Frequently Asked Questions
Derby Line Wind Project

- **What is "community-scale" power generation?**
  "Community scale" refers to a project of a size and power output in between the smallest scale, called "residential scale," and the largest scale, called "utility scale." Community scale wind projects are generally considered to be anything from 250kW up to 10MW. The Derby Line Project sits in the middle of this range, at 4.4MW.

- **How does this project compare to other wind projects in Vermont?**
  Derby Line Wind is different from other wind projects you may be familiar with in some important ways. The two main differences between Derby Line Wind and other projects are in its **size** and in its **location**. This project consists of two, 2.2 MW, wind turbines located atop two knolls on farmland. The footprint of this project is small relative to some recent Vermont wind projects, which are 40MW and larger. This project does not compromise Vermont ridgelines, since the turbines will be located on farms on the northern plateau. The Derby Line site is unique in Vermont, with a very high quality wind resource that is accessible from non-ridgeline land. Locating turbines on farms rather than the ridge makes them less controversial, less likely to create environmental impacts, and easier to install and maintain.

- **What happens when the life of the wind turbines ends?**
  We intend to use Northern Power Systems' (of Barre, Vermont) permanent magnet direct-drive turbines on this project. These turbines have an expected life of 20 to 25 years, though they can operate longer than that at a minimum. At the end of their useful life, the turbines will be decommissioned, removed from the site, and the land will be restored, at the developer's expense, to its original condition.

- **How will wind turbines affect my health?**
  To date, there is yet to be a definitive study that shows wind turbines to have adverse consequences on the health of community members. For this project we have had Alteris Renewables conduct a study of the acoustic and flicker impact to the nearby properties. These impacts have been shown to be minimal. More information about these analyses can be found in a report conducted by the American Wind Energy Association and the Canadian Wind Energy Association, titled *Wind Turbine Sound and Health Effects,* Energy Association. According to this study, the ground borne vibrations from wind turbines are too weak to be

detected by, or to affect, humans (Colby et al. 9). The tables below show the results of a study of acoustic and flicker (shadow) analysis of the impact of the turbines on neighboring properties.

Acoustic Analysis:

Farms and Neighbors	Maximum Calculated dB(A)
LeTourneau Farm	42.60
Grand View Farm	43.80
Neighbor 4	44.00
Chase Farm	44.50
Neighbor 5	50.30

Note: 40-50 decibels (dB) is equivalent in volume to listening to a quiet conversation or whisper in a library.

Worst Case Scenario – Flicker Analysis

Farm/Property	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
LeTourneau Farm	5:56	25	0:18
Chase Farm	10:51	34	0:25
Neighbor 4	40;28	75	0:43
Neighbor 5	148;05	98	1:54
Grand View Farm	54;16	100	0:46

➲ **How loud will these wind turbines be?**

The technology associated with the turbine we are using, the permanent magnet direct drive from Northern Power Systems, does not require a gearbox and is therefore much quieter than conventional wind turbines. There will be very minimal effect beyond the host farms.

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- **How will wind power help me as a resident of Derby Line?**
  - Derby Line Wind will provide a significant boost to Town and Village property tax revenues, and those of surrounding communities.
  - Derby Line Wind will increase the portion of your electricity that comes from clean, renewable sources
  - Over time, increased renewable energy production should lead to better air quality, reduced global warming, and greater energy independence.
  - Derby, Vermont will be recognized as a leader in the advancement of the clean energy economy in New England

- **What are the benefits to the Northeast Kingdom?**
  - Clean, renewable power
  - Farmers will receive lease payments for hosting system, thus supporting the viability of local farms in the NEK
  - Showcase the success of non-ridgeline wind power in Vermont
  - Environmentally conscious branding of the NEK
  - Stabilization of the electrical grid
  - Stimulate local and state economy

- **Will the value of my property suffer as a result of this project?**

  No. There have been numerous studies about this question, both on a national level and for projects based here in Vermont. According to the U.S. Department of Energy's Lawrence Berkley National Laboratory, "proximity to wind energy facilities does not have a pervasive or widespread adverse effect on the property values of nearby homes" (http://newscenter.lbl.gov/press-releases/2009/12/02/wind-power-property-values/). In addition, the property values in Bennington have not been adversely affected by the 11-turbine wind project in Searsburg, according to a study conducted by the Renewable Energy Policy Project (http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf). Another study was conducted in Madison County, New York which indicated that after an analysis of 280 home sales within 5 miles of the 30 MW Fenner wind farm, researchers, "failed to uncover any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes" (http://www.windaction.org/?module=uploads&func=download&fileId=811).

- **Can't wind power affect the environment and local wildlife?**

  Yes. Studies have shown that local wildlife, including birds and bats, can be negatively impacted by the installation of wind turbines, as can water quality as a result of construction. Fortunately, Vermont has a high set of standards in

place to ensure that renewable energy projects are developed with minimal impact on the environment. An Environmental Impact Study (EIS) is required as part of the State's Act 248 permitting process for this project, (see, which all renewable energy projects are required to go through. See http://psb.vermont.gov/statutesrulesandguidelines/guidelines for more information on the Act 248 permitting process.

The EIS will be undertaken by independent experts who will help determine whether the Derby Line sites we've selected are appropriate ones for wind. The studies evaluate the project on a number of criteria including impact on water quality and native species wildlife habitat. Our own preliminary study suggests that because these projects are located on farms and off of ridgelines, the environmental impacts are significantly reduced. Encore Redevelopment's preliminary studies suggest that the environmental impacts from these projects will be minor, because they are being constructed on land that is already "in use."

Local wildlife, including birds and bats, occasionally can be negatively impacted by the installation of wind turbines. Through properly siting, mitigating and operating the turbines, we can significantly reduce, if not avoid entirely, this risk. Moreover, the Audubon Society has publicly stated that they strongly support wind power, as they believe the effects of global warming on bird life (species extinction, breeding rates, etc) are far more harmful than the effects of wind power on wildlife. As they state on their website,

> "In order to prevent species extinctions and other catastrophic impacts of climate change, scientists say we must reduce global warming emissions by at least 80 percent by 2050. Reducing pollution from fossil fuels to this degree will require rapidly expanding energy and fuel efficiency, renewable energy and alternative fuels, and changes in land use, agriculture, and transportation… Additional general information about the impacts of Wind power is an important part of the strategy to combat global warming… If the United States obtains 20 percent of its electricity from wind power by 2020, it will reduce global warming emissions equivalent to taking 71 million cars off the road or planting 104 million acres of trees. Expanding wind power instead of fossil fuels also avoids the wildlife and human health impacts of oil and gas drilling, coal mining and fossil fuel burning" (http://policy.audubon.org/wind-power-overview-0).

Furthermore, the actual number of bird fatalities as a result of wind turbines is seemingly negligible. A study was conducted in Wisconsin that looked at bird fatalities in the wind energy industry. The study quotes the National Wind

Coordinating Collaborative who posits that, "based on current estimates, wind plant-related avian collision fatalities probably represent from 0.01 percent to 0.02 percent (i.e., 1 out of every 5,000 to 10,000) of the annual avian collision fatalities in the United States…data collected outside California indicate an average of 1.83 avian fatalities per turbine (for all species combined), and 0.006 raptor fatalities per turbine per year" (Sagrillo 3). This study can be found at the following hyperlink: http://www.focusonenergy.com/files/document_management_system/renewables/windturbinesandbirds_factsheet.pdf.

Additional general information about the impacts of wind energy on wildlife can be found at the following websites:

Audubon Society
http://policy.audubon.org/wind-power-overview-0

United States Department of Energy
http://www1.eere.energy.gov/windandhydro/faqs.html

The American Wind Wildlife Institute
http://www.awwi.org