

## Commercial Wind Turbines Over Windham and Grafton:

An important and challenging issue for our communities

**A tract of land that spans Windham and Grafton has been identified as a potential site for a new industrial wind installation.** As a result, residents and property owners are facing one of the most important and challenging issues in the towns' histories. Our goal in this and future issues of this Newsletter is to provide facts and analysis to generate informed community discussion. To set the stage:

**Meadowsend/Iberdrola lease agreement:** In 2012 Iberdrola Renewables, a multinational corporation based in Spain, entered a wind-energy lease agreement with Meadowsend Timber Limited, owner of the Stiles Brook Tract in Windham and Grafton. Under the lease agreement, the land is made available for a large-scale commercial wind installation. The land under lease includes most of the ridgeline east of Windham Hill Road in Windham and a small piece of the western part of Grafton.

**Installation of meteorological test towers:** In 2013, Iberdrola erected three meteorologic test towers, each 197 feet tall, to test the wind resource on the Stiles Brook Tract. In the past, Iberdrola has stated that data collected from these towers would not be available to the public. In a recent brochure, Meadowsend has promised to present information on an analysis of the first year of collected wind data.

**Number and size of turbines:** On the basis of recent Iberdrola proposals for other sites, it is possible to project that the Stiles Brook Tract could see up to 37 turbines on its ridgeline. They would likely be 3.3 megawatt turbines with 371-foot rotor blades and a total height of 459-492 feet from base to blade tip. The comparison on page three gives an idea of the size of an industrial-scale wind turbine.

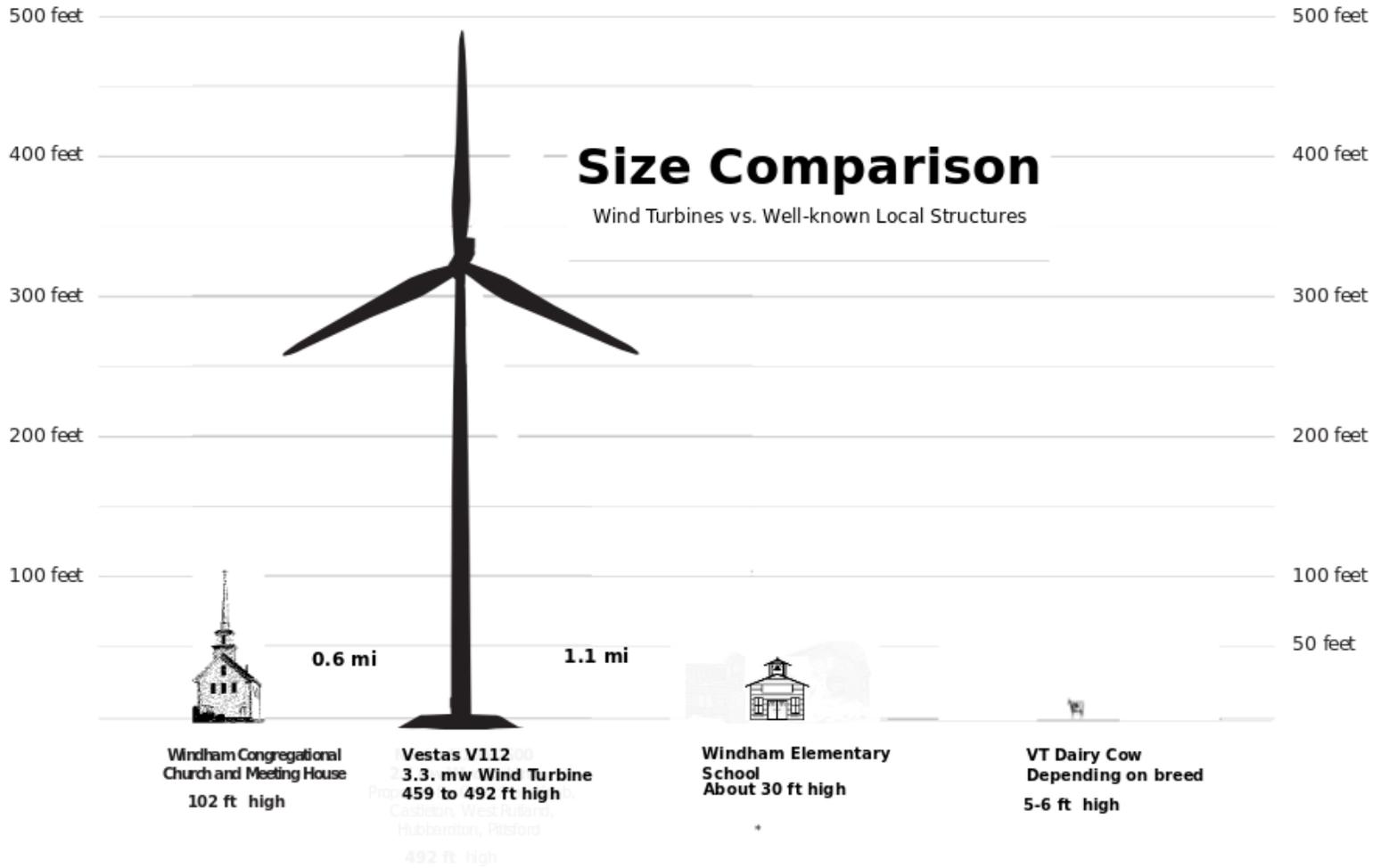
### Envisioning the Scale of Wind Turbines

A large area is required by each turbine. The photo below is of a pad at Lowell Mountain, Vermont, and gives some idea of the area required to place a single turbine on a ridge-line. Photo used by permission of Steve Wright.



One of Twenty One Wind Turbine Pads, Lowell Mountain, Vermont Photo by Steve Wright

The chart at right makes clear the scale of an industrial wind turbine in the context of community structures. The turbine used for comparison in the picture is the one currently proposed by Iberdrola for an installation in New Hampshire.



## Predicting a String of Wind Turbines in Windham and Grafton

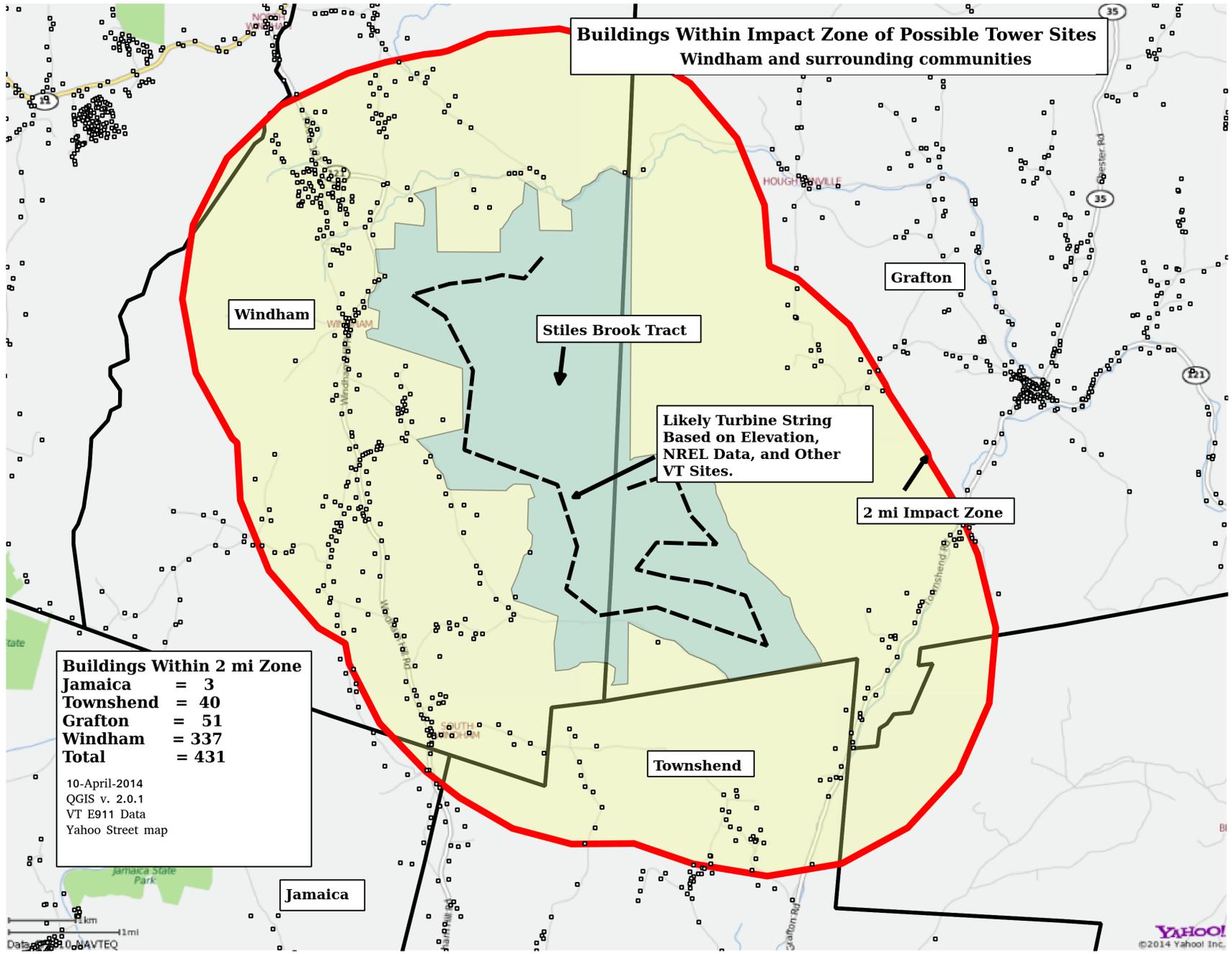
Iberdrola has not provided information on placement of turbines in Windham and Grafton, emphasizing that they do not yet have sufficient information to develop a specific design or layout. However, given the impact of this proposed installation on the community, many residents and property owners want some idea of what to expect.

Using topographical information and wind data, it is possible to predict with high confidence the placement of a projected string of turbines in relation to buildings in Windham and surrounding communities. (See map at right.) It is also possible to compare the Windham/Grafton site to Vermont's two largest currently operating commercial wind installations at Sheffield and Lowell.

In the map at right, the property owned by Meadowsend is shown in light blue. The black segmented line represents a possible string of turbines, and the black dots stand for buildings. The red boundary surrounds the area within a two-mile impact zone, where the side effects of the turbines would be most pronounced.

### ***How to predict where turbines will go.***

*Geographic Information Systems (GIS) software was used to examine the topography of the Stiles Brook Tract and the surrounding area. Wind data from the Vermont Center for Geographic Information were used to determine likely placement of turbines on the Stiles Brook Tract. To test the method, data from the same sources were used to predict placement of turbines at Vermont's two largest currently operating wind installations. The assumption, that turbines are located to take advantage of the best wind resource, generally found at the highest elevation, proved correct. The predictions matched the actual location of the turbines at Sheffield and Lowell. More information on this methodology is available upon request to Friends of Windham.*





### How Close is Too Close?

Most studies of the effects of wind turbines on communities focus on buildings that lie within a 1-, 2-, or 3-mile radius of the turbines. There is general agreement that turbines have some degree of impact on all these. When

we look at how close a possible string of turbines is to our community buildings, we see surprising results:

- 58 % (255 of 441) of Windham buildings lie within a 1-mile radius.
- 76 % (337 of 441) of Windham buildings lie within a 2-mile radius.
- All buildings in Windham, 265 in Grafton, 220 in Londonderry, and more than 200 in Townsend, Athens, Chester, Jamaica and Andover fall within the 3-mile radius of potential turbine sites. In total, more than 1100 buildings, at least 90% of which are homes, and many more people would be affected by this wind installation.

The buildings in Windham and neighboring communities are closer to the possible string of turbines than is true at other large installations in Vermont. No large-scale commercial turbine installation in New England is surrounded by as many homes within a one-mile impact zone. The communities of Sheffield and Lowell, which have Vermont's two largest existing wind installations, lie at greater distances from turbine sites. Most homes in these towns are also separated by altitude differences from turbines. Altitude difference affects how people experience turbine noise. Turbines sited on the eastern ridge of the Stiles Brook Tract would be close in altitude to many Windham homes.

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## Issues for Community Discussion

At this writing, Iberdrola has not yet submitted an application for approval of a final project to the Vermont Public Service Board (PSB), which has authority to permit such projects. There is opportunity for Windham and Grafton residents and property-owners to calmly consider significant issues related to Iberdrola's potential plans for turbines in our towns. In future editions of the Newsletter, there will be information on the following topics:

- Population density comparisons: Windham/Grafton and other sites in Vermont and New England
- Property values, compensation, and taxes
- Special nature of wind turbine noise, and effects on quality of life
- Impact of wind installations on ecology of ridgelines and watersheds
- Vermont's use of carbon fuel and progress toward energy independence
- Ideas for Windham's renewable energy future

### **The Heart of the Matter**

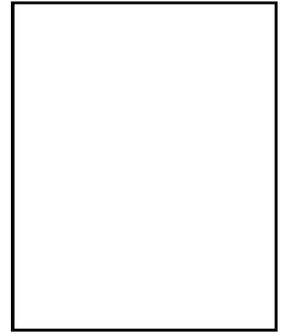
*The Friends of Windham are strong supporters of wind, solar, and other alternative energy sources in suitable environments. We support the use of wind turbines in appropriate locations. The primary question we raise is whether the mountain ridge between Windham and Grafton is an appropriate place for an industrial wind project. The core issues with which we are concerned cannot be reduced to subjective feelings or personal aesthetics, although we respect these feelings and concerns as they arise in our communities.*

*In the next issues of this Newsletter we will explore the suitability of the Stiles Brook Tract as a site for an industrial wind installation, by examining the potential impact of industrial wind on the people living here, on the ecology of our ridgeline, and on the integrity of our communities.*

**FRIENDS OF WINDHAM**

**Box 297**

**LONDONDERRY, VT 05148**



### **Who are the Friends of Windham?**

We are a new grass-roots organization and we invite those who share our mission to join. Our purposes are:

- To encourage preservation of the rural heritage and the woodlands of the Town of Windham;
- To encourage comprehensive renewable energy ideas and proposals for our town, consistent with the ecology of our lands and the well-being of our fellow citizens;
- To raise contributions for our work.

The purpose of our Newsletter is to foster rational discussion of renewable energy ideas and proposals. We are residents and property owners of the Town of Windham, guided by the common good of our community; we are not lobbyists representing corporate clients or economic agendas. We are particularly interested in analyzing facts and providing clear information. In this and the next several editions, we will focus on core issues raised by Iberdrola's proposal to develop an industrial-scale wind installation on the Stiles Brook Tract. In future Newsletters, we will discuss broader issues and proposals to further the goal of making Windham independent of fossil fuels for our electricity.

Inquiries can be sent to Friends of Windham, Box 297, Londonderry, Vermont 05148; or by email to [fw@vermontel.net](mailto:fw@vermontel.net). Donations can be sent to the Treasurer at the above address.

*Contributors to this issue of the Newsletter: Donn Welton and Nancy Tips, year-round Windham residents, and Chris Fisher, Windham second-home owner. Front page drawing: Steve Maurath*