ISSUE PAPER SERIES

The Next Generation of Wind Farms on Tug Hill

September 2016

NEW YORK STATE TUG HILL COMMISSION

DULLES STATE OFFICE BUILDING · 317 WASHINGTON STREET · WATERTOWN, NY 13601 · (315) 785-2380 · WWW.TUGHILL.ORG

The Tug Hill Commission Technical and Issue Paper Series are designed to help local officials and citizens in the Tug Hill region and other rural parts of New York State. The Technical Paper Series provides guidance on procedures based on questions frequently received by the Commission. The Issue Paper Series provides background on key issues facing the region without taking advocacy positions. Other papers in each series are available from the Tug Hill Commission. Please call us or visit our website for more information.

Table of Contents

Introduction

Ten years have passed since the Maple Ridge Wind Farm in Lewis County, the largest alternative energy project east of the Mississippi, began operating in 2006. With 195 wind towers and 321 MW generating capacity, Maple Ridge Wind Farm "supplies 2 percent of the renewably sourced electricity" in New York State.[1] When large wind farms were originally proposed for Tug Hill, the commission wrote *Harnessing the Wind on Tug Hill* in 2000, with a 2010 update (www.tughill.org/wp-content/uploads/2011/10/HarnessingTheWind2010.pdf)

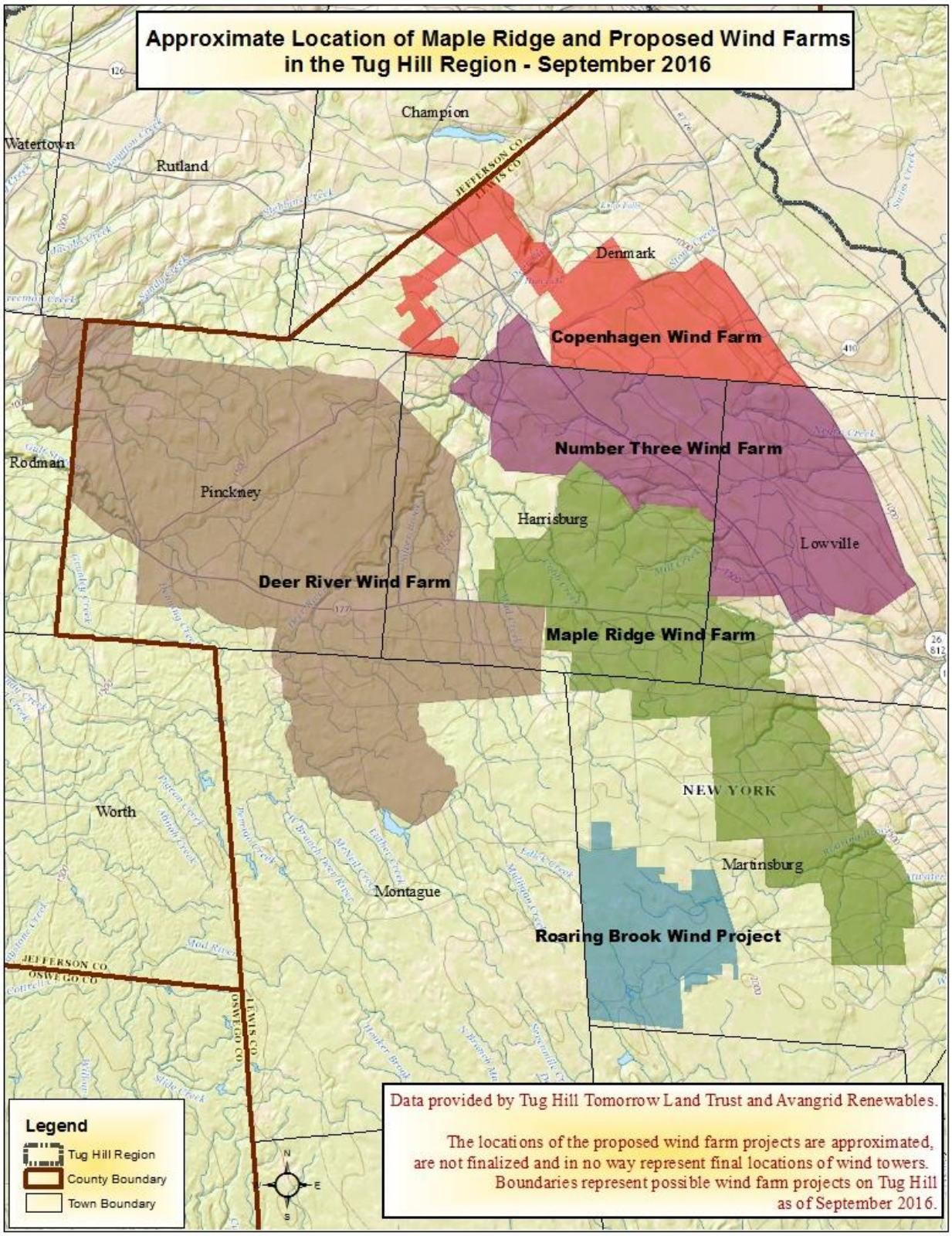
Now, with several more large-scale wind projects proposed for the Tug Hill region, it is important for communities to understand the proposals and issues to consider. This new paper summarizes the current state of six wind farm proposals and discusses topics that municipalities may find important when considering wind farms in their communities.

Current Wind Farm Proposals on Tug Hill

Tug Hill's elevation, relatively low population density, geography and proximity to prevailing lake-effect winds make it an ideal location for the construction of electricity-generating wind facilities. It is particularly noteworthy to mention that Lewis County has the third smallest population of New York counties, yet it produces about 2% of the renewable electricity in the state due to the Maple Ridge Wind Farm. Another way to look at it is that the total annual energy produced by the Maple Ridge Wind Farm is approximately 2% of the residential usage in all of NYS.[2]

As of September 2016, the commission is aware of six proposed wind farms being planned for the Tug Hill region; four are in various stages of the permitting process and two additional projects are in early stages of planning. The map on page 2 shows the existing Maple Ridge Wind Farm and the four wind farms that are already in the permitting process.

- **Roaring Brook Wind Farm (Town of Martinsburg):** According to the developer, Avangrid Renewables (Iberdrola Renewables), "the current project design calls for construction and operation of thirty-nine 2 MW wind turbines located on approximately 5,280 acres of private land."[3] In addition, the project will interconnect to National Grid's 115 kilovolt (kV) transmission line near Lee Road. The interconnection route will include about 5.5 miles of buried electrical line and three miles of overhead line. This project is under a local permitting process, as it began before the new NYS Article 10 review process was put in place by the NYS Public Service Commission. (iberdrolarenewables.us/roaringbrook.html)


Approximate Location of Maple Ridge and Proposed Wind Farms in the Tug Hill Region - September 2016
Champion
Watertown
Rutland
Denmark
Copenhagen Wind Farm
Number Three Wind Farm
Rodman
Pinckney
Harrisburg
Lowville
Deer River Wind Farm
Maple Ridge Wind Farm
NEW YORK
Worth
Martinsburg
Montague
Roaring Brook Wind Project
JEFFERSON CO
OSWEGO CO
LEWIS CO
Legend
Tug Hill Region
County Boundary
Town Boundary
Data provided by Tug Hill Tomorrow Land Trust and Avangrid Renewables.
The locations of the proposed wind farm projects are approximated, are not finalized and in no way represent final locations of wind towers. Boundaries represent possible wind farm projects on Tug Hill as of September 2016.

- **Copenhagen Wind Farm (Town of Denmark):** According to developer EDF Energy, the proposed 79 megawatt (up to 47 turbines) wind energy project will be located in the Town of Denmark. In addition, a 115 kilovolt overhead power line would run about nine miles through the towns of Champion, Rutland and Watertown and connect the wind farm to a National Grid substation near Burrville.[4] This project is under a local permitting process. (www.edf-re.com/en)

- **Deer River Wind Farm (Towns of Harrisburg, Montague and Pinckney):** According to developer, Avangrid Renewables (Iberdrola Renewables), the project calls for up to 40 wind turbines and is in the very early stages of the NYS Article 10 Siting Process. Also, a transmission line may be built into the Town of Rodman, as part of this project. (www.avangridrenewables.us/deerriver/index.html)

- **Number Three Wind Farm (Towns of Denmark, Harrisburg and Lowville):** According to developer Invenergy, this project will include a combination of 35 - 50 wind turbines and up to 100 acres of solar panels with a capacity of up to 126 MW of power. This project is in the very early stages of the NYS Article 10 Siting Process. (www.Numberthreewind.com)

- **Southern Jefferson County (Towns of Henderson, Hounsfield, Adams, Rodman, Ellisburg and Lorraine):** Developer Hudson Energy Development held an informational meeting in March of 2016 with farmers in Southern Jefferson County. Specific information is not known at this time, but it was speculated at the meeting that the project could have a 400-megawatt faceplate capacity (according to a Watertown Daily Times Article, *Farmers at Adams meeting get details about proposed wind project,* published on March 24, 2016 by Perry White.) This project would not be able to move forward until a new transmission facility to connect the project to the utility grid is constructed.[5] (www.hudsonenergydev.com)

- **Salmon River Timberlands (Towns of Worth and Redfield):** Developer Avangrid Renewables (Iberdrola Renewables) has recently applied for permits to construct meteorological towers on Salmon River Timberlands property, indicating a possible project could be proposed in the near future.

What are the potential economic impacts?

In many communities, wind farms are seen as a way to bring economic development to rural areas and sustain local farms and open space. Wind farms make lease payments to landowners who have turbines on their property as well as neighboring landowners in some cases. PILOT payments are made to taxing jurisdictions. Many jobs are created during construction, and several permanent jobs are created as the wind project becomes operational.

Payments in Lieu of Taxes (PILOTs): NYS Real Property Tax Law Section 487 generally provides a 15-year exemption from real property taxation for the increase in value resulting from the installation of a qualifying system, such as a wind or solar farm. Many times, local taxing jurisdictions (county, town, school, etc.) opt-out of the exemption and then require the owners of such systems to enter into contracts to make PILOT payments.

A PILOT is designed to abate county, municipal, and school real property taxes in order to incentivize a project and provide for its longer term success by improving cash flow in the early years. The company will typically receive a larger tax break in the early years, and its payments will generally increase over time until it pays full taxes. This helps the project to get through the initial years of operation and stabilize cash flow so it can take on the higher property tax payments. Because of their high capital investment and longer financing time frame, PILOTs for wind projects tend to be based on a fee per megawatt, include an annual escalator, and provide for additional payments to the community for energy production over a projected minimum level.

A local Industrial Development Agency (IDA) will generally take the lead role in negotiating the PILOT agreements with potential developers and is responsible for collecting PILOT payments and distributing them to the affected taxing jurisdictions. In the case of the Maple Ridge Wind Farm, however, Lewis County is responsible for distributing PILOT payments to the taxing jurisdictions.

The PILOT payments made by the Maple Ridge Wind Farm were fairly high because of a certain set of circumstances; PILOTs negotiated for the current projects will likely be smaller. At the time of its construction, the Maple Ridge Wind Farm was located in a NYS Empire Zone, which was a state funded tax incentive program (that currently no longer accepts new businesses). The Empire Zone designation provides Maple Ridge a tax incentive for paying the local taxing jurisdictions their PILOT payments. With the Empire Zone in place, Maple Ridge agreed to a PILOT for nearly the amount that would have been owed to the taxing jurisdictions if taxed at regular rates. That PILOT expires in 2021, at which time it will need to be renegotiated between the company, Lewis County and its taxing jurisdictions and without the Empire Zone incentive.

Annual PILOT payments received by the municipalities, county, and school districts as a result of Maple Ridge are in the millions of dollars annually. According to the Lewis County Treasurer[6], the January 2016 PILOT disbursements were as follows (rounded to the nearest dollar):

- Lowville Academy and Central School - $3,442,827
- Lewis County - $2,102,383
- Town of Harrisburg - $849,480
- Copenhagen Central School - $206,004
- Town of Martinsburg - $1,000,518
- Town of Lowville - $157,707
- Town of Watson - $24,331
- South Lewis Central School - $19,750

In addition, Maple Ridge employs about 35 local full time employees[7] and provides annual revenue payments of over $1 million to the landowners involved with wind turbine leases.[8]

How are wind farms permitted?

Prior to 2011, the process for siting wind farms in New York was primarily handled at the local municipal level, including an environmental review through the State Environmental Quality Review Act process. On August 4, 2011, Governor Cuomo signed into law Chapter 388 of the laws of 2011 that enacted Article 10 of the NYS Public Service Law. It "established a process for the siting of electric generating facilities and re-powering projects. As part of the process, a multi-agency **Siting Board** is charged with streamlining the permitting process for power plants of 25 megawatts (MW) or greater."[9] Article 10 is meant to provide a more uniform and efficient process for the siting of electric generating facilities such as wind farms in New York. There are five phases of the Article 10 process: Pre-application, Application, Administrative Hearings, Siting Board Decision and Compliance.

While Article 10 provides communities opportunities to participate throughout the siting process, it preempts certain local permitting requirements for the siting of wind projects and exempts projects from the SEQR environmental review process. The environmental impact review requirements are instead incorporated in the Article 10 review process. Local governments may still have influence over the standards used by the siting board based on the substantive standards in their local laws. In addition, local communities participate when negotiating their PILOT agreement, their road use agreement with the wind farm and their host community agreement.[10] Article 10 provides that locally adopted development standards must be adhered to by the siting board in their review and approval of projects, unless the standards are unreasonably burdensome in view of the existing technology or the needs of or costs to ratepayers. No project in New York State has yet gone through the entire Article 10 process, so the substantive and procedural requirements under Article 10 remain largely untested at this time.

Who makes up the Siting Board? There are five permanent members of the Siting Board:

- Chair of the Department of Public Service who serves as chairperson of the Siting Board;
- Commissioner of the Department of Environmental Conservation;
- Commissioner of the Department of Health;
- Chair of the New York State Energy Research and Development Authority, and;
- Commissioner of Economic Development.

There are also two ad hoc members of the siting board, "appointed for the special purpose of providing a local voice in each proceeding conducted to consider specific individual applications for certificates. Each facility application will have its own associated ad hoc members."[11] **Ad hoc members must be**:

- 18 years old or older,
- citizen of the United States,
- resident of the State of New York, and,
- for towns, resident of the municipality in which the facility is proposed to be located.

To be appointed as an ad hoc member in towns, the supervisor and the chief executive of the county (chairman of the legislature) each nominates four candidates and submits their candidates to the state Senate and Assembly. From there, one ad hoc member is appointed by the Majority Leader of the NYS Senate and one is appointed by the Speaker of the NYS Assembly to serve on the Siting Board. Each local ad hoc member chosen for the siting board is also paid $200 each for each day they spend working on the project and are reimbursed for actual and necessary expenses incurred in their duties.

A complete explanation about Article 10 can be found at www.occainfo.org/wp-content/uploads/2015/01/Article10DiscussionPaper.pdf. It provides important information about how home rule, zoning and comprehensive plans relate to this topic. If wind projects were started before 2011, prior permitting processes are required for siting of electrical generating facilities. A more graphical explanation of the Article 10 process can be found here: static1.squarespace.com/static/570d57d19f7266ca3ceea27a/t/572768fb044262921a2782b1/1462200571517/Article10ReviewProcess.pdf.

What is the Intervenor Fund? The NYS Article 10 process requires that an Intervenor Fund be created by the wind developer and made available in both the Pre-application stage and in the Application stage of the process. In the pre-application phase, the amount set aside is $350.00 per 1,000 kilowatts of generating capacity of the proposed facility, but not to exceed $200,000. During the Application stage, $1,000 per MW, but not to exceed $400,000. Fifty percent of the fund will be reserved for involved communities. These funds, which are awarded by the Public Service Commission (PSC), can be used to help offset costs incurred by local parties or municipalities for witnesses, consultants and administrative and legal fees during the scoping and application phases of the process. Funds cannot be used for judicial review or litigation. It is important that the community affected by a wind farm make use of the fund, especially in circumstances where communities require additional information about specific questions they have for their community.

Why are so many wind farms being proposed now?

A combination of advances in wind turbine technology, as well as institution of policies that encourage renewable energy, have led to the increased number of wind farms being proposed on Tug Hill and around the state.

Technology improvements continue to make sites attractive for wind development that would not have been considered 10 or 20 years ago. Turbine components are more efficient and can generate enough power to make development economically feasible. In many cases, fewer, but taller towers and larger rotor blades can be installed to produce the same or more electricity as in the past. For example, the 195 Maple Ridge towers are 390 feet tall and are rated to produce 322 MW (1.65 MW/tower). The 40 wind towers proposed at the Copenhagen Wind Project would be 498 feet tall and rated to produce 80 MW (2 MW/Tower).

State policies that encourage renewable energy development have also increased the attractiveness of wind power. On August 1, 2016, the state adopted the New York State Energy Plan. One target outlined in the plan states that by 2030, 50% of the electricity generated in the state must come from carbon-free renewables such as solar, wind, hydropower and biomass.[12] New York State promotes renewable energy development through programs that encourage renewable energy and provides assistance to businesses and individuals wishing to purchase renewable technologies. For more information about New York's Renewable Portfolio Standard, visit the NYSERDA website http://www.nyserda.ny.gov/About/Renewable-Portfolio-Standard.

Currently, there are also **Federal incentives** designed to promote the production of alternative energy. These are known as the Renewable Electricity Production Tax Credit (PTC) and Business Energy Investment Tax Credit (ITC). The PTC allows owners of qualified renewable energy facilities to receive tax credits for each kilowatt-hour (kWh) of electricity generated by the facility over a 10-year period. Qualified wind power projects are eligible to receive 2.3 cents per kWh for the production of electricity from commercial wind farms. The ITC is a corporate tax incentive that allows for owners of new wind energy systems of any size to receive tax credits worth 30% of the value of the facility.[13] The Federal tax credits were recently extended through 2019, however, the programs will be scaled back incrementally over the next several years until 2019.[14]

What are the potential environmental impacts of wind farms?

As with every power generating facility, wind farms have environmental impacts. Impacts on wetlands and streams, historic structures, views and wildlife habitat on potential wind farm sites are evaluated and minimized by careful siting of turbines. Impacts on aviation and bird and bat habitat can have more wide-ranging impacts and require careful consideration. Many of the potential impacts can be mitigated through good planning and siting criteria.

Aviation: Tall structures, like wind turbines, are known to cause issues with RADAR, including RADAR for weather forecasting and aviation. Jefferson County is home to Fort Drum, which conducts military flight training over portions of the Tug Hill. While the impact of the Maple Ridge towers on military flights from Fort Drum have been generally mitigated, the cumulative impacts of several more wind farms on aviation RADAR will need to be addressed. There is currently a Joint Land Use Study being conducted between Ft. Drum and its surrounding communities. It is hoped that the study will address encroachment issues between the communities and Fort Drum, including the siting of energy projects to ensure that mitigation measures are adopted where needed to avoid further clutter to aviation RADAR and threats to flight safety. In addition, it is yet to be determined if better technology and newer RADAR systems could help mitigate the impacts of wind towers on aviation.

Habitat and Wildlife: The impacts of wind farms on wildlife, particularly birds and bats continue to be assessed at potential and operating projects throughout the country. The impacts of wind farms on particular species is more well-known than before and post-construction monitoring information furthers the understanding of potential impacts. Because of the information now available as well as the requirements of Article 10, wind farms being proposed currently will have much more stringent requirements when it comes to documenting habitat and wildlife before and after wind farm construction.

Three studies that have been conducted and published about the impact of the Maple Ridge Wind Farm on birds and bats. These reports were prepared by Aaftab Jain, Paul Kerlinger, Richard Curry, Linda Slobodnik of Curry and Kerlinger, LLC, 174 Fayette Blvd., Syracuse, NY 13224. These reports are titled ***Annual Report for the Maple Ridge Wind Power Project*** **Post-construction Bird and Bat Fatality Study** and were conducted and published in 2006 (June 25, 2007), 2007 (May 2, 2008) and 2008 (May 14, 2009). These studies state, in general, that the Maple Ridge Wind Farm's impact on wildlife were comparable to other wind farms of similar size in the northeast. There is much to be learned yet about the impacts of wind farms on wildlife, namely birds and bats. However, studies have repeatedly shown that the estimated total number of bird collision fatalities at wind energy facilities is several orders of magnitude lower than other leading anthropogenic sources of avian mortality (AWWI 2016). Further, studies show that fatality rates at currently estimated values do not appear likely to lead to population declines in most bird species (AWWI 2016). There are links at the end of the paper for more information about wildlife impacts.

What should communities keep in mind when approached by a wind farm developer?

Communities where wind farms are proposed have many things to consider. The town of Pinckney's attorney, James Burrows of Conboy, McKay, Bachman and Kendall, had a meeting with Pinckney town representatives on August 8, 2016 to discuss various considerations. The following take-away points were made during his presentation:

Infrastructure: If a wind farm is to be built in a community, wear and tear to the town's infrastructure needs to be considered, most importantly on the municipally owned roads. Agreements for road maintenance and repair should be worked out with the wind farm developer ahead of time so that any damage or wear will be fixed after the wind farm is built.

Decommissioning Plan: A decommissioning plan should also be negotiated with the wind farm developer ahead of time. Wind towers have a useful life expectancy, after which the wind tower will either become obsolete or too expensive to operate. The wind towers and infrastructure should then be removed at the expense of the developer. To ensure this happens, the town should consider requiring a bond to be posted up front by the developer, as a way of providing an "insurance policy" that the cost of removing the wind tower will be covered by the developer. An engineer should be consulted by the municipality (a possible use for intervenor funds) to develop accurate and adequate costs for removing the wind tower and a multiplier should be applied to ensure that the bond will cover the cost out to a 20-50 year time frame. If the town will be taking down the wind towers in the decommissioning plan, they need to consider prevailing wages in their cost estimates, which will increase the cost to take the wind towers down.

Lease Agreements: Landowners being approached with lease agreements from the wind developer should always consult an attorney before signing them. In particular, the landowner should pay attention to the fact that if the wind tower is abandoned on their property by the developer that the landowner would be responsible for the full taxes on the wind tower they host on their property.

Land Use Plans: The community should carefully consider the impacts of wind projects in its development plans, as some impacts may foreclose other development options in and around the project area. A wind tower will require a development setback or a radius around it to ensure its operation is compatible with other permitted land uses in the community.

Lease and Neighbor Payments: Wind farm developers may offer, in addition to lease payments to the landowners hosting a wind farm, a "neighbor payment" to those landowners close enough to the wind tower to be affected by visual impacts or aesthetics.

Property Values: It is difficult to determine if wind farms have an effect on property values. In some instances, for example near popular vacation destinations, there may be a negative impact on property values. In other more rural areas, property values may not be negatively affected. There are several studies in different geographical contexts that can be consulted for more information.

Additional Resources

American Wind and Wildlife Institute: *Wind Turbine Interactions with Wildlife and their Habitats: A Summary of Research Results and Priority Questions (June 2016)*
awwi.org/resources/summary-of-wind-wildlife-interactions-2/

USGS Fort Collins Science Center: *Bat Fatalities at Wind Turbines: Investigating the Causes and Consequences (June 2016)*
www.fort.usgs.gov/science-feature/96

National Wind Coordinating Collaborative: *Wind Turbine Interactions with Birds, Bats, and their Habitats: A Summary of Research Results and Priority Questions (Spring 2010)*
nationalwind.org/wp-content/uploads/assets/publications/Birds_and_Bats_Fact_Sheet_.pdf

Literature Cited

[1] http://www.buffalonews.com/opinion/viewpoints/time-to-get-serious-about-renewable-energy-maple-ridge-wind-farm-at-the-eastern-end-of-lake-ontario-can-serve-as-model-for-western-new-york-20150329

[2] William Moore, personal communication, September 13, 2016

[3] http://iberdrolarenewables.us/roaringbrook.html

[4] Watertown Daily Times article by Steve Virkler, Published Thursday, July 9, 2015

[5] William Moore, personal communication, September 13, 2016

[6] O'Brien, Patty, personal communication, August 25, 2016.

[7] http://iberdrolarenewables.us/cs_mapleridge.html

[8] https://s3-us-west-2.amazonaws.com/iberdrola-pdfs/pdf/MapleRidgeFactSheet.pdf

[9] http://www3.dps.ny.gov/W/PSCWeb.nsf/All/1392EC6DD904BBC285257F4E005BE810?OpenDocument

[10] Marguerite Wells, personal communication, September 22, 2016.

[11] http://www3.dps.ny.gov/W/PSCWeb.nsf/ArticlesByTitle/bce89bd8c61d9d4b85257e200054a99a?OpenDocument&ExpandSection=7%2C10%2C11%2C17%2C16%2C15%2C13%2C12%2C9%2C8#_Section7

[12] http://energyplan.ny.gov/Plans/2015.aspx

[13] http://www1.eere.energy.gov/wind/pdfs/57933_eere_wwpp_federal_incentives.pdf

[14] http://www.renewableenergyworld.com/articles/2015/12/making-sense-of-the-itc-extension-for-wind-solar-and-bioenergy-too.html