

Testimony before Vermont House Committee on
Natural Resources and Energy

April 8, 2015

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Town of Windham, Vermont

Introduction:

A common feature of most of the energy-siting bills before this committee is language to ensure that due deference is given to town and regional plans during the Public Service Board's review of an applicant's request for a Certificate of Public Good. The language in H-0377 is a meaningful improvement of the current statute, and we urge you to adopt it.

However, regarding wind-energy siting, we underscore a different deficiency in the permitting process: **We believe there must be substantive community engagement *before* a developer is allowed to approach the PSB for an initial Certificate of Public Good for the installation of wind-measuring (MET) towers.** Here is why we believe this:

Our experience:

1. When the landowner and the wind developer first approached the Town of Windham, they told us virtually nothing about project details. The developer deflected our questions, claiming ignorance of specifics pending completion of wind studies.

To put the matter simply: the developer wanted to know if there is an adequate wind resource; but the community wanted to know what a wind installation would mean for our community and region. The community's question is an urgent one, touching upon the daily lives of the populace. Nonetheless, the developer received an initial CPG for wind measurement without disclosing project details. The result for the people of Windham: prolonged fear, opposition, and divisiveness, the negative effects of which will be felt for years in our town, regardless of whether turbines are installed here.

2. We found the developer's claim of ignorance about siting specifics incredible, so we determined to study the site, our town, and our region to evaluate suitability for an industrial wind installation.

We wanted to identify factors that could be measured, quantified, compared, and clearly presented. We also wanted our analysis to be quick and inexpensive. Using free, open-source Geographic Information Systems (GIS) software and public domain data¹, we learned:

The Town of Windham is remarkably inappropriate for a large-scale wind development, as shown by a comparative analysis of Windham and the two largest existing Vermont wind-installation sites, at Lowell and Sheffield, as well as 9 industrial wind sites in Maine. (Appendix 1, also available on the web at <http://tinyurl.com/nb7u3gk>.) Of particular note are the enormous differences in density of neighboring population, and in Vermont, size of the adjacent road/culvert network, and number of nearby riparian areas, just to name three variables.

1 GIS software, and data from: Vermont Center for Geographic Information, ANR *Natural Resources Atlas* and *Biofinder*, e911 data for state of Maine, and the US Geological Survey.

Our recommendations:

1. As soon as the ANR is contacted by a wind developer regarding the placement of MET towers on a specific site, the ANR must notify the planning commissions of both the region and the municipalities in which the site is located.

In most cases a site targeted by a wind developer is, at the outset, presumed to meet all criteria for success except for adequacy of the wind resource, which is to be determined by MET towers. This notion is patently and cruelly absurd. People in affected towns and surrounding communities have other legitimate criteria that should be recognized *before wind measurement is considered*. From the beginning, towns and Regional Planning Commissions (RPCs) must take part in evaluating a site. RPCs have GIS experts who can carry out the kind of site and region analysis done in Windham, should the target municipalities lack such expertise.

2. A template for analyzing a site from the community and regional standpoint should be developed, with room for local factors. Regional and local analyses would form part of municipal recommendations to the PSB as described in Bill H-0377.

At a minimum, a template should include the following factors: proximity to population centers, roads/culverts, and streams and riparian areas; soil type and slope; and consequences to surrounding towns, especially those downstream. Additional factors peculiar to each site should be added.

For example, Saxtons River rises in Windham and flows through Grafton, Cambridgeport, Saxtons River village, and Bellows Falls before emptying into the Connecticut river. Between 1927-2011, Grafton flooded 6 times – a flood about every 14 years. Given that a wind development in Windham would require mountaintop blasting and road building at the headwaters of the Saxtons River, heavier flooding of Grafton would be almost certain, due to substantial removal of tree-root mass that mitigates downstream flooding, and coverage of a large area with impermeable surfacing.

3. From the outset, RPCs, the municipalities, and the ANR should have access to the entire proposed wind installation site (not just MET tower sites) so that field visits can be conducted, should they be necessary.

Appendix 1

The Question of Siting An Industrial Wind Turbine Installation In the Town of Windham, Vermont by Frank Seawright²

Introduction

Vermont towns are required to update Town Plans every five years. The Town of Windham has adopted a new Town Plan, in which the energy and natural resources sections have been substantially updated and strengthened.

Windham's current Town Plan prohibits industrial wind development. The Town of Windham Planning Commission did its own investigation of the consequences of such development after learning that the owner of an approximately 3000-acre tract in Windham known as the Stiles Brook (SB) tract had invited a wind developer to install turbines on the tract. The Planning Commission concluded that the SB tract is inappropriate for such development, and improved measures to protect the Town of Windham, its citizens, and its lands.

When a town is confronted with a possible industrial wind installation, the questions most likely to arise are:

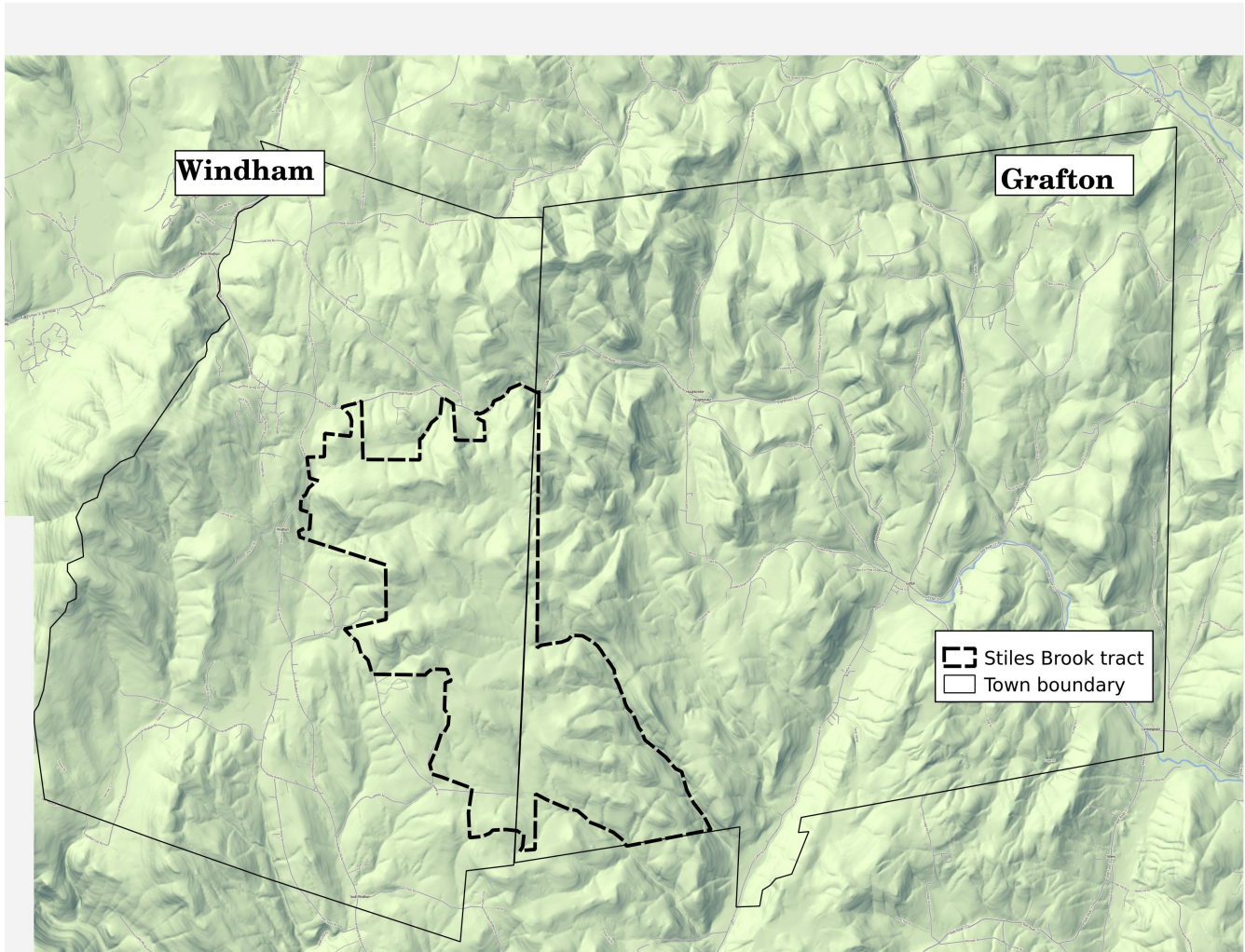
- Where will the turbines be located?
- How many will be erected?
- What will it mean for us as a town?

Wind developers generally do not answer these questions. As a result, citizens are asked to support a project about which they know very little. Town officials decided to conduct their own analysis to help them consider probable consequences of an industrial wind installation. They also wanted to compare the Town of Windham to other sites with such installations. They examined terrain, wind resource, location of buildings, and presence of natural features in the Town of Windham and surrounding towns. They used a variety of data sources, including the Vermont Center for Geographic Information; the National Renewable Energy Laboratory; the US Geological Survey; and 911 data for the states of Vermont and Maine. (Note: the state of New Hampshire did not have available comparable 911 data at the time of this analysis, otherwise it would have been included.)

The Planning Commission and other Town officials concluded that the SB tract is *not* appropriate for industrial wind development, as explained in the following maps and supporting narrative.

2 Selectboard member for the Town of Windham, VT

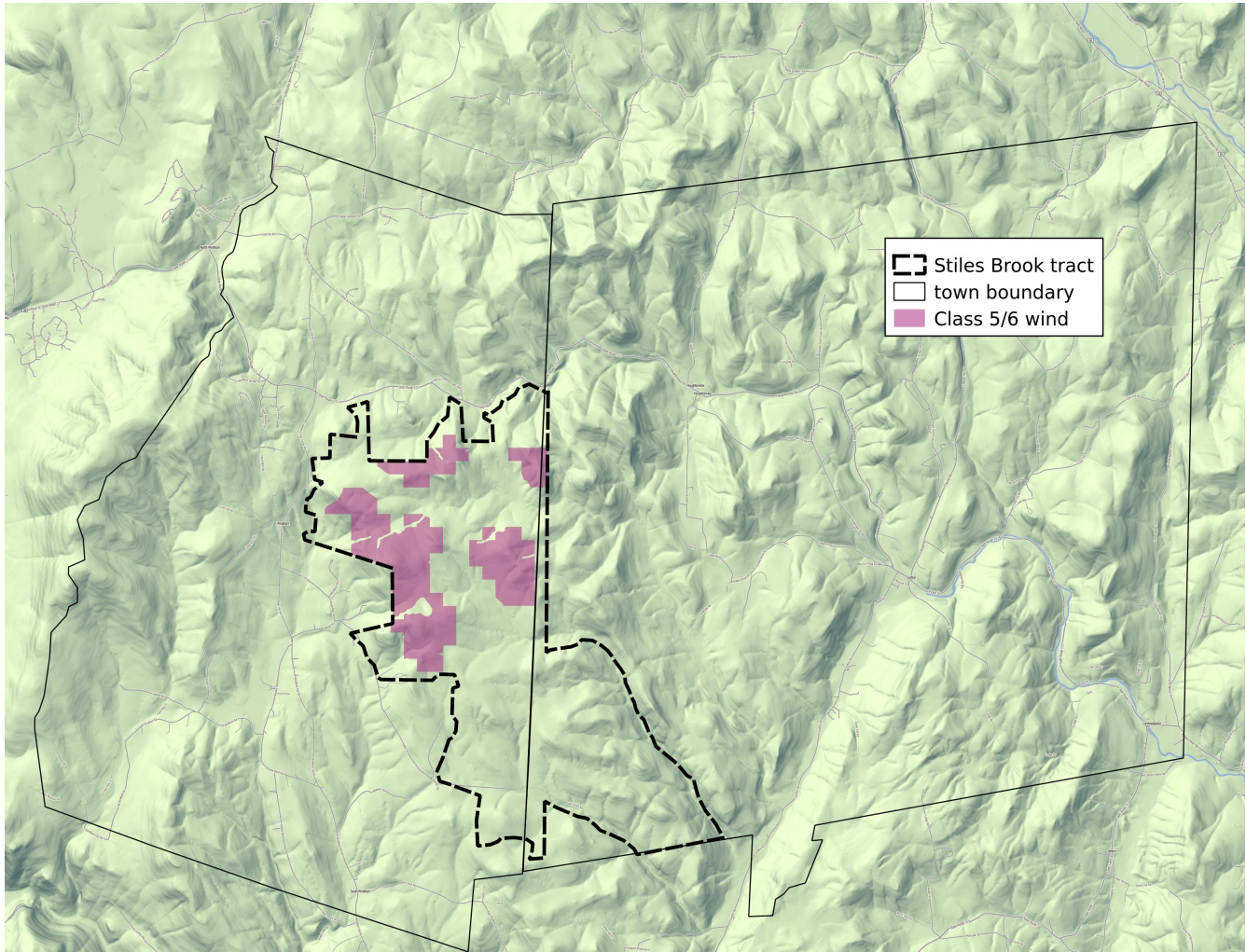
Map 1: Location of the Stiles Brook Tract in Relation to the Towns of Windham and Grafton



Map 1

Map 1 shows the towns of Windham and Grafton and an outline of the SB tract, parts of which lie in each town.

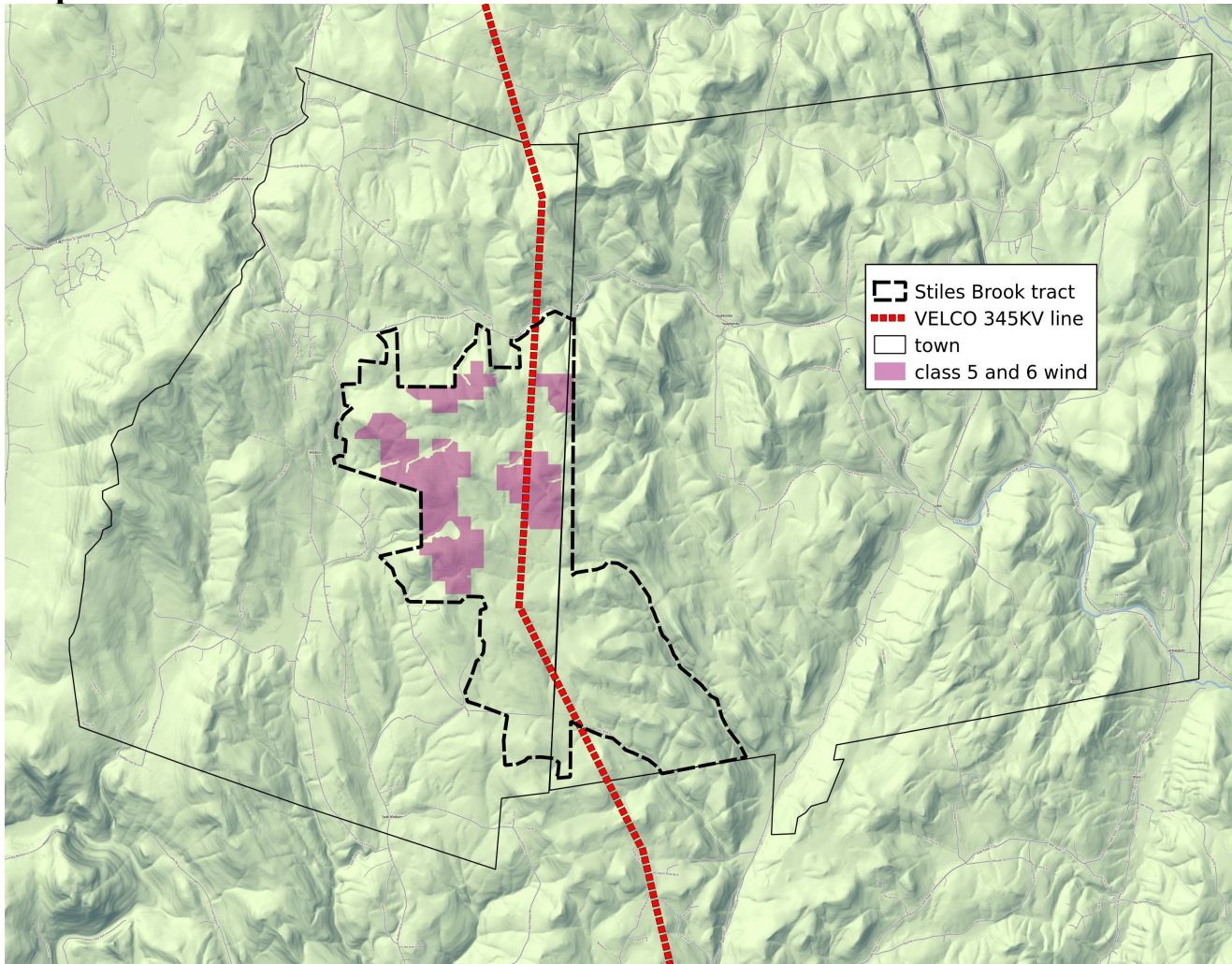
Map 2: Location and Magnitude of Wind Energy in Windham and Grafton



Map 2

Map 2 shows wind energy data produced by the National Renewable Energy Laboratory. Note that wind energy is generally classified as class 1 (low) through 7 (high). Map 2 shows where there are class 5 and 6 wind on the SB tract. (There is no class 7 wind on the SB tract.)

Map 3: VELCO Transmission Line

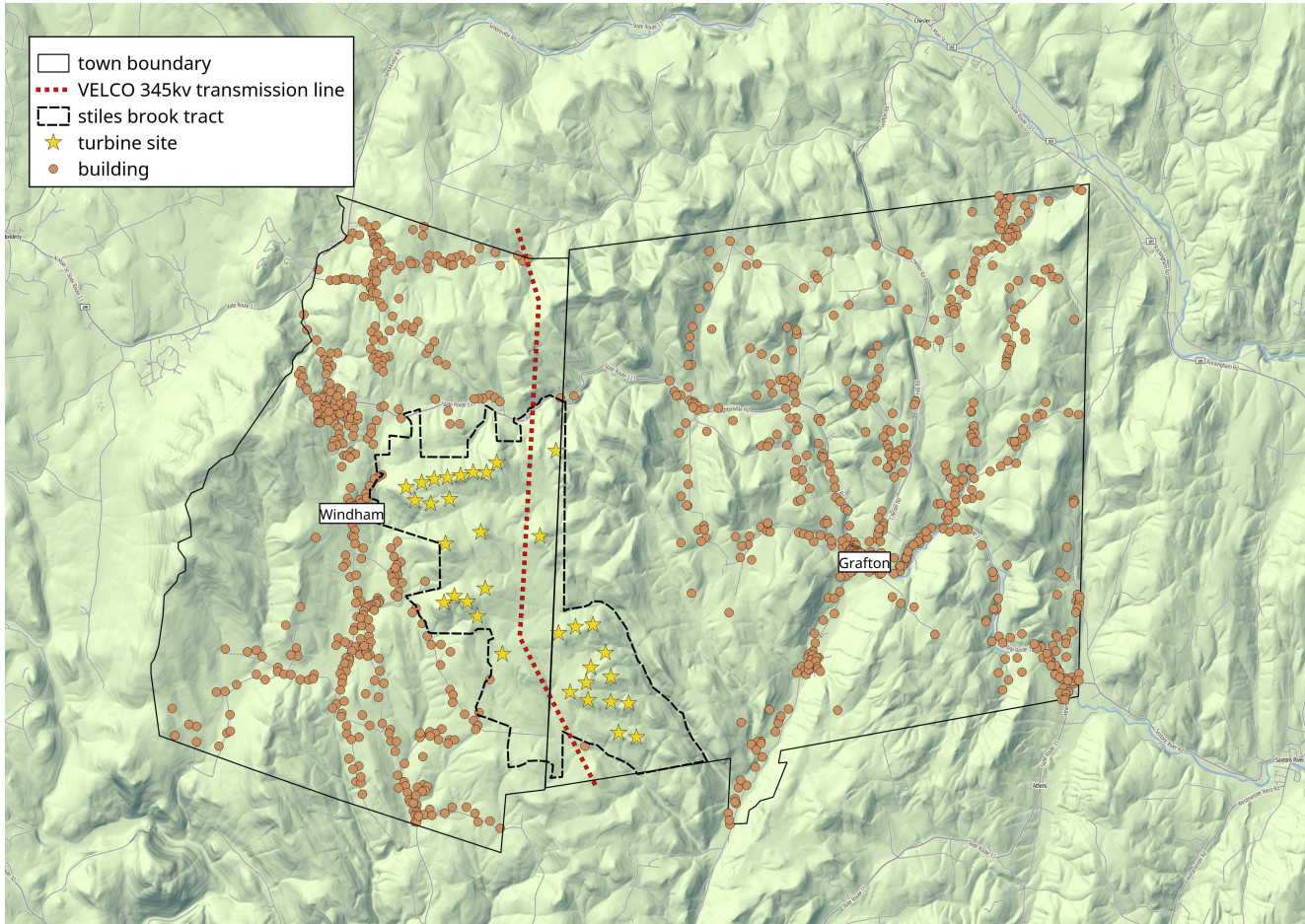


Map 3

Map 3 adds the 345 kilovolt (kv) VELCO transmission line to the preceding map.

Importance: Turbines can throw ice 1300 feet or more, making it probable that VELCO would require a safety setback, thus precluding turbine placement in the northeast area of the SB tract. Cost considerations will be paramount because the developer must pay to boost generated electricity to 345 kv or more, in order for power to flow onto the VELCO transmission line. Tom Dunn, VELCO's CEO said (June 2014 interview with VermontBiz.com magazine) "I think we're in a state of equilibrium now, where the amount of wind works for the system that we have. For the next project that shows up, their basic interconnection costs are going to be pretty expensive, ...we're talking tens of millions of dollars..." Thus, for the site to be economically viable, it would have to be thickly populated with the largest possible turbines, requiring extensive roadwork and foundation building, and exacerbating runoff and erosion.

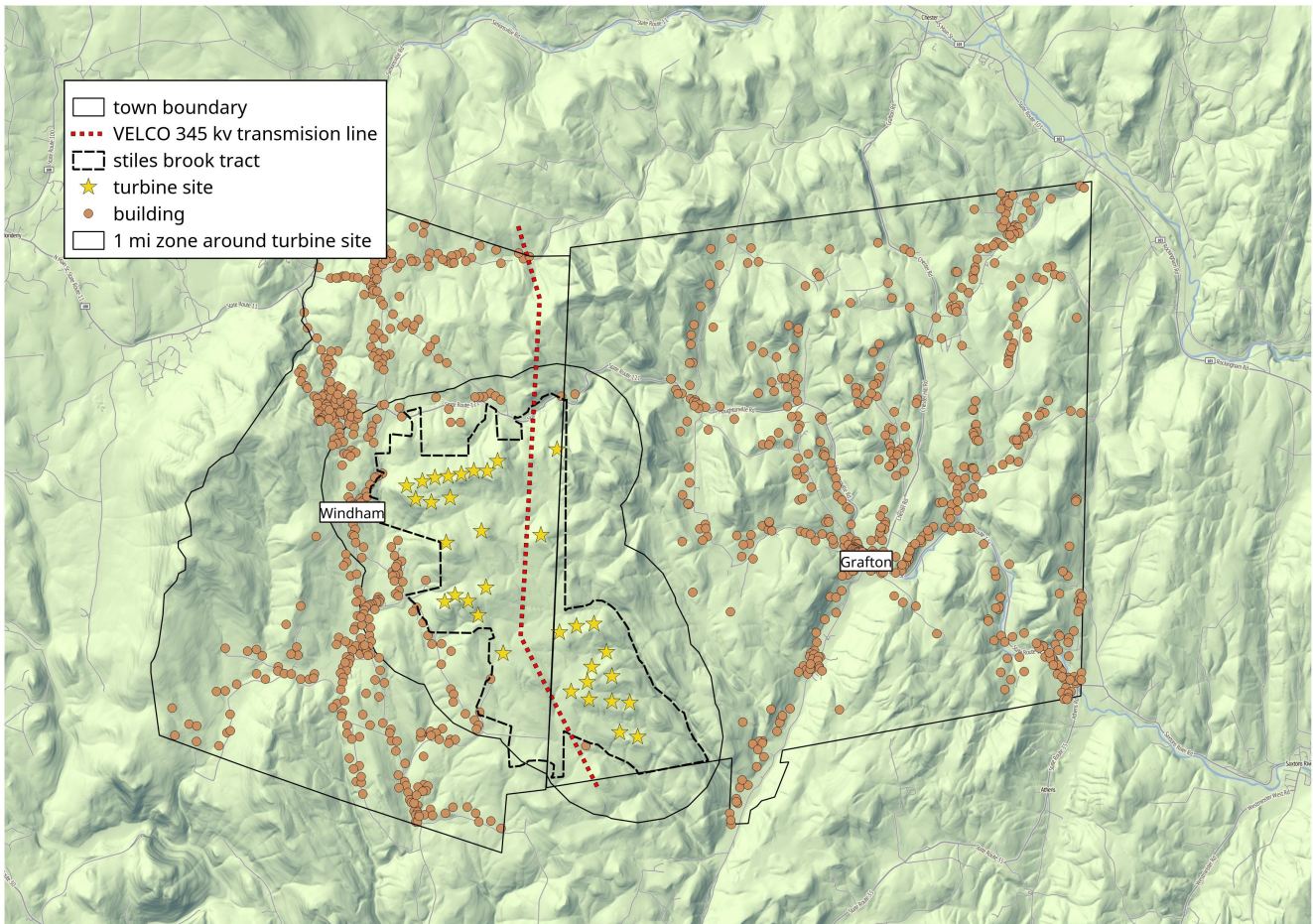
Map 4: Location of Buildings and Projected Wind Turbines in the Towns of Windham and Grafton



Map 4

Map 4 shows the most likely placement of wind turbines, on the basis of wind energy data. (A 1000ft grid was overlain on the site to guide turbine spacing.) A 30-foot-wide road would be created along the ridgelines, connecting the turbines and used for installation and ongoing maintenance. It should be noted that an examination of wind installations at Lowell and Sheffield, VT and nine installations in Maine showed that turbines are always located on or in close proximity to the highest elevations.

Map 5: One-mile Zone Around Projected Wind Turbines on the SB Tract



Map 5

On this map, a line has been drawn around the projected turbine-installation area at a distance of one mile, to show number of buildings in the Windham and Grafton that would be near the turbines.

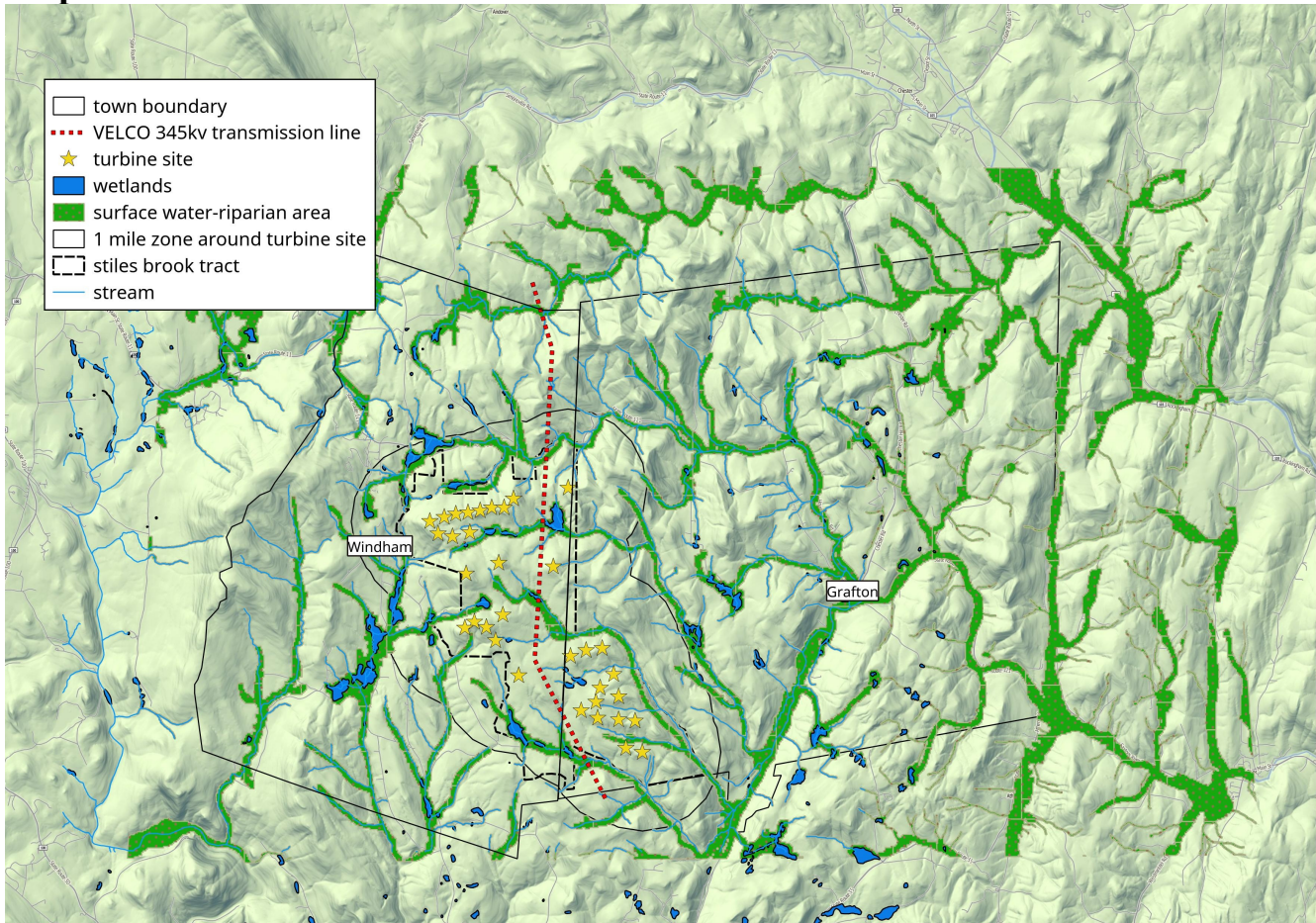
Figure 1: Number of Buildings Within One Mile of Industrial Wind Turbines in Maine and Vermont

State	Installation	Buildings at One mile
Maine	Mars Hill	24
Maine	Stetson Mt	0
Maine	Rollins Mt	24
Maine	Rollins Mt South	11
Maine	Blue Sky East	2
Maine	Vinyhaven (Fox Isl)	42
Maine	Spruce Mt	11
Maine	Record Hill	6
Maine	Kibby Range	0
Total		120
Vermont	Lowell	18
Vermont	Sheffield	23
Total		41
Total Maine and Vermont		161
Windham	Stiles Brook	111

Figure 1

A one-mile zone was drawn around each of the nine wind installations in Maine, and around the Lowell and Sheffield sites in Vermont. Figure 1 shows the number of buildings lying within the one-mile zone for each site, compared to the number in the Town of Windham.

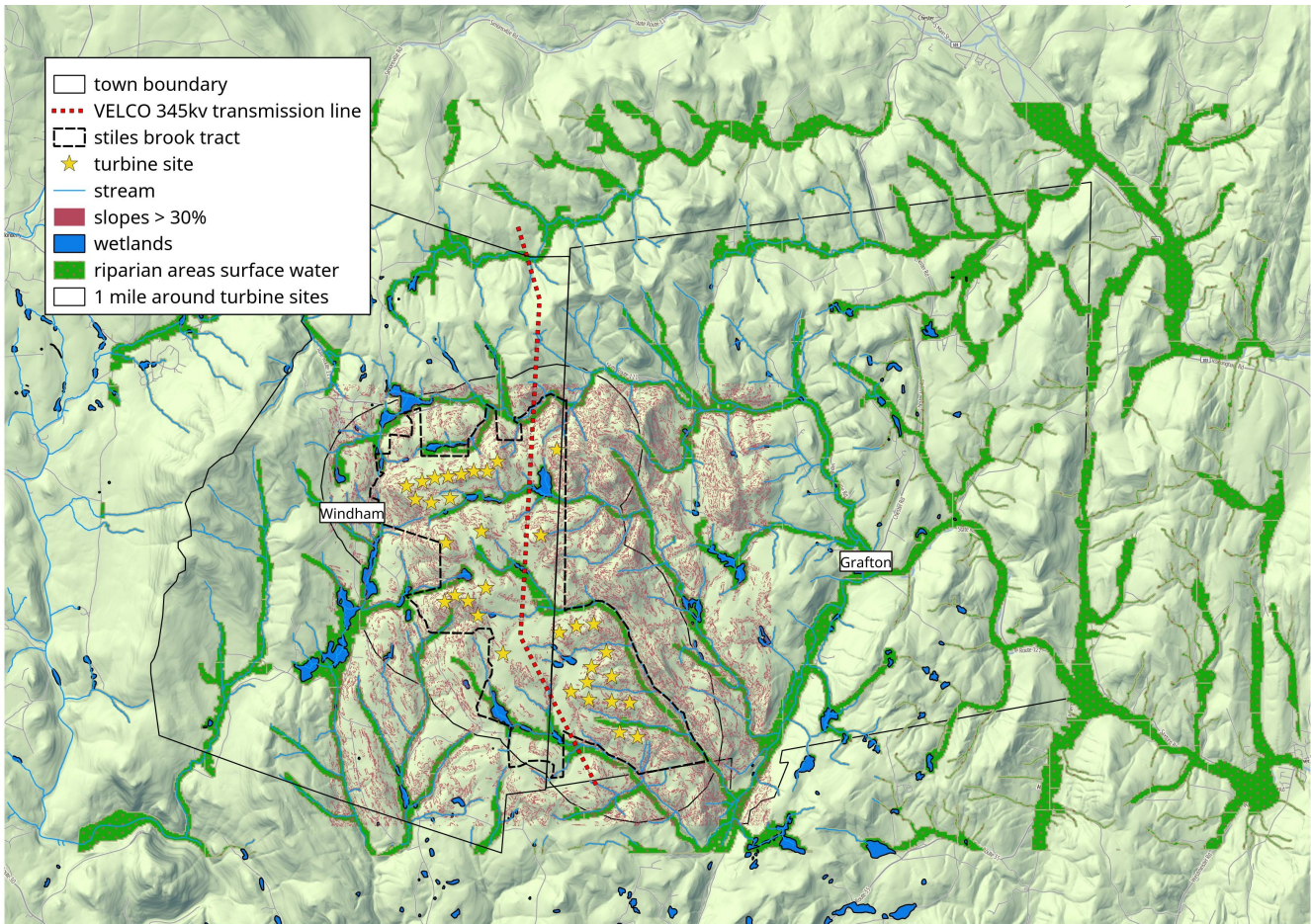
These data indicate that Windham would have almost as many buildings lying within one mile of turbines as there are at all nine Maine installations combined. Furthermore, Windham would have almost 28 times more nearby buildings than at the Lowell, VT site, and nearly five times more than at the Sheffield, VT site. It should also be noted that approximately 48% of the value in the Town of Windham's Grand List lies within one mile of the SB tract.

Map 6: Natural Features of the SB Tract**Map 6**

Map 6 shows streams and riparian areas along the Saxtons River between the SB tract and the Connecticut river. A riparian area is the interface between land and a river or stream. In 2005 Vermont's Agency of Natural Resources (ANR) stated that "Riparian corridors, including stream banks and lake shores, serve vital functions that have significant environmental, economic, and social value." Wind installations require removal of ridge tops and their replacement with impermeable surfaces; with the resulting increase in storm-water runoff comes thermal pollution, silting, erosion, and abnormal fluctuations in water levels of local rivers and streams. The Town of Windham has approximately 31 miles of streams and riparian areas within one mile of projected turbine sites. By comparison, the wind installations at Lowell and Sheffield, VT have 16.5 and 18.7 miles respectively.

Map 6 further shows that riparian areas on the SB tract may be affected at nearly every potential turbine site and access road. Additionally, nearly all of Windham is above 1500 feet in elevation, the highest of any neighboring town; its rivers and streams contribute to three watersheds: the Saxtons, Williams, and West rivers, all of which run through surrounding towns. The north and south forks of the Saxtons river will receive increased runoff from ridgeline destruction on the SB tract and both those forks converge in downtown Grafton which already has a history of flooding. It can also be seen that several streams originating in the projected turbine site run directly under the VELCO transmission line. Runoff from a storm such as Tropical Storm Irene could directly threaten the VELCO transmission line and parts of the New England electricity grid.

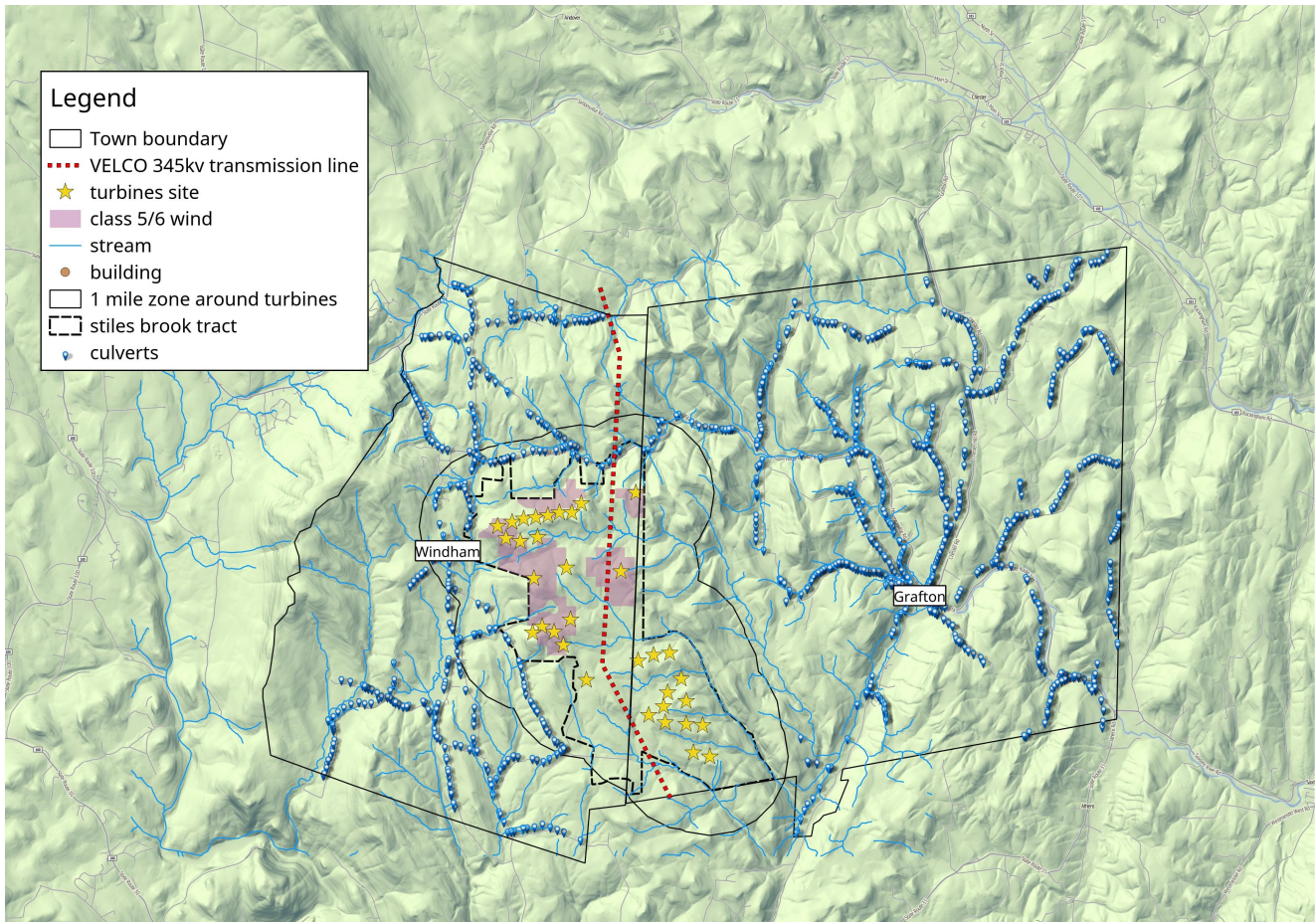
Map 6A: Slopes in the Area of the SB tract



Map 6 A

Most of the slopes on the SB tract are considered steep (greater than 10%). Map 6a shows slopes of 30% or greater, in and around the SB tract. The Town Plan prohibits the use of level spreaders to control stormwater runoff. This prohibition is based on the literature reporting that level spreaders are difficult to install correctly, require constant maintenance, and are ineffective on slopes of 30% or greater.

Map 7: Windham/Grafton Roads and Culverts



Map 7

Map 7 shows Windham's and Grafton's roads and culverts in relation to the projected wind turbine siting.

Windham would have 110 culverts (31% of the 359 culverts in Windham) within one mile of turbine sites; by contrast the Lowell and Sheffield sites have, respectively, 0 and 26 culverts within the same distance. Approximately 21% of Grafton's 715 culverts lie along the Saxtons River. Serious damage to roads, culverts, and bridges is a likely consequence of a wind installation on the SB tract due to three factors: Windham's many streams, very steep slopes, and the central location of the most likely site for turbines. Many culverts and miles of Windham's roads would be directly threatened by runoff associated with extensive excavation on the SB tract. The same is true for Grafton. The developer, as a holder of a Certificate of Public Good, would be immune from paying the cost of damage resulting from their development. The ongoing cost to taxpayers for road and culvert maintenance would certainly rise.

Windham's Town Plan and Hazard Mitigation Plan

Windham has road washouts every year, especially during spring snow melt and late summer season rains. Due to the extreme threat posed to our town by flooding and fluvial erosion, Windham officials have done extensive work to develop a protective Town Plan and Hazard Mitigation Plan.

Some recent Windham history:

- 2003 - flood resulting in approximately \$700,000 in damages. The storm all but destroyed Route 121; costs were so significant that the Town had to obtain financial aid from a local bank.
- 2007 - Windham County was part of a Presidentially Declared Disaster associated with severe spring storms and flooding; the Town of Windham shared with the state costs associated with this disaster and local flooding in previous years.
- 2011 - \$718,667 spent to repair extensive damage to Windham's roads and culverts from Tropical Storm Irene.
- Ongoing - Windham continues to seek grants to upgrade culverts and bridges in order to meet new state requirements.
- 2014 – a microburst in July caused approximately \$69,000 in damages.

Windham has taken steps listed by Flood Ready Vermont so that we may be eligible for increased financial assistance following a declared disaster. But the extensive blasting, forest clearing, excavation and road-building required for a wind installation on the proposed site in Windham would present a mitigation problem well beyond the resources and ability of local and state government. Additionally, knowingly acting contrary to recommended mitigation activities may make Windham and downstream towns ineligible for Federal reimbursement. The Saxtons River rises in Windham and every downstream town – Grafton, Cambridgeport and Saxtons River – will be place at increased risk for flood damage. One of the other streams running directly off the proposed wind installation site is in the West River watershed, with the same consequences as those described for the Saxtons River.

These are some of the reasons that the Windham town officials thinks that Windham is an inappropriate location for a wind installation.