption by landscape features.

The 2006 updated assessment included notable locations in Lempster, including the Goshen-Lempster School. Lempster Town Hall, Pillsbury State Park, Long Pond, and residences of individuals who have raised specific concerns about noise. The Lempster noise assessment has been attached as **Appendix 21**.

Beyond the technological advancements in the state-of-the-art Gamesa wind turbines that minimize aerodynamic and mechanical noise, the Project will mitigate potential noise concerns by its siting and setbacks. The Lempster Project site is designed to be insulated from people and public places, and the wind turbines will be situated more than 1,000 feet from permanent residences adjacent to the site.

Sites that are rural and insulated in nature, and are away from high-density residential areas or public places, greatly reduce the potential for noise impacts on the community. According to the UMass RERL, "operating sound produced from wind turbines is considerably different in level and nature than most large scale power plants, which can be classified as industrial sources. Wind turbines are often sited in rural or remote areas that have a corresponding ambient sound character. Furthermore, while noise may be a concern to the public living near wind turbines, much of the sound emitted from the turbines is masked by ambient or the background sounds of the wind itself." (**Appendix 21,** p. 3)

(4) Odors

Background & Impacts: N/A. The wind turbine generators produce no air emissions, and utilize no processes that would produce odors as an environmental impact.

(5) Hazardous and other wastes

Background & Impacts: The Project will produce no hazardous waste streams as part of the power generation process, nor will it involve any disposal, storage, or transportation of hazardous wastes as part of the power generation process.

The Project will utilize small amounts of lubricant oil and other chemical materials for the routine operation of the generators. These materials are stored on site under standard operation and maintenance procedures, and handling and disposal will be conducted in compliance with New Hampshire and federal laws for solid or hazardous wastes.

Study and Mitigation: The Project has studied the environmental conditions at the existing site area by conducting a "Phase I" Environmental Site Assessment in 2005 and 2006. The assessment found no environmental impact insofar as the existence of hazardous materials, underground tanks, or other hazardous wastes that would be in violation of environmental laws or pose a risk to public health or safety. A copy of the executive summary of the Phase I Environmental Site Assessment is attached as **Appendix 23** and full copies of the comprehensive study are available upon request.

(6) Public health and safety

a. Ice Shedding

Background & Impacts: In northern climates such as New Hampshire, concerns have been raised about the risk of potential ice shedding from wind turbines. "Ice throw" can occur when fragments from the rotor are thrown off from the operating turbine due to aerodynamic and centrifugal forces, or "ice fall" can occur when ice fragments fall down from the turbine when it is shut down or idling. Ice throw or fall depends heavily upon weather and wind conditions, and on the operation and control system of wind turbines. As the ice begins to thaw, it will typically drop straight to the ground. Any ice that remains attached to the blades as they begin to rotate could be thrown some distance from the tower. However, such a throw will usually result in the ice breaking into small pieces, and falling within 300 feet of the tower base.

Questions and concerns have been raised about potential ice throw from the wind turbines proposed for the Lempster Project. Based upon the research and scientific data, the Project's siting characteristics, and the proposed control of public access to the turbine sites, it is not anticipated that the Project will result in any measurable risks to the health or safety of the general public due to ice shedding.

Study & Mitigation: There are several organizations studying wind turbine icing, including the International Energy Agency Wind Research Annex XIX on wind energy in cold climates (http://arcticwind.vtt.fi/) and the Finnish Meteorological Institute (http://www.fmi.fi/en/). The most widely referenced scientific study on icing is "Risk Analysis of Ice Throw from Wind Turbines" (2003) by Henry Seifert et. al. from DeutschesWindenergie-InstitutGmbH in Cuxhaven, Germany (attached as **Appendix 24**.)

The Seifert study on wind turbine icing have identified a safety threshold of 200 to 250 meters (660 to 820 feet), beyond which there is no significant risk from falling ice fragments (risk equivalent to being hit by lighting). The Seifert study also calculated wind turbine risks based on a sample turbine location, concluding that if 15,000 people walked by the study turbine each year there would be one accident every 300 years.

It is widely recognized that risks of ice throw or ice fall can be mitigated by siting turbines a safe distance from structures, roads, or public areas (660 to 820 feet). The Project has worked to ensure that turbines are sited in such insulated and remote areas. While the Project is on privately-owned land with limited public access, to ensure the safety of authorized or unauthorized users of the site the Project will post warning signs at visible locations within appropriate distances from turbines. The Project will also work to ensure public awareness of icing and safety issues through dissemination and positing of information in the community.

Technological advancements as well as operational practices can also mitigate ice throw. When ice forms on blades, it produces an imbalance on the blades which is instantly detected by the turbine's continuous monitoring system. If the turbine does not perform according to normal operational requirements, it is programmed to automatically operate under a "safe mode" as well as alert operators that can implement safety measures.

If icing does occur on turbine blades, accumulated snow and ice drops occur at the very bottom of the blade position, and therefore any shedding would occur by the base of the turbine, rather than through a long-distance "throw" of ice. A "throw" would require that the ice be projected from the very tip of one of the blades when running at high rotational speed; but the turbine's safety system would prevent this by foreseeing the unbalance in the weights and adjusting accordingly. With higher wind speeds, the imbalance would only be accentuated and the system would adjust. Also, if heavy weights of ice are present, turbines would not be able to operate, much less project large pieces of ice for hundreds of feet.

The most likely safety risk is for maintenance personnel, who could be impacted if at the base of the turbines when shedding occurs. Operation and maintenance require training of personnel to deal with extreme weather events, restrict access to turbines by personnel dusting icing conditions, and require personnel to wear protective equipment such as helmets, gloves, and steel-toe boots.

b. Lightning strikes

Background & Impacts: Due to their height and metal/carbon components, wind turbines can be susceptible to lightning strikes. Most lightning strikes hit the rotor, and their effect is highly variable, ranging from minor surface damage to blade failure. Lightning protection systems were first added to rotor blades in the mid 1990's, and are now a standard component of modern turbines that generally prevent catastrophic blade failure. Questions have been raised about the effect of lightning strike on the proposed wind turbines at Lempster, based on past reports of lightning damage to wind turbines and concerns about potential safety risks associated with lightning strikes.

Study & Mitigation: The Gamesa G87 turbines proposed for Lempster are equipped with state-of-the-art "total lightning protection" system, according to the International Electrotechnical Commission (IEC) 1024-1 standard. This system conducts the lightning from both sides of the blade tip down to the root joint and from there to the nacelle, tower and earthing system. Therefore, blade failure is protected and electrical component damage is avoided. The turbines' blade monitoring system provides documentation of all critical lightning events. If a problem is detected, the turbine will shut down automatically, or at a minimum, be inspected to assure that damage has not occurred.

The siting of the turbines in remote and insulated areas will also mitigate the potential safety impacts related to lightning damage to the wind turbines.

c. Tower Collapse/Blade Throw

Another potential public safety concern is the possibility of a wind turbine tower collapsing or a rotor blade dropping or being thrown from the nacelle. These are extremely rare occurrences, but such incidents do occur (a tower collapse at the Weatherford Wind Power Project in Oklahoma occurred in May 2005), and are potentially dangerous for Project personnel, as well as the general public. The reasons for a turbine collapse or blade throw vary depending on conditions and tower type. Past occurrences of these incidents have generally been the result of design defects during manufacturing, poor maintenance, wind gusts that exceed the maximum design load of the engineered turbine structure, or lightning strikes. (See **Appendix 39 AWEA Appendix**, *Wind Energy Facts vs. Myths*)

Study & Mitigation: Most instances of blade throw and turbine collapse were reported during the early years of the wind industry. Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have largely eliminated such occurrences. Modern wind turbines are safely operating worldwide near schools, in urban settings and densely populated areas, and in rural communities.

State of the art braking systems, pitch controls, sensors, and speed controls on wind turbines have greatly reduced the risk of tower collapse and blade throw. The Gamesa G87 wind turbines proposed on the Lempster Project automatically shut down at wind speeds over 56 mph, and they also cease operation if significant vibrations or rotor blade stress is sensed by the turbines' blade monitoring system. These technological factors mitigate the minimal risk of catastrophic tower collapse or blade failure.

Siting of the Project's turbines away from roads, public places, residences and property lines equivalent to the maximum turbine height (i.e., base of tower to tip blade), will mitigate risks to public safety. Adequate public notice, warnings and public education efforts will be used to discourage unauthorized access to wind turbine areas.

d. Stray Voltage

Background & Impact: Stray voltage is a low level of electrical current that can occur between two points on a grounded electrical system, and is a concern usually raised by livestock farmers. Stray voltage can occur from a damaged or poorly connected wiring system, corrosion on either end of the wires, or weak/damaged wire insulation materials.

Study & Mitigation: Stray voltage is largely preventable with proper electrical installation and grounding practices. The Project's power collection system will be properly grounded and will not be connected to the local electrical distribution lines that provide electrical service to local homes or buildings. It will be physically and electrically isolated from all of the buildings in and adjacent to the Project area. Additionally, the Project's electrical collection lines will be located approximately four feet below ground, and will use shielded cables with multiple ground points. This design eliminates the potential for stray voltage. The electrical facilities will be located on private land, and will be adequately noticed by signs, warnings and public education efforts to limit unauthorized access to these areas.

e. Fire

Background & Impact: Although wind turbines contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) does create the potential for fire or a medical emergency within the tower or the nacelle. This, in combination with the elevated location of the nacelle and the enclosed space of the tower interior makes response to a fire or other emergency difficult, and beyond the capabilities of most local fire departments and emergency service providers. However, fires associated with wind turbines are extremely rare and because of setbacks requirements do not pose an immediate danger to the public.

Study & Mitigation: Project electrical equipment will be inspected by PSNH (for grid and system safety) prior to being brought on line. The turbines will also contain built-in fire safety systems to minimize the chance of fire occurring in the turbines or electrical stations. Potential causes of fire such as lighting strikes, short circuits or mechanical failure/malfunction would be sensed by the Project's control center in Lempster, and turbines would automatically shut down and maintenance personnel would respond as appropriate.

Since the public typically does not have access to the private land on which the turbines are located, risk to public safety during a fire event would be minimal.

Generally, any emergency/fire situations at a wind turbine site or substation that are beyond the capabilities of the local service providers will be the responsibility of the project owner/operator. Fire or emergency incidents would generally not expose local emergency

service providers or the general public to any public health or safety risk beyond those normally associated with such incidents.

A Fire Protection and Emergency Response Plan will be prepared for the Project, and will include training for personnel, regular inspection of turbine components with fire risk, and installation and maintenance of fire safety systems and equipment. Development and implementation of this plan will assure that project construction and operation will not have a significant adverse impact on public safety, or the personnel and equipment of local emergency service providers.

f. Aviation Safety Risks

Background & Impacts: In order to prevent risks to aviation, the Federal Aviation Administration requires the lighting of wind turbines. New FAA guidelines do not require daytime lighting, and allow nighttime lighting of perimeter turbines only, at a maximum spacing of 0.5 mile. (Federal Aviation Administration, 2005. *Development of Obstruction Lighting Standards forWind Turbine Farms*. DOT/FAA/AR-TN 05/50. U.S. Department of Transportation, Washington, D.C.)

Wind turbine lighting has also been raised as a potential aesthetic or visual impact, and is addressed in subsection (7) a., below.

Study & Mitigation: The Project applied for "determination of no hazard to air navigation" rulings from the FAA for all 12 proposed wind turbine structures, and the FAA performed an aeronautical study and determined "that the structure does not exceed obstruction standards and would not be a hazard to air navigation." See an example of an FAA Determination of No Hazard letter for one project turbine, attached as **Appendix 25**. As a condition to the FAA's approval, the Project must comply with FAA lighting standards, such as (FAA Advisory Circular 70/7460-1 K, *Obstruction Marking and Lighting*).

Wind turbine lighting will be kept to the minimum allowable by the FAA. Medium or low intensity pulsing red lights will be used at night, rather than white or red strobes, or steady burning red lights. The Project is in the process of seeking clarification from the FAA that only perimeter lighting of turbines every 0.5 mile is required, and not lighting of every turbine structure.

For additional information on the wind industry's efforts to address wind turbine lighting issues with the FAA and other stakeholders, please see the **Appendix 39, AWEA Appendix**, *Wind Turbine Lighting.*

(7) Other (aesthetics, historic sites, public health, safety, etc.)

a. Aesthetics

1. Visual Impacts

Background & Impacts: The proposed Project is located on the Lempster Mountain ridgeline and will be visible from a number of locations in the local and regional area. No environmental, health, or safety impacts will occur related to the visual impacts of the Project, but the prospect of seeing wind turbines in a previously un-developed area has created aesthetic concerns by members of the community.

Study & Mitigation:

The Project is working on an ongoing basis to provide visual impact information to the community, through photo-simulations from local vantage points, survey of viewshed impacts from historic places, provision of actual photographs from similar wind projects in operation, tours of wind farms in operation, and other visual impact assessments.

Photographs from construction and operation of Community Energy's Bear Creek (PA) Wind Farm, which is in the Pocono Mountains and uses the same number and type of turbines as planned for the Lempster site, have been provided in public meetings, as well as on the Community Energy/Lempster Wind website (www.lempsterwind.com), and are included in this application as **Appendix 26**.

Photo-simulations produced in 2005 and exhibited at a number of public meetings and on the Community Energy/Lempster Wind website (www.lempsterwind.com) are attached as **Appendix 27**.

In conjunction with public meetings associated with the Project's SEC application (date to be determined by the SEC), the Project will conduct a "photo-simulation tour" in Lempster, with simulated images of the wind turbines posted at the actual vantage points from the photographs, allowing a "before and after" comparison by members of the community and decision makers. Locations for simulations will be representative views of the Project from various distances and directions, and times of day. Suggestions for simulation locations will be solicited from the community and decision makers as part of public meetings on local issues and agreements, expected to occur in August and

September of 2006. Information on these locations and copies of the photo-simulations produced will be provided to the SEC as an addendum to this application when available.

The Project has also planned to conduct a bus tour to the Community Energy wind farm at Bear Creek, PA as a "see it for yourself" opportunity for members of the community, planned for September 2006 prior to SEC public meetings or hearings. Notice will be provided by postings in town, mailings to residents and/or local media outlets.

Visual impacts will be avoided, minimized, and mitigated to the greatest extent possible through careful site planning and project layout, as well as a comprehensive site restoration process following completion of construction.

The Project has worked to limit aesthetic impacts by ensuring that siting of wind turbines, roads and facilities are located on the most rural, insulated portion of the site lands, away from residences, businesses, and public roads or places. The proposed project layout was developed so as to minimize the need for tree clearing and new road construction by utilizing existing logging roads and open areas. Where clearing of undisturbed forest is unavoidable, cleared sites are not easily accessible from public roads and are not near residences, so impacts from close proximity are limited.

Following completion of construction, site restoration activities will occur. These will include removal of any temporary road stabilization material from project access roads and stabilizing/revegetating all disturbed sites through seeding and mulching. These actions will assure that, as much as possible, the site is returned to its preconstruction condition and that long-term visual impacts are minimized.

In terms of appearance, all turbines will have uniform design, speed, height and rotor diameter. Towers will include no exterior ladders or catwalks, and there will be no placement of any advertising devices on the turbines.

The Project is also evaluating with the Town the potential of creating a parking/viewing location, with an informational kiosk, to provide an appropriate viewing point for the Project as well as enhance public understanding and appreciation of the Project.

2. Shadow Flicker

Background & Impacts: Shadow flicker is the alternating change in light intensity or shadows created by the moving turbine blades when back-lit by the sun. These flickering shadows can cause an annoyance when cast on nearby buildings or residences. However, due to the turbines' low blade pass frequency, shadow flicker is not anticipated to have any adverse health effects (e.g., trigger epileptic seizures). Although setback distances for turbines (1,000 feet from permanent residences) will significantly reduce shadow flicker impacts to potential receptors, some limited impact may occur.

Study & Mitigation: The Project has performed an analysis of potential shadow flicker impacts, using data on proposed locations and turbine specifications, wind speed and directional data, and data on sunrise/sunset and weather factors in the Lempster area to indicate the area and extent of potential impacts. (Attached as **Appendix 28**.)

The analysis concludes that the Project will comply with accepted norms for shadow flicker, which suggest that impacts remain below 30 hours per year.

All the areas that would experience 30 hours or more of shadow flicker impact are located in the vicinity of the wind turbines and on the associated ridge – remote from buildings or residences. A few areas containing residences to the west of Project turbines at the south end of the site (Guilford Lane, Nichols Road, Maplewood Road, Fifield Drive, Sugarhouse Drive) are not projected to receive more than 10-20 hours per year of impact. Some key locations studied (Goshen-Lempster School, Lempster Town Hall, Pillsbury State Park, Long Pond) are shown to experience much less than 10 hours of impact per year.

For areas receiving these minimal impacts, site-specific factors such as terrain, trees, other buildings, and window location would further reduce impacts from shadow flicker.

3. Wind Turbine Safety Lighting

Background & Impacts: A few residents in the community have raised concerns about the nuisance of safety lighting on wind turbines, related to the flashing or "strobing" effect of safety lights at night on residences.

Study & Mitigation: Wind turbine lighting will be kept to the minimum allowable by the FAA for safety purposes. Medium or low intensity pulsing red lights will be used at night, rather than white or red strobes, or steady burning red lights. The Project is in the process of seeking clarification from the FAA based in its regulations that only perimeter lighting of turbines every 0.5 mile is required, and not lighting of every turbine structure. By minimizing the number of lights required for safety purposes, the Project will mitigate potential impacts from flashing lights.

Siting of the Project's turbines far away from public places, residences and property lines equivalent to the maximum turbine height (i.e., base of tower to tip blade), will also mitigate impacts of lighting. The lighting is designed to be visible for aircraft, and its intensity will be lower at ground level, and will also decrease with distance from the Project. The potential for turbine safety lights to illuminate residences to a level of nuisance is very low, given the distance of turbines from residential areas.

For additional information on the wind industry's efforts to address wind turbine lighting issues with the FAA and other stakeholders, please see the **Appendix 39, AWEA Appendix**, *Wind Turbine Lighting.*

b. Historic and Cultural Resources

Background & Impacts: The Project's impacts on historic and cultural resources may include both the impacts from construction and placement of roads and facilities near sites of archaeological significance, and visual impacts from places or structures of historical significance. The Project has investigated the presence of historic resources in Lempster and the area through research with the Lempster Historical Society and the New Hampshire Division of Historical Resources (NH DHR). Based on its records, NH DHR indicated no known presence of cultural sites on Lempster Mountain that will be affected by the Project. There is one site in Lempster currently listed on the National Register of Historic Places – the Lempster Meetinghouse, on Lempster Street in Lempster (2.8 miles away from the Project) – as well as one site that will be listed in the future – the Lempster Miner Memorial Library on Route 10 in East Lempster (1 mile from the Project). There are also several historic sites within 3-5 miles of the Project area, including the Washington Common Historic District in Washington, NH, and the Captain John Gunnison House in Goshen, NH.

Survey and Mitigation: Under a memorandum of understanding with the NH DHR, the Project is currently conducting an archaeological survey of all areas of potential disturbance on the proposed site, to search for sites of cultural or historical significance. The Project will also collaborate with historical and cultural groups in the area to assist in the survey. If potential impacts are found on the site, additional ground testing and analysis will be done to determine the significance of the location, and a plan for mitigation or avoidance of impact will be developed.

Under the NH DHR agreement, the Project will also conduct a historic viewshed impact survey to document Project visibility from existing and potential historic sites within a 3-mile radius of the Project. The search for properties within the 3-mile radius will be guided by GIS mapping to determine the "worst case" visibility of turbines (any portion of turbine visible without regard to vegetation cover). The viewshed survey will result in a comprehensive list of potentially affected locations that can be provided to NH DHR and the community, as well as the production of visual simulations to document potential impacts from several areas in Lempster and surrounding towns.

The memorandum of understanding with NH DHR, as well as the 3-mile radius GIS viewshed "worst case" map is included as **Appendix 29**. The final results of the historic and cultural surveys will be provided to the Committee and NH DHR when completed.

c. Plant Life

Background & Impacts: With the construction of new roads and wind turbine locations, the Project will have potential impact on plant life on the proposed site, particularly if rare or significant plant species are present at the site.

Study & Mitigation: The Project consulted with the Department of Resources and Economic Development, Natural Heritage Bureau (NHB), and no exemplary natural communities were identified by the NHB in its review of state databases and files. In collaboration with the NHB, the Project is currently conducting a plant survey to document site specific findings and assess potential impacts, if any. Based on the characteristics and location of the site, it is not expected that rare or significant plant species will be found. Results of the plant survey when completed (report expected August-September 2006) will be provided to the Committee as an addendum to this application.

In terms of impact on plant life removed due to clearing and construction of new roads and facilities, the Project will work to mitigate removal of plant life by re-vegetation of construction areas to the greatest extent

possible, with non-invasive species that are consistent with the character of the site. Plans submitted along with the Site Specific Permit Application also call for seeding and re-vegetation as one of the final phases of the construction sequence.

d. Tree Clearing

Background & Impacts: The proposed Project site is located in mixed forest, and is primarily on land that has been previously used for timber operations, agriculture or recreation, and contains a number of logging roads and cleared locations. The site is mostly northern forest, with some boreal elements. Trees are a mixture of deciduous hardwoods mixed with some conifer, with fairly large patches of red spruce. The tops of hills are either, mixed hardwood and conifer, continuous red spruce, or balds, and there are clearings throughout the site. Many of the trees on site are newer re-growth since prior timber or agriculture activities. The land under lease by the Project consists of parcels greater than 1,500 acres, of which only approximately 35-40 acres will be utilized for Project roads and turbine locations.

Study & Mitigation: Any alteration of terrain at the site will be covered by the "Site Specific" permit application was filed with the Department of Environmental Services on April 14, 2006 and is currently under review (attached as **Appendix 9**). As required under the Site Specific permit, tree clearing required by the Project will be documented in the "Notice of Intent to Cut" forms that are submitted to the Town before the commencement of work.

The Project has worked to minimize the extent of tree clearing and cutting needed for Project access, using only approximately 1.5% of the land under lease. After construction, trees and other plant life will be allowed to re-grow in areas cleared for large construction equipment, to a normal 18-foot access road width.

e. Wildlife

Due to its rural, remote location in mountainous and forested terrain, the Lempster Project site is home to a number of species of wildlife and is also used by migrating species. In general terms, impacts on wildlife are generally partitioned into two categories: "direct effects" which include the chance that wildlife (mainly birds and bats) that live near or migrate through a wind power project site will collide with turbine blades, nacelles, or the towers, or the potential that wildlife will be harmed by the presence of construction vehicles or activities; or "indirect effects" which include the chance that that wildlife will avoid visiting or nesting in land that supports wind turbines, due to the presence of new structures, motion

or sound from turbine operation, or from habitat fragmentation or loss due to clearing and excavation for access roads and turbine locations.

Wildlife including various species of birds, bats, mammals and aquatic life are potentially present throughout the site, and their presence has been documented and will continue to be documented by a number of wildlife surveys, discussed below. Of particular concern are endangered or threatened species that may use or reside at the site. No endangered or threatened species have been identified by NH Fish and Game or the US Fish and Wildlife Service as present in the area, but concerns have been raised that more survey and analysis is needed at the specific site to document use by various species and assess potential risks.

Overall, it is important to recognize that in comparison to other energy sources that could be built to meet energy demands, wind power's impact on wildlife is minimal. The list of environmental and wildlife impacts of other energy sources is long and varied, including:

- Habitat impacts from mining (coal, uranium), drilling (natural gas, oil), and compressing fuel (natural gas). Some of these effects are local, while others can extend over fairly broad areas.
- Habitat impacts from air and water pollution: acid rain, smog, mercury, drilling wastewater disposal (fossil fuels).
- Habitat impacts from global warming (fossil fuels). Significant changes in some species' ranges are already occurring, particularly in northern latitudes.
- Habitat impacts from thermal pollution of water (nuclear and fossil power plants).
- Habitat impacts from flooding of land and streamflow changes (hydropower).
- Habitat impacts from waste disposal (coal). The American Bird Conservancy estimates that mountaintop mining/valley fill operations in West Virginia, Tennessee, Kentucky, and Virginia will lead to a massive and permanent impact on mature forest birds including the loss of tens of thousands of breeding Cerulean Warblers and other forest birds in the next decade.

While wind plants and their construction definitely have local impacts, the use of wind energy largely avoids these more far-reaching effects. (See attached **Appendix 39 AWEA Appendix**: *Wind Energy and Wildlife: Frequently Asked Questions*, and *Save the Loon with Wind Energy: Comparative Impacts of Wind and Other Energy Source on Wildlife.*

1. Birds

Background & Impacts: The Project has the potential to have both direct and indirect effects, as described above, on a number of avian species that are resident at or migrating through the proposed site. The Project has conducted a number of surveys to document avian species at the site that could be impacted by the Project.

The Project's "*Phase I Avian Risk Assessment*" (attached as **Appendix 30**), and "*Pre and Post-construction Avian Survey, Monitoring, and Mitigation at the Lempster, New Hampshire Wind Power Project*" (attached as **Appendix 31**.) provide a comprehensive discussion of the potential habitats that support various species of nesting birds, the suitability of the site for endangered and threatened species, and potential for migration use by raptors and night migrating birds.

In general, issues related to wind power facility impacts on birds have been addressed by comprehensive analyses that the wind industry has undertaken over the last 2 decades, by technological improvements like rotation speeds, tower designs and by proper siting practices. The wind industry record is very positive in this area; bird deaths are extremely low when compared to most other man-made and natural causes.

Based on decades of research, a conservative estimate is that of every 10,000 human-related bird deaths in the U.S. today, wind plants cause less than one. Leading human-related causes of bird kills, in the U.S. alone, include:

- cats (1 billion per year)
- buildings (100 million to 1 billion per year)
- hunters (100 million per year)
- vehicles (60 million to 80 million per year)
- communications towers (10 million to 40 million per year)
- pesticides (67 million per year)
- power lines (10,000 to 174 million per year)

And as discussed above and in AWEA literature, in comparison to the impacts on avian species from fossil fuel energy sources, wind energy has far lesser impact than these alternatives.

Study & Mitigation: At early stages in the planning phase, the Project contacted NH Fish and Game and the US Fish and Wildlife Service to learn about documented occurrences of endangered or threatened species in the area. The agencies

reported no known occurrence of endangered or threatened species, but raised several concerns about the possibility of avian species that may be present at the site. (Letters are included as part of Phase I Avian Study, **Appendix 30**.)

In response to concerns, the Project has voluntarily undertaken surveys and analyses of bird impacts since fall of 2004, with additional surveys continuing throughout 2006 and 2007. Specific survey and analysis conducted to date at the Lempster site includes:

- a Phase I Avian Study conducted in the fall of 2004 to determine site characteristics and the need to address specific issues;
- Breeding bird survey and migratory bird "point count" to analyze bird habitat and activity at the site, spring/summer 2005, and ongoing monitoring until construction;
- Raptor migration survey during migration periods in the fall of 2005 and spring of 2006; and
- Radar survey for migratory birds, scheduled for fall 2006 and spring 2007 migration periods.

The U.S. Fish and Wildlife Service has requested that the Project be reviewed under the US Army Corps of Engineers individual wetlands permitting process due to the Project's potentially significant impact on habitat for migratory birds and other endangered species. The Project will continue to provide the US Fish & Wildlife Service and NH Fish & Game with information about the Project's design, results of wildlife surveys, and analysis about potential habitat impacts to address such concerns and collaborate in the permitting process.

To mitigate for wildlife displacement related to temporary construction impacts, construction activities and sequencing will be examined to try to avoid disturbing bird habitat or identified nesting sites until the young have fledged. In addition, all temporarily disturbed areas will be restored following construction activities to allow reestablishment of wildlife habitat. Permanent habitat loss and fragmentation will be mitigated through careful site design (i.e., avoiding wetlands and large areas of mature forest, and minimizing the permanent footprint of Project components to the extent practicable) and restoration of all temporarily disturbed areas. Additional measures for sustainable design of the Project are discussed in the white paper: *Pre and Post-construction Avian Survey, Monitoring, and Mitigation at the Lempster, New Hampshire Wind Power Project* (Avian and Bat Survey), **Appendix 31.**

The turbines themselves will be placed much further apart than in older wind farms where greater avian mortality has been documented, such as northern California. The towers will be mounted on tubular towers (rather than lattice), which prevents perching by birds. In accordance with recommendations included in the Phase I Avian Risk Assessment, electrical lines between the turbines will be buried. It has also been recommended that any permanent meteorological towers be freestanding and unguyed, and that lighting of the turbines (and other infrastructure) follow specific design guidelines, such as using flashing lights with the longest permissible off cycle. The Project has committed to follow all of these recommendations to decrease the risk of avian and bat mortality.

Despite the fact that significant impacts to birds and bats are not anticipated, a post-construction avian and bat fatality monitoring program will be implemented. The purpose of the on-site, post-construction monitoring program will be to determine if avian and/or bat collision fatalities are occurring as a result of project operation, and if so, the rate of mortality. This data can then be correlated with pre-construction data, and ultimately this information can help to develop models that will more precisely predict the impact of future wind power projects. The protocols and study design will follow established/accepted procedures for monitoring collision mortality at wind power facilities and other tall structures. These methods include searches under turbines, coupled with analysis of carcass removal rates (scavenging) and searcher efficiency rates.

2. Bats

Background & Impacts: The Project has the potential to have both direct and indirect effects on bat species that may be resident at or migrating through the proposed site. The Project has conducted surveys to document bat species at the site that could be impacted by the Project. The Avian and Bat Survey paper, **Appendix 31**, provides a more detailed discussion of potential bat impacts at the site as well as initial results of ongoing "Anabat" acoustical surveys.

In general, the impact of wind turbines on bat communities is a relatively new area of inquiry and research, with interest peaked by a few isolated collision incidents. The wind industry is working with the governmental and environmental community to study the reasons for these unique bat-related events, conduct

proper studies related to turbine siting, and plan for future mitigation.

Study & Mitigation: At the Lempster site, no endangered or threatened species of bats were identified as present by NH Fish and Game or US Fish and Wildlife Service. Voluntary studies undertaken to examine bat issues include the use of "Anabat," an acoustical sensor technology to detect bats, conducted in the Fall of 2005, Spring 2006 and planned for the Summer/Fall 2006. Also, a direct examination of an on-site pond area identified by USFWS and NH Fish and Game will be conducted in the Summer/Fall of 2006.

Mitigation measures for bat impacts will be integrated with avian risk mitigation measures, as discussed in the Birds subsection above and in the Avian and Bat Survey paper.

3. Other wildlife

Background & Impacts: Other wildlife using the Project site that may be potentially impacted by construction or operation include mammals (other than bats) and aquatic species. The Project is currently conducting a survey to determine the presence of mammals and aquatic species at the site (Summer 2006). Large or non-seasonal surface water bodies at the site are limited, so the survey will focus predominantly on mammals, and aquatic species that could be present in the types of water bodies found on the site. It is expected that species found at the site will include mainly those that are common and widely distributed throughout New Hampshire and the region.

Temporary impacts to wildlife are anticipated to be limited to incidental injury and mortality due to construction activity and vehicular movement, construction-related silt and sedimentation impacts on aquatic organisms, dredge and fill of wetlands, one stream crossing disturbance (underground cable conduit only), habitat disturbance associated with clearing and earth moving activities, and displacement due to increased noise and human activities. Long term operational impacts could include minor habitat loss or fragmentation in forested areas, or displacement due to the presence of the wind turbines. A total of approximately 35-40 acres of wildlife habitat will be permanently lost from the Project area (i.e., converted to built facilities).

Study & Mitigation: Based on concerns raised in discussions with NH Fish and Game and U.S. Fish and Wildlife Service, the

Project is currently conducting a survey to document wildlife habitat at the site, document wildlife use of the site including specific mammals and stream life, and perform analysis of potential impacts. Results of the wildlife survey when completed (report expected August-September 2006) will be provided to the Committee as an addendum to this application.

Mitigation of impacts related to construction activity will be accomplished through careful site design (e.g., utilizing existing roads, avoiding sensitive habitat, and minimizing disturbance to the extent practicable). In addition, the contractor will assure that all work remains within the designated construction limits and does not encroach upon off-limit sensitive areas.

To avoid and minimize impacts to aquatic resources resulting from construction-related siltation and sedimentation, an approved sediment and erosion control plan and Storm Water Pollution Prevention Plan (SWPPP) will be implemented (see **Appendix 10**, discussed above). Proper implementation of these plans will assure compliance with New Hampshire DES and US EPA National Pollutant Discharge Elimination System (NPDES) regulations and state water quality standards.

Mitigation for impacts related to permanent habitat loss and fragmentation will be accomplished through careful site design (i.e., avoiding wetlands and minimizing the permanent footprint of Project components to the extent practicable) and restoration of all temporarily disturbed areas.

(f) Impacts on local land use, economy, and employment;

(1) Land use

The Project area in the Town of Lempster and surrounding Sullivan County has a rural, low-density character. Forestland and single-family rural residences are the dominant land uses. Commercial uses of land in Lempster include timber operations, greenhouses, single-family home developments, gravel and sand pits, and a motorcycle racing track. Two communications towers are sited on the Lempster Mountain ridgeline, located to the south of the Project site – a 350-foot tall, lattice-style microwave tower and a 400-foot guy-wired cellular phone tower – both containing safety lighting.

The Town of Lempster currently has no zoning or land use ordinances. The Town does have a Planning Board that has functions to approve subdivisions of property and other basic responsibilities. The Lempster Planning Board has

worked to develop a draft "Master Plan" for the Town, which includes preferred zones for development, as well as a statement in support of ridgeline protection.

The land comprising the site will be leased from private landowners, and totals approximately 35-40 acres out of the more than 1,500 acres comprising the total land holdings of these individuals. A large percentage of the land that will be leased is currently classified as "current use" for taxation purposes, due to its rural nature and limited uses. The lands surrounding the Project have been used mainly for timber operations, agriculture or recreation.

The land under lease for the Project is not under conservation or land otherwise not subject to development – according to at least one landowner, it is land that would otherwise be used for other purposes such as logging or housing development.

During Project operation, additional impacts on land use should be infrequent and minimal. Other than occasional maintenance and repair activities, the Project should not interfere with on-going land use (e.g., timber, agriculture, authorized recreation). By supplementing the income of participating landowners, the Project will help avoid subdivision or sale of the land, as well as limit the conversion of land to uses such as housing development.

a. Project Decommissioning

Modern wind turbine generators typically have a life expectancy of 20 to 25 years. The current trend in the wind energy industry has been to replace or "re-power" older wind energy projects by upgrading older equipment with more efficient turbines. A good portion of a project's value is in its proven wind resource, land agreements, and in-place infrastructure. Therefore, it is likely that after mechanical wear takes its toll, the Project would be upgraded with more efficient equipment. However, if not upgraded, the turbines will be decommissioned. Decommissioning of the wind power facility is essentially the reverse of the installation process.

A decommissioning plan that details the process, estimated cost, salvage value, and site restoration will be put in place with the Town prior to Project operation. All decommissioning and restoration activities will be in accordance with all applicable federal, state, and local permits and requirements. Likely elements of a decommissioning plan include: turbine removal and disassembly into salvageable, recyclable, or disposable components; turbine foundation removal and restoration of land; removal of underground cables, collection system components, and metering point equipment, and a monitoring and remediation plan for the period after decommissioning.

(2) Economy

The State of New Hampshire's economic data for the Town of Lempster is available in **Appendix 32** attached, and in the Town of Lempster Annual Town and School Report. As a few key economic data points include:

- Population around 1,044 (2003 Census estimate), and 601 total housing units.
- Town budget 2005 of $858,641, proposed a budget of $1,230,187 for 2006.
- 2005 total income of $2,392,467.62 and disbursements of $2,365,729.23
- 2005 tax rate of $22.54 per $1,000 of value (town $5.67, school $14.30, county $2.57)
- 2005 total inventory of tax valuation of $77,206,952
- Annual per capita income of $19,172 and median 4-person family income of $45,385
- Largest employers include Jolly Roger Moto-Sports Park (seasonal), 15; Onnela Lumber Company, sawmill, 7.
- Other industries present include sand and gravel pits, greenhouses, auto repair & tool shops.

The proposed Lempster Wind Project represents a unique economic development opportunity for the Town of Lempster. The Project will provide significant property tax revenues but will not burden the local economy – with only 3 or 4 full time employees, a burden will not be placed on local schools, and with all facilities located on private property, no Town services are expected to support the Project. As a clean energy facility, the Project will not impose environmental or heath impacts that carry costs to the town, region or state.

a. Landowner payments

Local landowners will receive land lease payments and will be able to continue existing uses of the majority of their land, including timber operations, agriculture, conservation, hunting or recreation. Lempster landowners that will lease land to the Project have land parcels containing over 1,500 acres, but just 35-40 acres will be used for the Project – representing a use of 2.5% or less of their land. Leases with Lempster landowners are confidential and private contracts, but the American Wind Energy Association estimates that the average payment to landowners is between $2,500 and $5,000 per turbine per year.

b. Tax Revenues

The Project will generate substantial revenues for the Town of Lempster in the form of local property taxes. Discussions with the Town on tax valuation and payment are ongoing, but are expected to yield annual

payments equivalent to a significant portion of the Town's annual budget.

In addition to local taxes, the Project will generate state tax revenues in the form of the state utility property tax (charged at the rate of $6.60 per $1,000 of valuation of the facility) which funds education statewide. Discussions with New Hampshire Department of Revenue Administration are ongoing about Project valuation for purposes of the Utility Property Tax.

c. Local Jobs and Services

The construction phase of the Project will provide approximately 150 jobs, with some lasting 2 to 3 months and some lasting 6 to 9 months. It is expected that 3 or 4 longer term, full-time jobs will be created relating to project operation and maintenance. Raw materials and services for the construction of the Project will be purchased locally to the extent possible.

d. Long term economic development

Wind power development has vast economic potential for New Hampshire and the U.S. The American Wind Energy Association estimates that more than 2,400 MW of new wind energy capacity was installed in 2005, resulting in $3 billion in investment and an estimated 10,000 new job-years nationwide (10,000 one-year jobs or 1,000 long-term, ten-year jobs).

One large (108-turbine, 162-MW) project in rural Prowers County, Colorado, increased the county's tax base by 29%, adding annual payments of about $917,000 to the general school fund, $203,000 to the school bond fund, $189,000 to a county medical center, and $764,000 in new county revenues, as well as 15-20 permanent and well-paying full-time jobs at the wind farm. (see **Appendix 33**, Economic Development Case Studies)

Wind energy development also presents the long-term opportunity to attract manufacturing or related businesses to the state, as seen recently in Pennsylvania where wind energy development (including a recent 24MW project developed by Community Energy) led to Spanish wind turbine producer Gamesa making an $84 million investment and creating 300 new jobs in manufacturing in the state. Information from the Pennsylvania Governor's office on wind-related economic development is included in **Appendix 33**.

New Hampshire's long history in machining and component manufacturing would be an excellent complement to the development of

wind turbine equipment or component manufacturing, if the demand for wind power becomes substantial enough in New Hampshire and New England to warrant such economic development.

e. Population and Housing

Approximately 3 to 4 full-time jobs will be created once the Project is fully operational. These can include technical operation and maintenance personnel, project managers and administrative support. These employees are expected to reside locally, which could translate into purchase of a few homes and addition of a few families to the towns and surrounding communities. Although this represents a positive economic impact, long-term employment associated with the Project is not large enough to have a significant impact on local population, schools or housing characteristics.

Owners of seasonal and year-round properties in Lempster have expressed concern about the impact of the Project on future property values, however there is no local data to support this claim. Recent studies of property values in communities with wind farms show no devaluation of property after construction of new wind farms.

In order to address this concern, a quantitative study was conducted by the Renewable Energy Policy Project (REPP) in 2003, titled *Effect of Wind Development on Local Property Values*. REPP assembled a database of real estate transactions adjacent to every wind power project in the United States (10 MW or greater) that became operational between 1998 and 2001 (a total of 10 projects, including the Madison and Fenner projects in Madison County, New York). Analysis of real estate transactions for three years before and three years after wind farm construction showed no negative affect on property value from existing wind farms in the communities studies.

To present a more specific understanding of the actual effects of existing wind farms on property values and address criticisms raised about the REPP Study, a master of science thesis was prepared by Ben Hoen of Bard College in 2006 to analyzed transaction value of homes within 5 miles of the existing Fenner (NY) Wind Farm that have views significantly effected by views of the wind farm. The Hoen-Bard College study concluded that the "likelihood that property values were affected in Madison County is negligible, thereby reducing similar concerns for other communities hosting wind farms."

Copies of the REPP and Hoen-Bard College studies are attached as **Appendix 34**.

f. Tourism

Tourism is a major component of New Hampshire's economy – the Division of Travel & Tourism Development indicates that travel and tourism is New Hampshire's second largest industry in terms of jobs and attracting dollars from out of state. The impact of wind power development on tourism has been raised as a concern, particularly since a large percentage of New Hampshire's tourism is related to its natural and scenic resources.

The Lempster Project site is located in an area that contains state parks and scenic areas, including Pillsbury State Park (1 mile to the east in Washington, NH) and Mount Sunapee (5-6 miles to the northeast). Tourist attractions or destinations in Lempster include a motorcycle racing park, private campgrounds, snowmobile trails, and areas for hunting and fishing. Lempster does not have any hotels/motels or inns, and has one food service establishment, at the Town's general store. The Project site is on private land which has been used in the past for recreation such as hunting or snowmobiling at the permission of landowners, primarily by local residents and not tourists.

Views of the Lempster Mountain ridgeline from various locations in the area will be subject to visual impacts from the placement of turbines at high elevations. Visual impacts are discussed in more detail section (e)(7) above. Noise, as discussed in section (e)(3) above and related analysis, is not anticipated to be present at distances outside 500-1,000 feet from the Project site and will not be an issue for state parks in the area, including Pillsbury State Park.

The Project is not anticipated to have a negative impact on tourism in the area, and could provide tourism benefits to the Town itself. There is no evidence to indicate that the presence of wind turbines will have a negative impact on tourism. Based on information from other areas that are home to wind power projects, negative impacts on tourism have not been found – in fact projects have resulted in a significant increase in visitation from tourists interested in the projects.

At the wind power installation closest to Lempster located at Searsburg, Vermont, Searsburg officials say they've had to build a parking lot for visitors due to the tourist draw. This is also evident in the resort community of Palm Springs, California, where there are over 3,500 wind turbines. Tours of this wind farm regularly draw 10,000 to 12,000 curious tourists every year.
http://www.capecodonline.com/special/windfarm/windmountain12.htm

At one of Community Energy's newest wind power facilities in Atlantic City, New Jersey, the wind project is highlighted as an attraction in the resort city, characterized by *Atlantic City Weekly* as "a definite tourist attraction." http://www.acweekly.com/view.php?id=3731
The Atlantic County Utility Authority (ACUA), host to the wind project, anticipates the project will have major tourism value:

> "Clearly visible from the Atlantic City Expressway and the White Horse Pike, the towers will be seen by the 35 million visitors a year flocking to Atlantic City's casinos and beaches. According to Paul Gallagher, vice president of the ACUA, the Atlantic City wind farm may become 'One of the most photographed and discussed wind turbines in the country, maybe the world.' Gallagher feels that the proximity of the wind farm to major roads and businesses will impress and educate the public's perception of alternative energy. Based on how many visitors a year currently visit the ACUA environmental park in Egg Harbor Township, the ACUA anticipates even "bigger" interest in the wind farm.
>
> To educate the public, the ACUA hopes to establish a user-friendly control room at the wind farm offering a number of video displays for visitors. In addition, an observation area at the front gate, a scenic overlook, and informational kiosks are also part of future tourist attraction plans. Authority officials are also hoping a pedestrian boardwalk that will run behind the Borgata Hotel Casino & Spa will offer a beautiful view of the wind farm."

In New York state, both the Fenner Wind Power Project and Madison Wind Power Project are listed as attractions on the Madison County Tourism website. www.madisontourism.com

In Prince Edward Island, Canada, a wind power project is prominently featured as the main attraction in the North Cape region on the government's visitor's guide
http://www.gov.pe.ca/photos/original/tou_nccd06.pdf

A 2002 study conducted in the Argyll Region of Scotland, involving interviews with over 300 tourists, found that 91% said the presence of wind farms in the area would not influence their decision about whether to return to the area. Almost half (48%) of the tourists interviewed were visiting the area because of the 'beautiful scenery and views'. Of those who had actually seen wind farms, 55% indicated that their effect was "generally or completely positive", 32% were ambivalent, and 8% felt that the wind farms had a negative effect.
http://www.mori.com/polls/2002/windfarms.shtml

Similarly, a recent survey of visitors, to Vermont's Northeast Kingdom found that 95% would not be deterred from further visits by the existence of a proposed wind farm. http://www.revermont.org/press/neksurvey.pdf.

Positive effects have been reported from various wind farm locations in Australia. According to the Australian Wind Energy Association (AusWEA), initial concerns that wind turbines would negatively impact tourism in that country have proven unfounded. http://www.thewind.info/downloads/tourism.pdf.

Note: Articles or documents referenced above on tourism are attached as **Appendix 35.** The Project will work with the Town to provide appropriate promotional and educational information for tourists that maximizes the tourism and economic benefits to Lempster.

(g) Impacts during construction and mitigation plans

(1) Construction timing and process

a. Estimated Timing and Sequence

Wind project construction can take 6-12 months, depending on the size of the project and site-specific factors. Compared to other electric power generation options, the construction of a wind generating facility can be accomplished very quickly to meet energy needs and the demand for clean, emission free sources. As an example, Community Energy's Jersey Atlantic (NJ) Wind Farm went from ground breaking in May 2005 to operation in December 2005.

Project construction in Lempster is anticipated to occur in a single phase, which will begin in the spring of 2007 and be completed by December 31, 2007.

The wind farm layout and soil erosion and sediment control plan design was completed in March and April of 2006 to complete planning to avoid wetlands impacts and apply for permits with NH DES. Final construction engineering will be completed by the "balance of plant" construction contractors for the Project, which is anticipated to occur in the fall or winter of 2006. Construction engineering will include final road and staging area design, final electric collection system design, foundation design, and operation and maintenance building design.

Procurement and delivery of materials will follow design activities and will commence during early 2007. However, should approvals for the Project be delayed into 2007, turbine availability may become an issue for the Project. Transportation permits for access to public roads and

access road construction will be obtained and the work will be started in the spring when appropriate (April-May, depending on local road restrictions and site conditions).

This will be followed in the summer of 2007 by site clearing and access road construction (although some site clearing work could be performed over the winter of 2006-2007). Foundation excavation and collection system excavation, foundation pouring and curing, metering point and operations & maintenance building construction, and foundation and collection system backfilling are anticipated to occur in the summer to fall of 2007. Concurrently, and throughout April to August, foundation conduit and grounding, underground and aboveground collection system and collection and interconnection metering point equipment will be installed. Wind turbine tower, nacelle, and rotor assembly, as well as permanent meteorological tower erection will be accomplished in the late fall of 2007. Mechanical completion and turbine wiring, as well as energization will be performed through November followed by commissioning of the Project by the end of 2007.

b. Construction Process

Pre-construction activities: In the development process, wind turbine locations are selected and preliminary civil engineering is completed, including detailed road and turbine layout for wetlands and stormwater permitting. The Project has completed these activities.

Before construction commences, a site survey will be performed to mark the exact location of the wind turbines, access roads, electrical cables, collection station, and metering point areas. Geotechnical investigation will be performed to identify subsurface conditions and allow development of final design specifications for the access roads, foundations, crane pads, laydown areas, underground trenching, substation and electrical grounding systems.

The Project, with the assistance of parent/affiliate Iberdrola, will select a qualified construction contractor that will work with the turbine equipment supplier to prepare final construction specifications for the various components of the Project. The design specifications will comply with construction standards established by various industry practice groups such as: American Concrete Institute (ACI), Institute for Electrical and Electronic Engineers (IEEE), National Electric Code (NEC), National Fire Protection Agency (NFPA), and Construction Standards Institute (CSI). The Project engineering team will ensure that all aspects of the specifications, as well as the actual on-site construction, comply with all applicable federal, state, and local codes and good industry practice.

Prior to the initiation of construction, various environmental protection and control plans will be developed and shared with the Town and other relevant state agencies. These will include a construction routing plan, construction documentation package, and public safety plan/emergency response plan.

Site Preparation: A construction staging area will be developed on the Project site to create a level working yard for construction trailers and other equipment and materials needed throughout construction. Construction will be initiated by clearing trees and vegetation access from all tower sites, access roads and facility areas. On average, a 200-foot radius will be cleared around each tower, an 18 to 50 foot-wide corridor will be cleared along access roads, and a 15 foot-wide corridor will be cleared along all underground electric interconnect routes. The actual width of clearing will vary on a case-by-case basis, and will depend on factors such as vegetation and slope.

Public roadways could require tree trimming in order to accommodate the movement of oversize equipment, as delivery vehicles may be as long as 170-feet and require turning radii of up to 150 feet.

Access Road Construction: Construction of Project access roads on private, leased site areas will, wherever possible, use existing logging roads and trails to minimize clearing and excavation impacts and impacts to wetlands. Otherwise, new gravel-surfaced access roads will be constructed, with topsoil stripping and grubbing of stumps, as necessary. Stripped topsoil will be stockpiled along the outer edges of the road corridor for use in site restoration. Any grubbed stumps will be chipped/mulched or buried. Following removal of topsoil, subsoil will be graded, compacted, and surfaced with gravel or crushed stone (depth to be determined by site specific conditions). A geotextile fabric or grid will be installed beneath the road surface, if necessary, to provide additional support.

The typical access road will be 18 to 40 feet in width and with occasional wider pull-off locations to accommodate passing vehicles. Roads will be restored where needed to protect sensitive environmental and wildlife areas, with a maximum permanent road width will not exceed 18 feet, with 10 ft shoulders on either side. Appropriately sized culverts will be placed in any wetland/stream crossings in accordance with state and federal permit requirements. In other locations, culverts may also be used to assure that the roads do not impede cross drainage. Where access roads cross, or are adjacent to, wetlands, streams, or drainage ditches/swales, appropriate sediment and erosion control measures (e.g.,

silt fence) will be installed in accordance with an approved sediment and erosion control plan.

During construction, paths for large crane use could result in temporary disturbance of approximately 40 feet, with temporary road corner radii of 125 feet. Once construction is complete, temporarily disturbed areas will be restored (including removal of excess road material and removal of all temporary fill in wetland/stream areas) and returned to their pre-construction contours.

Foundation Construction: Once the roads are complete, turbine foundation construction will commence. Foundation construction occurs in several stages including hole excavation, outer form setting, rebar and bolt cage assembly, casting and finishing of the concrete, removal of the forms, backfilling and compacting, and site restoration. Excavation and foundation construction will be conducted in a manner that will minimize the size and duration of excavated areas required to install foundations.

Initial activity at each tower site will generally involve stripping and stockpiling topsoil within a 200-foot radius around each tower (2.9-acre maximum area of temporary disturbance). Following topsoil removal, backhoes will be used to excavate a foundation hole. Some bedrock may not be ripable, and will be excavated by pneumatic jacking or hydraulic fracturing. If blasting is required, it will be conducted in compliance with a blasting plan, and in accordance with all applicable laws to avoid impacts to sensitive receptors. If necessary, dewatering of foundation holes will involve pumping the water to a discharge point, which will include measures/devices to slow water velocities and trap any suspended sediment. Dewatering activities will not result in the direct discharge of water into any streams or wetlands.

The foundation is anticipated to be one of two designs; either a concrete caisson or a spread footer. It is currently anticipated caisson foundation will be used. A caisson footing would be placed in a nominal 22-foot diameter excavation to a depth of around 30 feet. The top of the foundation is a nominal 18-foot diameter pedestal that typically extends 6 to 8 inches above grade. The base of each tower will be surrounded by a minimum of 6-foot wide gravel skirt. The crane pad area, which includes the foundation and surrounding laydown as well as the actual staging area for the crane to work is an approximately 82-foot by 100-foot area the roads roads/ramps into the crane pad area are an additional 85 x 85 ft. Foundations will require an estimated 300 yards of concrete on average per foundation, equivalent to 30 truckloads. (Total of 3,600 yards/360 truckloads)

Buried Cable Installation: The electrical collection system will generally follow Project access roads, but will also use Bean Mountain Road as a cable route separate from construction access roads to reach the Project metering point area, located at the intersection of Bean Mountain Road and Nichols Road. Direct burial methods through cable plow, rock saw, and/or trencher will be used during the installation of underground interconnect lines whenever possible.

Wind Turbine Assembly and Erection: Beyond the large vehicles used to transport the tower, nacelle, and rotor blades, other smaller wind turbine components include hubs, nose cones, cabling, control panels, and internal facilities such as lighting and ladders. All turbine components will be delivered to the project site on flatbed transport trucks and the main components will be off-loaded at the individual turbine sites.

Turbine erection is performed in multiple stages including: setting of the bus cabinet and ground control panels on the foundation, erection of the tower (which consists of 4 sections), erection of the nacelle, assembly and erection of the rotor, connection and termination of the internal cables, and inspection and testing of the electrical system prior to energizing.

Turbine assembly and erection involves mainly the use of large track mounted cranes, smaller rough terrain cranes, boom trucks, and rough terrain fork-lifts for loading and off-loading materials. The tower sections, rotor components, and nacelle for each turbine will be delivered to each site by flatbed trucks and unloaded by crane. A large erection crane will set the tower segments on the foundation, place the nacelle on top of the tower, and following ground assembly, place the rotor onto the nacelle. The erection crane(s) will move from one tower to another, sequentially.

Collection Station and Metering Point: Collection station and metering point construction will begin with clearing the site and stockpiling topsoil for later use in site restoration. The site will be graded, and a laydown area for construction trailers, equipment, materials, and parking will be prepared. Concrete foundations for major equipment and structural supports will be poured, followed by the installation of various conduits, cable trenches, and grounding grid conductors. Above-ground construction will involve the installation of structural steel, bus conductors and insulators, switches, circuit breakers, controls, and any poles or facilities required by PSNH. The final steps involve laying down crushed stone across the stations, erecting the chain link fence and testing the control systems.

Photographs of wind farm construction from Community Energy's recently-built Bear Creek Wind Farm are attached as **Appendix 36.**

(2) Potential impacts & mitigation plan

a. Road Use & Impacts

1. Traffic/road closures

Although roads within and adjacent to the Project area are operating well under capacity, some temporary impacts to transportation in and around the project area will result from the movement of vehicles involved in Project construction. The exact construction vehicles have not yet been determined, however, the types of vehicles typically involved in wind project construction include:

- Gravel trucks with capacity of approximately 10 cubic yards (cy) per truck and an estimated gross weight of 75,000 pounds (lbs), for access road construction. (Estimated 3,000 loads)
- Concrete trucks for construction of turbine foundations and transformer pads with capacity of approximately 10 cy per truck and an estimated gross weight of 96,000 lbs. (Estimated 360 loads)
- Flatbed trucks for transporting construction equipment to the site for clearing, excavation or equipment erection.
- Oversize flatbed trucks (up to approximately 14 axles) for transporting turbine components (tower sections, blades, nacelles, hubs); these trucks may have gross weights up to 276,000 pounds, with lengths (from front of cabin to end of trailer) up to 170 feet, widths to 14 feet, and heights to 15 feet 6 inches. (Estimated 84 loads)
- Pickup trucks for equipment and tools.
- Trucks and cars for transporting construction workers.

Transport of gravel, cement, construction equipment and personnel access will result in increased traffic on local roads, but is not expected to result in any road closures or traffic disruptions in the local area. Transport of oversize loads for wind turbine equipment can result in temporary traffic stops or re-routing, as vehicles navigate corners, town centers or other road or traffic features.

Final transportation routes for wind turbine equipment have not been selected, as the Project is not able to order wind turbine

equipment until state and federal permits (including an SEC certificate) are received, and thus the Project will not know the ultimate delivery points or interstate transportation routes. However, it is anticipated that locally, oversize loads related to wind turbine equipment will utilize New Hampshire Route 10 (either from the south via I-91 and NH Route 9, or from the north via I-89) and Lempster Mountain Road between NH Route 10 and Earl's Lane (private road). Most traffic impacts would be expected to occur around interstate highway exits, passing through city/town areas along the route (i.e., Keene or Newport), and navigating the intersections at Route 10/Lempster Mountain Road and Lempster Mountain Road/Earl's Lane.

Construction and transport plans will be provided to the Town of Lempster and be made available to the public, so residents will be aware of potential traffic issues. Trucking contractors will submit routes for delivery of oversize loads (see subsection 2., below) for approval to New Hampshire Department of Transportation (NH DOT), once equipment has been ordered, trucking contractors have been selected, and final transport routes are determined. The Town of Lempster and any other municipalities affected by the transport of oversize roads will be informed of the routes and schedules as coordinated with NH DOT.

Final transportation routing will be designed to avoid/minimize safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads.

2. Heavy/Oversize trucking loads

As discussed in subsection 1., above, delivery of large wind turbine components to the site will involve transport of approximately 84 oversize and overweight loads. These loads will be subject to the New Hampshire Department of Transportation's "Special Permit to Move a Load In Excess of Legal Limit."

According to NH DOT regulations, special permit applications are issued only to the person or firm who will actually be hauling the oversized load. At this time, the Project has not selected the trucking contractors for the wind turbine equipment and will not be able to do so until it orders the turbines. Such orders will not be placed until all necessary state and federal permits relating to the construction and operation of the facility are obtained.

In order to provide the Committee and public with as much information as possible related to transportation issues, documents including specifications for typical oversize trucks used in transporting wind power equipment and information on the size and weight of loads has been included in this application as **Appendix 37**.

3. Damage to Public Roads

Transportation routing has been planned so as to avoid or minimize the impact to state and local roads. The Project will work with NH DOT and local highway departments to survey the transport impacts on the final route selected, and will perform any work required to prepare the route or repair damage to the route at the Project's expense.

The Project will work with the Town of Lempster on a specific plan and agreement for prevention of damage to public roads and the restoration and repair of any damaged areas post-construction. Such plan and agreement is expected to contain provisions for financial/performance guarantees for repair by the Project. Damage is expected to be mitigated by confining heavy truck travel to a few select roads, including NH Route 10 and Lempster Mountain Road. Prior to construction, the Project will work with the Town to video or photo document the existing roadways to verify the pre-construction roadway conditions. Upon completion of the construction activities, the Project will, at a minimum, return all roadways to their pre-construction conditions (subject to plan, agreement and financial guarantees entered with the Town).

b. Construction process impacts and mitigation

Beyond transportation issues, impacts related to Project construction could include impacts on environmental conditions such as dust and air emissions, impacts on soil and water resources, impacts from blasting, impacts related to construction noise, and safety impacts.

Dust and air emissions: During all aspects of project construction, the contractor and/or construction manager will minimize fugitive dust and airborne debris to the maximum extent practical by implementing appropriate control measures. These measures will include (but are not limited to) the application of mulch, water, stone, or an approved chemical agent on any access roads, exposed soils, or stockpiled soils when dry and windy conditions exist.

Other mechanisms to initiate dust control procedures include a determination from Project or construction managers that control measures shall be implemented, or complaints by landowners or local residents. A watering vehicle shall be available for use for the duration of project activities, including restoration.

During the construction process, there will be increased air pollutant emissions due to increased vehicle traffic. These impacts will be short-term, and at a minor enough level so as not to be a significant impact on overall air quality in the area.

Soil and water resources: Impacts from construction activities on wetlands, stormwater runoff, soil erosion and sediment control, and surface water quality are addressed in section (e) above, in discussion of the various permits required for these impacts. The core of the Project's mitigation in these areas is addressed in the stormwater pollution prevention plan, included in the Site Specific Permit (Stormwater Pollution Prevention Plan) and as referenced in wetlands and surface water quality permits.

The plan describes the temporary and permanent structural and vegetative measures that will be used to control erosion and sedimentation for each stage of the project from land clearing to the finished edge. The plan also provides detailed maps, dimensional details, and calculations for siting temporary erosion and sediment control facilities and permanent stormwater management facilities.

Wildlife impacts: As discussed above in section (e)(7)e., to mitigate for wildlife displacement related to temporary construction impacts, construction activities and sequencing will be examined to try and avoid habitat or identified nesting sites until vacated. In addition, all temporarily disturbed areas will be restored following construction activities to allow reestablishment of wildlife habitat. Permanent habitat loss and fragmentation will be avoided through careful site design (i.e., avoiding wetlands and large areas of mature forest, and minimizing the permanent footprint of project components to the extent practicable) and restoration of all temporarily disturbed areas. Additional measures for sustainable design of the Project are discussed in the Avian and Bat Survey paper, **Appendix 28**.

Noise impacts: Noise related to trucking (engine noise, brakes, back-up alarms, dumping, and bouncing on uneven road surfaces) and the operation of heavy construction equipment (excavators, rollers backhoes, hoe rams, pneumatic jacks, cable plows/trenchers, erection crane, blasting equipment) is expected to occur during the construction phase of the Project. Noise from construction-related activities may cause some temporary annoyance at residences within and adjacent to the Project area and public transportation routes. However, in many locations construction-related noise will not be significantly louder than everyday noise sources such as home construction, logging, or agricultural

equipment and vehicles passing on the road. In addition, construction noise will be a relatively short-term impact.

The Project will mitigate noise impacts by implementing best management practices for noise abatement during construction, including use of appropriate mufflers and limiting the hours of construction. The Project will also notify landowners of certain construction noise impacts in advance (e.g., blasting or heavy equipment moving). The Project will also implement a complaint resolution procedure to assure that any complaints from residents regarding construction or operational noise are adequately and efficiently investigated and resolved.

Blasting Impacts: During required blasting times, given the proposed turbines' distance from adjacent development (at least 1,000 feet from permanent residences), there should be no significant blasting-related impacts on wells, foundations, or other property features. Only temporary, minor impacts on the Project site are expected a result of blasting activities.

Safety impacts: Public safety impacts could be associated with Project construction including the movement of large construction vehicles, equipment and materials; falling overhead objects during erection; falls into open excavations; and electrocution. These issues are most relevant to construction personnel that will be working in close proximity to construction equipment and materials, and who will be exposed to construction related hazards on a daily basis.

The general public could also be exposed to construction-related hazards due to the passage of large construction equipment on area roads and unauthorized entry to the work site (on foot, by motor vehicle, ATV, or snowmobile). The latter could result in collision with stockpiled materials (e.g., soil, rebar, turbine/tower components), as well as falls into open excavations. Because construction activities will occur primarily on private land, and be well removed from adjacent roads and residences, exposure of the general public to construction-related risks/hazard is expected to be very limited. Contractors will comply with all Occupational Safety and Health Administration (OSHA) regulations, in addition to state worker safety regulations, regarding electricity, structural climbing, and other hazards, during construction of the wind farm. To minimize safety risks to construction personnel, all workers will be required to adhere to a safety compliance program. The safety compliance program will address appropriate site health and safety related issues including personal protective equipment, job safety meetings and attendance requirements, fall prevention, construction equipment operation, maintenance and protection of traffic, hand and power tool use, open hole and excavation area safety, petroleum and hazardous material storage, use, containment and spill prevention, posting of health and safety requirements, procedures for visitors to

the job site, local emergency resources and contact information, and incident reporting requirements.

Construction vehicles will avoid areas where public safety could be a concern (schools, clusters of homes, etc.). The Project worked to design a construction access via Lempster Mountain Road rather than School Road in order to avoid traffic near the Goshen-Lempster School and the homes on School Road.

To minimize safety risks to the general public, all over-sized vehicles will be accompanied by an escort vehicle and/or flagman (if necessary) to assure safe passage of vehicles on public roads. The general public will not be allowed on the construction site, and the site will be well posted and gated at key entrances to avoid unauthorized access. Temporary construction fencing or other visible barriers will be placed around excavations that remain open during off hours. The contractor will coordinate with local fire and emergency personnel to assure that they are aware of where various construction activities are occurring, and avoid potential conflicts between construction activity and the provision of emergency services (e.g., road blockages, etc.).

(h) Net energy analysis

As discussed in Section (b)(3) d., above, wind data collected at the site indicates average wind speeds of between 7 and 8 meters/second (15 and 18 mph), resulting in an estimated capacity factor for the Project in the range of 37-38 percent. For a project with 24 MW rated capacity, this would result in the production of approximately 70,000 and 80,000 megawatt-hours (MWh) per year.

(i) Storage and distribution

N/A – no storage or distribution of energy products is required.

(j) General information – Statutory Requirements of RSA 162-H:7 V.

(1) Description in reasonable detail of the type and size of each major part of the proposed facility;

A description in detail of the type and size of each major part of the proposed Project is contained in sections (c)(1)-(3) above.

(2) Identification of the applicant's preferred alternative and any other options for the site of each major part of the proposed facility;

Identification of preferred alternatives for the Project site and turbine locations is contained in sections (b)(1)-(8) and section (c)(3) f. above. Identification of

alternatives considered for wind turbine locations is included in section (c)(6) above.

(3) Description in reasonable detail of the impact of each major part of the proposed facility on the environment for each site proposed;

A detailed description of the potential environmental, health and safety impacts of the Project is contained in section (e) above.

(4) Description in reasonable detail of the applicant's proposals for studying and solving environmental problems;

Detailed descriptions of studies that have been conducted or that are on-going to analyze environmental impacts of the Project are included in section (e) above, as are plans for mitigation of environmental impacts, where relevant.

(5) Description in reasonable detail of the applicant's financial, technical and managerial capability for construction and operation of the proposed facility;

A detailed description of the financial, technical and managerial capability of the Project is included in section (a), above.

(6) Documentation that written notification of the proposed project, including appropriate copies of the application, has been given to the appropriate governing body of each community in which the facility is proposed to be located;

The Town of Lempster has been provided with copies of this New Hampshire Site Evaluation Committee Application, as documented in **Appendix 38**.

(7) Description in reasonable detail of the project's consistency with the state energy policy;

A detailed description of the Project's consistency with the state energy policy is contained in section (c)(5) a. 2., above.

(8) Identification of any requests for waivers from the information requirements of any state agency or department whether represented on the committee or not;

Applicant has not requested waivers of any information requirements.

(9) Describe in reasonable detail the energy efficiency of the process;

The energy efficiency of the wind power generation units is included in section (c)(3) d., above.

(k) Statement certifying that the applicant agrees to provide such additional information as the Committee shall require to carry out the purposes of RSA 162-H;

Please see an executed Certification and Verification Statement of Lempster Wind, LLC, below.

Certification by Executive Officer of Lempster Wind, LLC

In accordance with RSA 162-H:8, I, Eric Blank, an executive officer of Lempster Wind, LLC, do hereby swear and affirm that the information contained in this Application is true and accurate to the best of my knowledge and belief.

I also certify that, as an Applicant to the New Hampshire Site Evaluation Committee, Lempster Wind, LLC agrees to provide such information as the Committee shall require to carry out the purposes of RSA 162-H.

LEMPSTER WIND, LLC

Eric Blank

Name: Eric Blank

Title: Manager

Date: August 16, 2006

STATE OF Colorado

COUNTY OF Boulder

On this 16th day of August, 2006, personally appeared before me the above-named Eric Blank , Manager of Lempster Wind, LLC, and swore and affirmed that the information contained in this Application is true and accurate to the best of his knowledge and belief.

Susan Schmidt

MY COMMISSION EXPIRES 9-12-06

Notary Public/Justice of the Peace

SUSAN SCHMIDT NOTARY PUBLIC STATE OF COLORADO