



TOWN OF NORTHBOROUGH ENGINEERING DEPARTMENT

Town Hall Offices • 63 Main Street • Northborough, MA 01532 • 508-393-5015 • 508-393-6996 Fax

December 9, 2008

Mr. Chris Clark
MTC - Innovation Center
75 North Drive
Westborough, MA 01501

Re: MTC Municipal Wind Turbine
Site Survey Application for Northborough

Dear Mr. Clark,

Enclosed please find one (1) hard copy and one (1) electronic copy of the above-referenced site survey application for the Town of Northborough. Please know the Town is very excited about pursuing this opportunity to generate alternative energy.

Please feel free to contact me with any questions or comments you may have regarding this application or the next step in the process.

Sincerely,

Fred Litchfield
Town Engineer

cc: John Coderre
Bob Giles
Joe McNamara

MUNICIPAL WIND TURBINE SITE SURVEY APPLICATION

Applicant's Contact Information

Site Survey applicants must identify a single project contact who is employed by the town and authorized to speak on behalf of municipality on matters relating to the municipal wind site survey. Additionally, the contact must be available to accompany RERL on the site visit.

Name: Frederic E. Litchfield, Jr. P. E.	Title: Town Engineer
Street address: Town Hall, 63 Main Street, Northborough, MA 01532	
Town, state, ZIP: Northborough, MA 01532	
Phone number(s):	508-393-5015
E-mail address:	flitchfield@town.northborough.ma.us
Fax number:	508-393-6996

Application and Attachments

Please make sure the following documentation is provided. Place a check in the appropriate box once attached.

- ☒ Municipal Wind Turbine Site Survey Application
 TrueWind's detail sheet for each site offered for consideration (see footnote 2 above)
 By-law, if applicable
 Other Documents (if applicable):

Application Approval

This application must be read and signed by the head of the governing body for the municipality (Town Council, Mayor, Chairman of the Board of Selectmen etc.) By signing this application, the municipality accepts services offered from MTC through the Wind Survey Analysis as described on the first page of this application. The applicant understands that the Site Survey is intended, in part, to help municipalities determine whether it is reasonable to pursue a wind project on municipally-owned property. The provision of a survey is not an implied or express commitment by MTC to provide subsequent funding, services or other support for wind development under any MTC program. MTC shall have no liability for the applicant for RERL's provision or, or failure to provide, the Municipal Wind Turbine Site Survey.

Name: Dawn Rand	Title: Chairman, Select Board
Signature: <i>Dawn Rand</i>	Date: <i>Dec 8, 2008</i>

Site Information

Use this space to identify potential sites for a municipal wind project. Potential sites must be owned and controlled by the municipality or a municipal board, authority or agency. In addition, a potential site should have open or clearable space sufficient to support the construction and operation of a tall piece of machinery, and should have strong winds, a sizable on-site load, or both.

Please provide all the information requested for each site. You may wish to consult with municipal planning boards, conservation commissions, historic commissioners, etc. for information on each site. The table and the following site information request forms provides space for up to three sites; if you wish to propose more sites, please download additional forms [here](#), fill out the required fields, and attach the forms to the application. RERL may recommend additional sites for consideration based on its desk-top analysis, or as a result of the site visit.

Town name:	Northborough	Electric Utility: National Grid		
Town Administrator:	John W.Coderre	Utility Contact: A. David Larson, P.E.		
		Site #1	Site #2	Site #3
Site name:	<i>Example: Wastewater Plant</i>	Algonquin Regional High School	Mt Pisgah Summit	Tougas Farm
General Site description and current land use	<i>At the wastewater treatment plant. Large 1.5 open flat area to north of main building</i>	High School with large open athletic fields and open space. Load use at site. 192.7 acre parcel about 33% cleared. Large forested area located behind the open fields	179 acres of Forested Conservation Land with many trails. From the Smith Road parking area, the Mentzer trail is the main nature path.	Located on Ball Hill relatively flat open space farmland. 83.7 acre parcel about 68% cleared farmland.
Street Address		79 Bartlett Street	Smith Road	234 Ball Street
Lat. & Long¹	42.64355278 70.62866389	42.1934 N 71.3644 W	42.2136 N 71.3940 W	42.2039 N 71.4039W

☒ Please check this box if the Municipality has included additional site information request forms. Attach all documents at the end of the Municipality's application.

¹ For Latitude and longitude please refer, for instance, to topozone.com at the highest resolution (1:25,000). When possible please use UTM19 coordinates.

Site #1

Site Name: Algonquin Regional High School, 79 Bartlett Street Assessor's Map 52 Parcel 88 and Map 33 Parcel 88

General Site description and current land use: High School with large open athletic fields and open space. 192.7 acre parcel, about 33% cleared. With a high diversity of trees located behind and around the open fields.

Latitude: 71.3644 W

Longitude: 42.1934 N

Elevation (Feet): 290 ft

Total size of parcel: 192.7 acres

Predicted Annual Wind Speed at 70 meters height: 6.0 -6.5 m/s or 13.4-14.5 mph

Describe vegetation on site: Grassy open space/fields, with property perimeter consisting of soft and hardwood trees.

Buildings on parcel; Annual Energy Consumption: Algonquin Regional High School, Administration Building, The high school consumes 2,784,563 KWh /YR. EST. 2008 (Average 2007 and 2008)

Portion of the site, which can be cleared: Approximately 33% is currently cleared.

Soil Type (ledge, rocky, soil, clay, etc.): Soil covered by grass, DEP soil profiles available

Road access to site: Two paved driveways to parking lot

Describe surrounding Parcels: Suburban residential house lots on the west side, separated by trees, large forested area on the east and south side of the open fields.

Nearest Residence: .2 to .3 miles near entrance roads

Proximity to airports: 15.8 miles, Stow Airport and 15.8 miles, Worcester Airport

Current Zoning: Residential RA

Wetland status on parcel and surrounding parcels: Some wetlands are located with this site, see attached map.

Other land use restrictions (conservation land, watershed, etc.): Unknown at this time

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: A significant portion of the site is shown on Priority Habitat Map dated October 1, 2008.

Site #2

Site Name: Mt Pisgah Summit located off Smith Road and shown on Assessor's Map 3 Parcels 1, 2 and 5, Map 9 Parcels 1 and 2 and Map 10 Parcel 24.

General Site description and current land use: 179 acres forested with a high diversity of trees. The land is wild, rural, and quiet, with few roads through the surrounding area, with an extensive trail system.

Latitude: 71.3940 W

Longitude: 42.2136 N

Elevation (Feet): 714 ft.

Total size of parcel: 179 acres

Predicted Annual Wind Speed at 70 meters height: 6.5 –7.0 m/s or 14.5-15.7 mph

Describe vegetation on site: Mt. Pisgah supports a high diversity of trees. Over 30 different species have been identified. Much of Mt. Pisgah region was farmland.

Buildings on parcel; None

Portion of the site, which can be cleared: <1%

Soil Type (ledge, rocky, soil, clay, etc.): Mt. Pisgah is comprised of bedrock with a layer of glacial till. As you progress to the top of Mt. Pisgah the soils become shallow and are much closer to bedrock at the highest points of the property.

Road access to site: Trails needs to be made wider, and site cleared.

Describe surrounding Parcels: Residential house lots and farmland separated by trees, large wooded area.

Nearest Residence: >5,000 ft from smith road to summit

Proximity to airports: 15.8 miles, Stow airport and 15.8 miles, Worcester Airport

Current Zoning: Conservation Land

Wetland status on parcel and surrounding parcels: Some wetlands are located with this site, see attached map.

Other land use restrictions (conservation land, watershed, etc.): Conservation Land

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: No portion of the site is shown on Priority Habitat Map dated October 1, 2008.

Site #3

Site Name: Tougas Farm, 234 Ball Street, shown on Assessor's Map 22 Parcel 7 and Map 25 Parcel 6

General Site description and current land use: Farmland on 83.7 acre lot consisting of relatively flat open space farmland. Surrounded by woodlands and Suburban residential house lots separated by trees

Latitude: 71.4037 W

Longitude: 42.1923 N

Elevation (Feet): 600ft.

Total size of parcel: 83.7 acres

Predicted Annual Wind Speed at 70 meters height: 6.5 -7.0 m/s or 14.5-15.7 mph

Describe vegetation on site: Farmland, grass, assorted soft and hardwoods, small trees and vegetation

Buildings on parcel; Annual Energy Consumption: 1 building consuming KWH annually

Portion of the site, which can be cleared: 68% already is

Soil Type (ledge, rocky, soil, clay, etc.): soil

Road access to site: yes

Describe surrounding Parcels: Residential house lots

Nearest Residence: 100 ft.

Proximity to airports: 15.8 miles, Stow Airport and 15.8 miles, Worcester Airport

Current Zoning: Residential RA

Wetland status on parcel and surrounding parcels: Some wetlands are located within this site, see attached map.

Other land use restrictions (conservation land, watershed, etc.): 99 year lease

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: No portion of the site is shown on Priority Habitat Map dated October 1, 2008.

Wind Turbine Project Interest

To the extent possible, please identify the community's wind energy development goals and the type of project(s) it envisions. This information will help RERL assess each site's potential for development of a wind project consistent with the community's goals and interests.

Describe why the town is interested in wind	The town of Northborough objective is to provide a reliable source of independent electrical power for the town. Provide a major reduction in town municipal energy costs. Become energy self-sufficient for a large portion of current town energy requirements i.e. all schools and town gov't.
What kind of a project does the town envision? <i>Power used onsite or sold into the electric grid?</i> <i>One or multiple turbines?</i> <i>250 kW(\leq180 ft, generating energy for about 80 households),</i> <i>600kW(\geq240 ft, about 200 households), 1.5 MW (\geq350 ft, about 500 households).</i>	We are planning to installing and operating a 1.8 MW Wind driven Turbine and Applying for a State sponsored no cost " Site survey". We are envisioning starting the process with one installation, located in the most opportune spot and progressing from there. Ideally, the site selected would consume the majority of the power generated but would welcome the opportunity to sell excess power back to the grid especially when demand drops in the off school hours. Excess power revenue could be used to purchase REC's to help offset other municipal electricity usage.
Are you considering public ownership (e.g., water authority owns and operates project), or private ownership (e.g., a third party owns and operates the project on leased town land)? If considering public ownership, describe possible financing options	Wind turbine(s) would be located on public lands and operated by the town for the benefit of the taxpaying public. Programs such as IRS CREBs (Clean Renewable Energy Bonds) offer potential for financing and will be explored as the project potentially moves forward.
Describe public input/outreach relating to municipal wind to date	Numerous residents of the town have voiced interest in seeing the town move forward with renewable energy focus. We will post our Presentation on the town web site for public input/outreach.
Does the municipality have a by-law governing wind energy projects? If yes, please attach copy.	No

Site #4

Site Name: Davidian Brothers Farm, 150 Ball Street, Assessor's Map 25 Parcel 5

General Site description and current land use: Farmland on 107.5 acre lot consisting of relatively flat open space farm land. Surrounded by woodlands and Suburban residential house lots separated by trees

Latitude: 71.4037 W

Longitude: 42.2109 N

Elevation (Feet): 647 ft.

Total size of parcel: 15 acres

Predicted Annual Wind Speed at 70 meters height: 6.5 –7.0 m/s or 14.5-15.7 mph

Describe vegetation on site: Farmland, grass, assorted soft and hardwoods, small trees and vegetation

Buildings on parcel; Annual Energy Consumption: 1 cold storage building with three phase power on site, annual energy consumption unknown at this time.

Portion of the site, which can be cleared: 90% already is

Soil Type (ledge, rocky, soil, clay, etc.): soil

Road access to site: yes

Describe surrounding Parcels: Residential house lots

Nearest Residence: 100 ft.

Proximity to airports: 15.8 miles, Stow Airport and 15.8 miles, Worcester Airport

Current Zoning: Residential RA, Protected

Wetland status on parcel and surrounding parcels: No, see attached map.

Other land use restrictions (conservation land, watershed, etc.): 99 year lease

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: No portion of the site is shown on Priority Habitat Map dated October 1, 2008.

Site #5

Site Name: Castle Rd, Assessor's Map 58 Parcel 6

General Site description and current land use: Wooded land on 2.4 acre lot consisting of trees. Surrounded by woodlands and Suburban residential house lots separated by trees

Latitude: 71.4116 W

Longitude: 42.1923 N

Elevation (Feet): 610 ft.

Total size of parcel: 2.4 acres

Predicted Annual Wind Speed at 70 meters height: 6.5 –7.0 m/s or 14.5-15.7 mph

Describe vegetation on site: Grass, assorted soft and hardwoods, small trees and vegetation

Buildings on parcel; Annual Energy Consumption: No buildings

Portion of the site, which can be cleared: 50% to 90%, currently completely wooded

Soil Type (ledge, rocky, soil, clay, etc.): Soil and rocky

Road access to site: Yes

Describe surrounding Parcels: Residential house lots

Nearest Residence: <100 ft.

Proximity to airports: 15.8 miles, Stow Airport and 15.8 miles, Worcester Airport

Current Zoning: Residential RA

Wetland status on parcel and surrounding parcels: Some wetlands are located within this site, see attached map.

Other land use restrictions (conservation land, watershed, etc.): No

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: No portion of the site is shown on Priority Habitat Map dated October 1, 2008.

Site # 6

Site Name: 119 Bearfoot Rd, Assessor's Map 29 parcel 30

General Site description and current land use: Senior Center and parking lot, open land on 7 acre lot. Surrounded by woodlands and trails, Suburban residential house lots separated by trees.

Latitude: 71.38,706 W

Longitude: 42.20,24.43 N

Elevation (Feet): 300 ft.

Total size of parcel: 18 acres

Predicted Annual Wind Speed at 70 meters height: 6.0 -6.5 m/s or 13.4-14.5 mph

Describe vegetation on site: Grass, assorted small trees and vegetation around pond

Buildings on parcel; Annual Energy Consumption: 1 Senior Center, Load TBD

Portion of the site, which can be cleared: 30% already is

Soil Type (ledge, rocky, soil, clay, etc.): Soil

Road access to site: Yes

Describe surrounding Parcels: Residential house lots

Nearest Residence: >300 ft.

Proximity to airports: 15.8 miles, Stow Airport and 15.8 miles, Worcester Airport

Current Zoning: Residential RA

Wetland status on parcel and surrounding parcels: Some wetlands are located within this site, see attached map.

Other land use restrictions (conservation land, watershed, etc.): Abuts Conservation Land

Designation by the Massachusetts Natural Heritage & Endangered Species Program as a Core Habitat or a Supporting Natural Landscape: No portion of the site is shown on Priority Habitat Map dated October 1, 2008.