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Wind Energy Development in New York State: Issues for Landowners

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SUMMARY

Wind power development is increasing dramatically because of New York's Renewable Portfolio Standard. This standard will make it necessary for New York's utilities to increase their use of renewable energy by more than 50%. As a result, wind power developers are seeking new sites for wind power generation in New York.

This bulletin is intended to be used as a resource by private landowners in New York State who are concerned about wind development's implications. It guides the landowner step- by- step through the process of wind development on private property. It starts with suggestions for the preliminary stages of development where the landowner interacts with the community and begins contemplating the effects of wind power on a local level. It then outlines the early development phases when wind development firms begin testing sites on private land. It discusses the issues in the lease negotiations that take place when a development firm wishes to obtain the right to access and build on private property. The landowner deserves a contract that is equitable and profitable, and mitigates unnecessary risks. The appendices summarize the entire wind development process in the form of a table, provide resources for further information, present a glossary of terms, and supply sample compensation provisions in a lease agreement.

Readers should consult with their own legal or financial advisors to ensure that the choices they make best fit their individual needs. Incidentally, we would like to offer special thanks to those who contributed to this work by sharing their experiences pertaining to wind energy development.

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Photo 1. (Page 3) Wind Turbine, Madison County, NY. Photo by John Taber, Cornell University

Photo 2. (Page 11) Constructing a wind turbine foundation in Woodward County, Oklahoma (Oklahoma Municipal Power Authority 2003)

Photo 3. (Page 15) Aerial view of turbines connected by access roads in Madison County, NY. Photo by Chris Milian, www.PhotosFromOnHigh.com

SECTION I. INTRODUCTION

Utility- scale wind generation is the fastest growing type of energy generation in the United States (US GAO 2004). If you own a single parcel of land with generating potential in New York State, there is a good chance that you have either been approached by a wind energy developer or know someone who has. You may be wondering why this has become such a popular issue.

In 2003, The New York State Public Service Commission announced that it planned on implementing a Renewable Portfolio Standard (RPS) that would ensure that within 10 years, 25% of New York's energy would be generated by renewable sources. At the time, renewable energy made up about 17% of New York's generating mix. Since the RPS went into effect in 2004, wind energy developers have literally been knocking on the doors of landowners in rural New York. Developers are motivated by the relatively low cost per megawatt hour of wind energy as compared with other renewable technologies such as solar energy. There are more than 100 identified potential wind energy sites in New York State (Eliot Spitzer 2004).

As a landowner, the decision to pursue or not to pursue such development on your land is based on a number of complex factors. This bulletin attempts to provide a useful background on wind power generation and its physical requirements. It also describes initial individual and community considerations, potential conflicts and resolutions, a description of a lease agreement, and some potential benefits and risks. After reading this, we hope you will have a more thorough understanding of how the process of utility- scale wind development can affect you as a landowner. To address additional questions, this bulletin has appendices that outline the entire wind development

process, provide sample lease compensation provisions, list personal contacts and web resources, and contain a glossary of frequently used terms.

This is the third Extension Bulletin in a series on the landowners' perspective in selling or leasing production rights for natural resources on their property. The first two in this series address natural gas leasing and timber sales. All three are issued by Cornell's Department of Applied Economics and Management.[*]

SECTION II. WIND POWER: DEVELOPMENT IN NEW YORK STATE

A. Wind Energy to Electricity: The Process

In order for wind to generate electricity on a commercial scale, it must go through a few steps first. Large wind turbines are the most visible part of this process. As the wind blows, it turns rotors that look like a giant propeller. These rotors then turn a turbine that generates electricity. A tower that is the height of a football field supports the rotors that are the size of the wingspan of a large airliner (Park 2003).

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[*] The other two Bulletins are listed below. They can be obtained by calling Carol Thomson at (607) 255-5464, or by printing from the Internet.

Katherine Ziegenfuss and Duane Chapman. Leasing of Natural Gas and Drilling Rights on Public and Private Land in New York, EB 2003-15. Cornell Department of Applied Economics and Management Extension Bulletins (2003), September 2003. http://aem.cornell.edu/outreach/extensionpdf/eb0315.pdf.

Jerry Brian and Duane Chapman. Timber Prices: A Guide for Woodlot Owners in New York State, EB 2005-01. Cornell Department of Applied Economics and Management Extension Bulletins (2005), January 2005. http://aem.cornell.edu/outreach/extensionpdf/eb0501.pdf.

Other pertinent Cornell publications include:

Logozar, Bernadette. Farming the Wind. Franklin County, New York: Cornell Cooperative Extension, 2005.

Ochterski, Jim. CCE Gas Exploration and Leasing on Private Land. Schuyler County, New York: Cornell Cooperative Extension, 2005. www.cce.cornell.edu/scnyag.

Photo 1. Wind Turbine, Madison County, NY. Photo by John Taber, Cornell University

The tower also supports turbine controls, a drive train, electric cables, and hardware. A central cluster computer that maximizes generating efficiency very precisely controls each of these turbines. The electricity generated is then sent to the state's electric utility grid, where it can be distributed through transmission lines to customers (NYSERDA 2004).

B. Potential Benefits to New York State

Wind is a renewable form of energy that can potentially benefit New York State. We normally associate generating electricity with large smokestacks and greenhouse gas releases, but as you probably know, the wind energy generating process is virtually emissions- free. It does not produce greenhouse gasses and pollutants that lead to acid rain and smog (AWEA 2005). This could lead to healthier rainwater on crops and less pollution in sensitive ecosystems like the Adirondack area. The construction of wind turbines and electricity generated by them also creates construction jobs, expands the tax base, and provides additional income to landowners (Ouderkirk and Pedden 2004). Wind development, if negotiated properly, can potentially boost local economies in rural New York.

C. Necessary Conditions for Private Land

After talking with a wind development firm or hearing about a lease agreement, you are likely curious about what constitutes a potential commercial site. To reduce turbulence, developers try to position turbines as far apart as possible, giving each 10 to 30 acres of land (Danish Wind Industry Association 2005). This is one of the reasons that

agricultural land is often chosen. Agricultural land is clear and usually free from commercial obstacles. Buildings, tall trees, and some geologic formations may make the site less desirable. Ideal sites are generally on hilltops and ridgelines where the wind is strong and unobstructed (Logozar 2005). Another important feature that developers consider is proximity to the utility grid. Since developers are in the business of selling power, the turbines that are closer to a utility grid can be more profitable (Power Naturally 2004).

A site is only "ideal" in the eyes of a developer if it is windy. Modern wind turbines require a minimum average wind velocity of 15 mph (NYSERDA 2004). This is the reason why developers will first request to install wind- monitoring devices on potential sites. Looking at a wind map will give you a general idea of the wind velocity in the area where you live. One such map is provided by AWS Truewind and is available online at http://truewind.teamcamelot.com/NY/ . As a whole, New York State contains many attractive potential wind energy sites due to its high average wind speed as well as access to high- voltage power lines. Given these factors and New York's large consumer base, our state provides more potential for utility- scale wind development than any other state east of the Mississippi (NYSERDA 2004).

SECTION III. EARLY ACTION

A. Community Involvement

Since interest in wind development has increased here in New York State and developers are moving quickly to secure prospective sites, it is advisable to address potential development issues at the community level early on. “One mistake that communities cannot make is assuming that if their zoning codes do not allow for wind farms, then wind development is prohibited within the community (Daniel Spitzer 2004).” Wind farms are utilities and therefore can be less restricted under zoning regulations. When there is buzz about wind development, that is the best time to begin to talk to your neighbors about the potential issues. It is easier to adopt codes and address concerns before there is conflict. There may, in fact, be codes in place that could influence the way that wind resources are developed. As a landowner who is considering wind power, you may attend a town, municipality, or county board meeting to learn what restrictions are in place and what the community’s plans and attitudes are towards wind development.

Community interaction is also important before development because it can increase the bargaining power of landowners in wind power lease contract negotiations. A group of neighbors collectively discussing development can increase leverage and motivate the developer to draft equitable and more valuable contracts. It also might make the area more desirable for development because continuous parcels of land are available for leasing.

B. Individual Involvement

Wind development may change your property taxes and possibly conflict with tax exemption schemes such as the 480-A or agricultural exemptions. You can contact a local tax assessor and get answers to your questions about general impacts on property taxes due to wind development. Specific tax impacts will be difficult to determine before a project is designed.

C. Possible Conflicts and Resolutions

1. Using Setbacks

As with any large- scale undertaking with observable impacts, it is possible to have opposition to development. Many of these objections can be addressed through appropriate setbacks. A setback means that the developer cannot build turbines very close to a park or a populated area, where people might be bothered by their existence. Since the turbines are very tall, it may be difficult to protect views, but setback requirements of at least ¼ miles are a good way to help reduce noise complaints and minimize the visual impact on landscapes (Daniel Spitzer 2004). Another justification of setbacks is shadows. The shadows of turbine blades in motion can have a strobe effect if cast onto the windows of a house. Setbacks reduce this potential annoyance by allowing for space between buildings and the turbine shadows. Ice shears are another reason why setbacks are important. In New York State, winter weather can lead to ice buildup on turbine rotors. As the ice thaws or the rotors move, large pieces of ice can fall from the turbines. The areas directly beneath the turbines can therefore be dangerous during parts of the winter (Merrick 2005).

2. Wildlife Impacts

Other concerns typically involve a turbine's impact on birds and other wildlife. There are some cases where wind turbines and the associated electrical equipment have killed or injured birds. Often, these impacts are minimal, but depend largely on migration patterns. In New York State, development such as wind power that receives state funding or requires approval by a local government is subject to review under the State Environmental Quality Review Act (SEQR) (Power Naturally 2004). Generally speaking, the wind developer will be required to thoroughly study these impacts before development begins.

D. Early Development

The development process actually begins when wind development firms start to classify potential wind resource sites. This classification procedure is known as speculating. It involves three distinct steps that have increasingly greater impact on your land: (1) prospecting, (2) validation, and (3) siting.

1. Prospecting

Prospecting means that developers will assess land features, structures, and vegetation that could affect the site. When they identify a site that may be promising for development, they will begin the process of validation and siting.

2. Validation

Validation is the step in the process when you as a landowner are likely to begin communicating with developers. In order to be certain that the site is desirable for development, a developer will typically ask to install monitoring equipment such as test towers on your land. Landowners are asked to sign a contract that allows access to the land for installing monitoring equipment as well as possible future development rights. Upon signing a contract for monitoring, you may be agreeing to a lease if the development firm decides to build turbines. These implications will be described in greater detail in the next section. This validation process ensures that the site's average wind speed is economically suitable for development. In other words, the company wants to see if the turbines are able to function efficiently (Logozar 2005).

3. Siting

After monitoring the land from six months to two years, the development firm will begin siting. This process is much more exact and intrusive than the validation procedure, and involves more extensive monitoring. Siting is the process of designing the project and locating the best areas on the leased land for turbines. Similar to an architect drawing blueprints to a house, the development firm begins planning what the wind site will look like.

4. Contractual Arrangements

The contract that allows a wind development firm to have access to your property and rights to develop a wind site is commonly referred to as a lease agreement. Some companies may present contracts called lease option agreements or easements. Some lease options or easements contain the provisions described in this bulletin. Others may be for monitoring purposes and you may be presented with a separate contract only if the site will be developed. It is very important to understand the terms of the contract that is presented to you. It is also advisable to ask about any potential future contracts and their implications.

SECTION IV. THE LEASE AGREEMENT

A. Compensation

In general, there are three different types of possible compensation included in a lease agreement: (1) option period payments, (2) development period payments, and (3) commercial use period payments. Option period payments compensate you for the firm's access to your land during wind monitoring installation. This is the process of validation and siting. The developer ought to compensate you for access to your land during the option period. It is advisable to ask how much access the equipment installation requires, where it will be, and what kind of alterations the developers will do to your land. If the developers decide that your property is optimal for wind generation, they will notify you and the development period payments will begin. This period is the most invasive. Remember the large size of the turbines. This is a significant construction project.

Photo 2. Constructing a wind turbine foundation in Woodward County, Oklahoma (Oklahoma Municipal Power Authority 2003)

Your land will be altered and you should be compensated above the cost of access and loss of productivity. The payment during this period should be greater than what you receive during the option period.

The third and final payment period occurs when the development firm completes construction and the turbines start to generate energy. This is the commercial use period. The terms of this part of the agreement are most critical in the long run. Often these payments last twenty years or more. You are usually paid a sum annually per turbine as each generates electricity. Payment methods can be a one- time lump sum, basic annual

royalty payments, payments per KW hour generated, or a fixed amount per year regardless of production levels. Combinations of these methods are also common. Current estimates of payments per turbine per year are in the thousands of dollars and can vary significantly. Payments depend on the expected return on the energy that the project generates. According to a study done by the US Government Accountability Office, you should ask for a percentage of gross revenues (a royalty payment) in addition to the base amount (a fixed payment) because wind power production is highly variable and prices will likely increase. Royalty payments per turbine are usually between 2% and 6% of revenues (US GAO 2004). It is important to ask the developer how revenues are to be calculated. These lease royalty payments have been significantly lower than oil and gas leases, which typically pay the landowner 12.5% of revenues (Ziegenfuss and Chapman 2003).

When the firm presents you with a payment amount per turbine, ask them how they came about the estimate. The New York State Public Service Commission may institute a premium subsidy payment of a few cents per KW hour. Your royalty agreement can reflect these payments.

Inflation is also important to consider when negotiating payments. Inflation causes the same sum of money to be worth less over time. Some landowners have asked for payments that increase over time corresponding to inflation rates. An example would be to work out a lease payment that increases per year according to the Consumer Price Index.

B. Legal Representation

As mentioned earlier, you will be contacted if the wind development firm feels that your land is desirable for turbines. Much like an oil or gas lease, this may grant the firm exclusive development rights to your property. It is also similar in that the developer pays the landowner money in exchange for these rights (Ochterski 2005). This lease is a very important contract that is legally binding. It is critical that you know what you are signing and are comfortable with all of the implications. You should know how much of your land is subject to the agreement. Be particularly cautious about the actual rights that you are agreeing to give up when signing the contract. One contract in Texas described "energy rights" as "wind and all other known and unknown energy sources" on the parcel (Dunn 2005). In other words, the landowner unknowingly agreed to natural gas and oil extraction without any extra compensation. You ought to consider all of the factors involved in the development process and the value of the rights that you are selling; then make a decision that maximizes your benefits.

When you receive a lease agreement, the language can be difficult to understand without legal expertise. A lawyer who has real estate experience and dealt with wind projects in the past can explain the implications behind the language in the lease. Qualified legal advice can be advantageous when negotiating with a development firm. You can request that the wind development firm help pay for legal service, but is often advisable to pursue the service on your own. There is a list of law firms in the appendix that may be able to provide appropriate assistance, although the list is by no means exhaustive. An attorney will be able to explain the lease agreement to you. The lease will

discuss compensation, duration, access to property, future site plan provisions, and some other legal issues that are likely to vary on a case- by- case basis.

C. Duration

The duration of the lease is another important feature of the contract. Like any other contract, it lasts for a specific time period. After the expiration date, it will become void. It is crucial that you consider the time that the firm proposes and that you carefully review clauses that result in automatic renewal. You ought to reserve the right to decide whether monitoring will continue after a designated period. Having a clear understanding of what happens when the lease ends is advantageous. It may be wise to avoid a contract that renews automatically without your consent (Daniel Spitzer 2005).

D. Access

The lease agreement will have a provision allowing the developer access to your property. This is relevant during monitoring, construction, and generation. Access due to monitoring will be minimal compared to the construction period of the project. Despite this fact, all liability associated with access should be the responsibility of the wind developer. You should not be held responsible for an injury caused by wind development on your land no matter who is involved. You can also ask to be notified when the developers will be on the property. Asking for specific days of the week and times of day may add to the peace of mind of you and your neighbors. When construction begins, the developer will begin clearing access roads for the turbines. These roads will be used for maintenance purposes when the turbines are generating energy. They will also be used

for hauling the equipment needed to assemble the turbines. Some farmers have said that these roads allow easier access to their fields (Ouderkirk and Pedden 2004). Road lengths and widths are important to consider, but specific information will likely be limited before turbines are installed. Access roads are usually gravel and 20 feet wide so that they can support heavy equipment (NYSERDA 2004).

Photo 3. Aerial view of wind turbines connected by access roads in Madison County, NY. Photo by Chris Milian, www.PhotosFromOnHigh.com

E. Site Plan

Before construction, the developer will produce a site plan, which lays out the design of the project. This was described earlier as siting. Provisions for siting should be in the lease agreement. As a landowner, you can ask to have access to the site plan as well as a voice in its design. Since the site plan dictates the way your land will be developed, it also indicates the way you will be affected. You should know where the turbines will be placed and where the access roads on your property will be constructed. It is important to pay close attention to how much input you have in developing the site plan as well as the amount of time you are allowed to review the site plan before construction begins. Having influence on the site plan will allow you to minimize the impact of wind generation on views, noise, and agricultural production.

F. Miscellaneous Provisions

Lastly, the lease agreement usually has other miscellaneous provisions. Make sure to ask your attorney to explain what each of these are, how they might affect you, and what needs to be addressed before you sign. The following is a list of important provisions that may need to be considered. This list is not meant to be exhaustive. Your attorney can help you think through provisions needed to reduce unnecessary risk on your property. Also consider the subject areas below when evaluating the compensation that the development firm offers you.

- Liability or indemnity provisions should be included so that the development firm is 100% liable for the project and its operation. This needs to be maintained for its entire life. Under no circumstances should the liability be transferred to you.

- It is also advisable to protect yourself from default during all phases of wind development including the option period. You can ask your lawyer about what kind of recourse you have in the case of default. During construction and generation, including a provision for a removal bond will protect you from having equipment on your land without proper payment. In other words, if the company is not able to pay you, it will be obligated to remove the turbines and restore your land. Acceptable restoration criteria should be described in this provision.
- Consider adding a provision specifying acceptable land restoration criteria after the turbine construction phase has ended. This is particularly important if your land is used for agriculture.
- It may be necessary to add a provision that limits the land subject to the agreement as only that which is reasonably necessary for wind power generation. Land not used for wind energy production should then be released from the terms of the agreement (McEowen and Nordling 2004).
- You should know the income tax consequences of each type of payment you could potentially receive from the wind developer. Wind development also may affect the amount of property taxes you owe (Kemp 1995). A tax counselor is the best objective source of information regarding tax changes (McEowen and Nordling 2004).
- Wind development may be in conflict with state land- use programs in which you participate. If this is the case, you should consider this factor in evaluating your compensation (McEowen and Nordling 2004).

- Development rights are regularly bought and sold, so you could potentially agree to a lease with one company who then sells it to another. Adding a provision requiring a notification of transfer will help you keep up to date on who actually own the rights to your land.

SECTION V. RISKS AND CONCERNS

It is important to consider wind energy development as an investment. As with any investment, there are risks involved. The previous section described how your attorney could help you protect yourself against some risks by negotiating provisions in the lease agreement. There are other risks that you may have to accept when you sign the lease. The most obvious is the risk of the development firm actually installing turbines on your land. When you sign a lease, you not only agree to allow the development firm to monitor your land, you also agree to allow them to build turbines on your land if they choose. Another major risk is the possibility of financial failure. A project in Minnesota provides an example: "A wind developer went bankrupt before completing the project. Unable to collect from the developer, the construction contractor that poured the concrete foundations for the turbines placed a lien on the farmer's land. In the end, the farmer assumed responsibility for completing the project (US GAO 2004)."

After the construction of turbines, there are production- related costs that you may need to consider if your land is used for farming. Those who have turbines on their land mentioned that they were unable to use aerial crop dusting. Their fuel costs rose since they had to drive their equipment such as tractors around obstacles like turbines,

substations, and access roads. There is also the loss of productive acreage (1/2 acre per turbine) from these installations (US GAO 2004).

Other costs are important for anyone, whether you farm or you just own a large parcel of land. These costs tend to be subtler, and relate to changes in property value. Since lease payments provide a stream of steady income, they could increase the value of your property. But, it is absolutely critical to consider your future plans for the land. If you think you might sell your land and there is a lot of residential development in the area, wind turbine development or even a lease agreement may prohibit a sale or reduce its attractiveness. Often the highest prices for farms or large plots of land are not offered by other farmers or timber harvesters, but by residential developers. Not having the ability to sell your land for its maximum value represents a very substantial cost that may be on the scale of tens or even hundreds of thousands of dollars.

When thinking about the costs of agreeing to a lease, make sure to keep in mind that some costs can be difficult to measure. There will be opportunity costs, or the values of the best alternatives of your resource (Perloff 2001). This means that you should first think about how much you earn on your land in the absence of the wind development. Then consider how the turbines and roads on your property can increase your costs of production in the case of agriculture. Comparing this with the amount of money per year that the development firm agrees to pay you will give you an idea of the true net benefits of the project.

SECTION VI. CONCLUSION

The choice of signing a lease agreement is an investment decision that should be carefully thought out. The implications of doing so are large both in terms of the size of the project and the potential payback. It is important to consider that wind developers are highly motivated to construct wind sites after the passage of New York's Renewable Portfolio Standard. Firms will be willing to negotiate with landowners, and as a landowner you should minimize your risk and maximize the payment you receive. The goal is an agreement that is fair and profitable to both developer and landowner. This is done through careful attention to the details of the lease. Decisions should be based on individual implications and are therefore likely to vary substantially. We hope that this bulletin has provided a sufficient foundation to understanding wind power development. The following appendices contain additional resources.

APPENDIX A:

AN OVERVIEW OF THE

PROCESS

Table 1. Steps and Activities in the Wind Development Process

Step	Activity	Description	Parties Involved
1	Detailed wind data gathered for the proposed project site from secondary sources.	Local wind data from airports or meteorological stations, wind data on an hourly basis on varying heights for about one year.	Development Firm, Landowner
2	Predevelopment studies and community interaction.	Information on the potential effects on birds, receptivity of neighbors and local communities; possible obstruction of air traffic by the turbines, interference with aerial crop dusting, possible environmental impact assessment.	Development Firm, Various Consultants, Community, Landowner
3	A lease agreement negotiated with the landowner.	A right of access to and across the property to construct, operate, and maintain the project. A right to transmit the electricity from the property. A term sufficient for financing the project, usually 20 years or more.	Development Firm, Landowner
4	Permission to construct and operate the project from local permitting authorities.	Permits include land use and construction permits.	Development Firm, Federal Authorities, State Authorities, Local Authorities, Landowner
5	Easement rights of access to interconnect transmission lines.	Allows the developer to connect the energy generated by the wind turbines to the utility grid.	Development Firm, Utility Provider, Landowner
6	Project financing obtained.	Bank or other lending institution, and federal or state assistance programs for renewable energy sources.	Development Firm, Lending Institutions, Government Agencies, Landowner
7	Construction begins.	Services and supplies related to site preparation, construction of turbines, substations, and access roads, and operation and maintenance of the project.	Development Firm, General Contractor, Electrical Contractor, Earthwork Contactor, Wind Turbine Supplier, Landowner

The steps and activities may vary slightly on a case- by- case basis.

Source: US GAO 2004

APPENDIX B:

SOURCES OF FURTHER

INFORMATION

A. Personal Contacts

For general information:

Jude Barry
Cornell University
255 Warren Hall
Ithaca, NY 14853

Online: www.cce.cornell.edu
Phone: (607) 254-4741
Fax: (607) 255-9984
Email: jab267@cornell.edu

Bernadette Logozar
Cornell Cooperative Extension
355 West Main Street, Suite 150
Malone, NY 12953

Online: www.cce.cornell.edu/~franklin/
Phone: (518) 483-7403
Fax: (518) 483-6214
Email: bel7@cornell.edu

***For legal advice*:**

Hodgson Russ, LLP
One M & T Plaza, Suite 2000
Buffalo, NY 14203

Online: www.hodgsonruss.com
Phone: (716) 856-4000
Fax: (716) 849-0349
Email: contact@hodsonruss.com

Watson, Bennett, Colligan
600 Fleet Bank Building
Buffalo, New York 14202

Online:www.forestrylaw.com/wbcjs.htm
Phone: (716) 852-3540
Fax: (716) 852-3546
Email: info@watsonbennett.com

Nixon Peabody, LLP
1100 Clinton Square
Rochester, NY 14604

Online: www.nixonpeabody.com
Phone: (585) 263-1000
Fax: (585) 263-1600

Scolaro, Shulman, Cohen, Fetter & Burstein, P.C
Franklin Square
507 Plum Street, Suite 300
Syracuse, NY 13204

Online: www.scolaro.com
Phone: (315) 471-8111
Fax (315) 425-3620
Email: jfetter@scolaro.com

B. Online Resources

www.eere.energy.gov/RE/wind.html (US Dept. of Energy Efficiency and Renewable Energy)

- This is a good site to gain an understanding of wind power generation and its benefits.
- The site explains wind power as it relates to scientific research, the environment, and the economy. There are links to many wind- related publications addressing the issue on a state, national, and international level.

www.fennerwind.com (Fenner Wind Project)

- This site contains an overview of the Fenner Wind Project. This is a very relevant site for a community interested in perusing wind power development.
- The photo link is very thorough and documents the installation of large turbines.
- The technical information provides data on the electricity production.
- The contact information lists all of the members of the project's development from start to finish. There are also additional wind power links.

www.nrel.gov/wind/ (National Renewable Energy Laboratory)

- This is a subsidiary of the US Department of Energy.
- The wind link connects to the National Wind Technology Center. There are some relevant publications on the site such as "Wind Power Today and Tomorrow" and a "Multi- Year Technical Plan from 2004- 2010."
- There is also a link to a NY state wind map.
- The site provides a good overview of the wind industry at the national level.

www.powernaturally.org (NYSERDA)

- This is the most relevant NY state- focused wind power site. It contains a draft Environmental Impact Statement (EIS) that closely examines environmental changes caused by a wind power site.
- There is also a description of New York State's Renewable Portfolio Standard and its final report.
- There is an interactive map of eligible wind installers.
- There are links to large wind energy projects in NY.

www.windustry.org (Windustry)

- This is the homepage for the Wind Farmer's Network.
- The site is tailored to educate landowners of potential sites and surrounding communities.
- There is a wind project calculator that can help estimate the profitability of a site development.
- Other resources include an online library and a link to current events and news.

C. Glossary of Terms

Easement (for wind power): A right executed by a landowner for air space or land for purposes of promoting wind energy development and generation.

Electric Utility Grid: The interconnection of generated electricity through transmission and distribution lines to customers.

Lease Agreement: A lease that allows for utility scale wind development on a parcel.

Lease Option: An agreement between a landowner and a wind developer that allows for access to the land for installing monitoring equipment as well as possible future development rights.

Prospecting: Assessing land features, structures, and vegetation that could affect a potential wind development site.

Renewable Portfolio Standard: A state regulation mandating that a certain percentage of power be generated by renewable sources.

Rotors: Turbine blades resembling a propeller.

Royalty: A payment in the form of a percentage of gross revenues.

Setback: A rule declaring that a structure is to be built a certain distance away from a given location.

Siting: The process of designing the wind project and locating the best areas on the leased land for turbines.

Transmission Lines: Utility lines that carry electricity.

Turbine: A mechanical device that converts the energy of the wind into electricity. For the purposes of this bulletin, it refers to the entire assemblage.

Utility- Scale Wind Development: Electricity generated by the wind that is intended to be sold to the public through utilities; also called “large wind.”

Validation: The installation of monitoring equipment such as test towers on land to ensure that it is economically viable for wind development.

Wind Development Company: A company responsible for organizing the operation of a wind farm, and commonly involved in all steps of wind development.

Wind Map: A map based on wind monitoring data that is created by meteorologists. It indicates wind velocity in specific regions.

APPENDIX C:

SAMPLE LEASE AGREEMENT

COMPENSATION PROVISIONS*

* The complete sample agreement is 26 pages, with 13 sections. This short excerpt of Section 3 only covers compensation. A complete copy of the sample Lease Agreement can be obtained by contacting:

Duane Chapman
Cornell University
246 Warren Hall
Ithaca, NY 14853

Phone: (607) 255-4516
Email: Duane.Chapman@cornell.edu

RENT

3.1. **Rent During the Development Term:** Commencing on the Effective Date, and thereafter on or before the first day of each calendar year during the Development Term, Lessee shall pay to the Lessor, annually in advance, as rent (the ***"Development Term Rent"***), an amount of One Dollar.

3.2. **Rent During the Extended Terms:**

3.2.1. For each Extended Term Year (as defined below), Lessee shall pay to the Lessor, as rent (the ***"Minimum Rent")***, an amount equal to the product of (a) ten [*what is the fair market price in your county at this time?*] Dollars ($10) and (b) the number of acres of the Property that are from time to time then subject to this Lease. As used herein, the term ***"Extended Term Year"*** refers to any calendar year that occurs during the Extended Term.

3.2.2. The Minimum Rent shall be paid in full annually in advance on or before January 1 of each Extended Term Year; provided, however, that (a) the first payment of Minimum Rent shall be made on the first day of the First Extended Term and (b) if the first day of the First Extended Term is any day other than January 1, then consistent with Section 3.3.2, Lessee shall subtract, from its first payment of Minimum Rent, an amount equal to any Development Term Rent that it prepaid for the period of time following the first day of the First Extended Term.

3.2.3. For Each Extended Term Year, Lessee shall also pay the Lessor, as additional rent (the ***"Additional Rent"***), the amount (if any) by which the Production Rent (as defined below) for such Extended Term Year exceeds the Minimum Rent payable for such Extended Term Year. As used herein, the term ***"Production Rent"*** means an amount calculated by multiplying the Gross Revenues (as defined below) actually received over the course of an Extended Term Year by three percent (3%). The Minimum Rent and the Additional Rent are together referred to herein as the ***"Extended Term Rent."***

3.2.4. No Additional Rent shall be paid in any Extended Term Year until such time as the Production Rent equals the Minimum Rent paid for such Extended Term Year. Thereafter, for the remainder of such Extended Term Year, the Additional Rent shall be calculated on a monthly basis, and shall be pad no later than fifteen (15) days after the end of the calendar month following the calendar month for which the Additional Rent is due. Notwithstanding the foregoing, for months (if any) when the Additional Rent due to Lessor totals less than One Thousand Dollars ($1,000.00), Lessee may elect to accrue and defer payment of such Additional Rent from month to month until such time as the accrued and unpaid Additional Rent exceeds One Thousand Dollars ($1,000.00).

3.2.5. Thus, by way of hypothetical example only, if the Minimum Rent to be paid in advance for the first full Extended Term Year is $50,000, and the Gross Revenues are such that (a) Production Rent of $50,000 has cumulated by September 23 of such Extended Term Year, (b) Production Rent of $53,000 has cumulated by September 30, (c) Production Rent of $59,000 has cumulated by October 31, (d) Production Rent of $64,000 has cumulated by November 30 and (e) Production Rent of $71,000 has cumulated by December 31, then: (i) Lessee would pay the Minimum Rent of $50,000 to Lessor on January 1 of such Extended Term Year; (ii) Production Rent would not equal the minimum rent until September 23, and hence no Additional Rent would be due for the months of January through August of such Extended Term Year; (iii) Additional Rent of $3,000 would be due for October, and would be paid on or before November 15; (iv) Additional Rent of $6,000 would be due for October, and would be paid on or before December 15; (v) Additional Rent of $5,000 would be due for November, and would be paid on or before January 15 of the second full Extended Term Year and (vi) Additional Rent of $7,000 would be due for December, and would be paid on or before February 15, with the same being the final payment of Additional Rent payable for the first full Extended Year Term.

3.2.6. For the purposes hereof, the term ***"Gross Revenues"*** means the aggregate total revenue actually received by Lessee or a Sublessee, during the applicable period of time, from the sale, to the purchaser of the electricity, of electrical energy generated and sold from Generating Units then located on the Property.

3.2.6.1. For purposes hereof, the term ***"Gross Revenues"*** shall, without limitation not include revenues received: (a) from the sale, lease, sublease, assignment, transfer or other disposition of Wind Power Facilities or any other of Lessee's or any Sublessee's improvements, trade fixtures or chattel (or any interest therein); (b) from sales of electrical energy produced by Generating Units not located on the Property; (c) from any rental or other payment received by Lessee in exchange for Lessee's assigning, subleasing, mortgaging or otherwise transferring all or any interest of Lessee in this Lease; (d) from the sale, modification or termination of any obligation under a power purchase contract; (e) from parasitic or other loss (i.e., electrical energy used to power Wind Power Facilities or Operations, or lost in the course of transforming, shaping, transporting or delivering the electricity); (f) from sales of electrical energy for which payment is not received (including because of a default by the purchaser thereof); (g) as reimbursement or compensation for wheeling costs or other electricity transmission or delivery costs; or (h) from production tax credits, other tax benefits and credits, or any reimbursement thereof received by Lessee or a Sublessee in connection with any Project. Except as provided above in this Section, Gross Revenues shall be calculated without offset for any costs of producing, gathering, storing, transporting, marketing or otherwise making electricity ready for sale.

3.3. **Commingling: Prorations.**

3.3.1. In the event that electrical energy produced from Generating Units located on the Property is commingled with electrical energy produced from generating units on other lands, then Lessee shall, using such methods, calculations, procedures, and/or formulae as Lessee may in good faith adopt, allocate to the Property a portion of Gross Revenues received from such commingled electrical energy.

3.3.2. Any Development Term Rent or Minimum Rent payable for less than a full calendar year shall be prorated by Lessee on the basis of a 365-day year, while any Additional Rent payable for part of a calendar year shall be calculated based solely on Gross Revenues actually received during such partial calendar year. Further, if at any time during the term of this Lease Lessor owns less than one hundred percent (100%) of the fee interest in the Property, then the Development Term Rent and the Extended Term Rent (collectively, the ***"Rent"***) payable to Lessor hereunder shall be reduced proportionally.

3.4. **Audit** Lessor shall have the right to demand, from time to time (but not more often than once every eighteen (18) months), by written notice to Lessee, an audit of the computations of Extended Term Rent made by Lessee (the ***"Computations"***), which audit shall be performed by an independent certified public accountant (an ***"Accountant"***), as follows:

3.4.1. Any determination made by an Accountant under this Section 3.4 shall be conclusive as between and binding upon the Parties. In the event that the Parties cannot agree upon an Accountant within thirty (30) days after Lessee's receipt of Lessor's demand for such an audit, then, at the request of either Party, such audit shall be performed by a single Accountant appointed by the American Arbitration Association (the ***"AAA"***). If such audit shows that Extended Term Rent has been underpaid, then the amount of the deficiency shall be promptly paid in accordance with the determination on made by such Accountant. If such audit shows that Extended Term Rent has been overpaid, then the amount of the overpayment shall be promptly refunded in accordance with the determination made by such Accountant.

3.4.2. All of the costs associated with such audit (including AAA fees and costs) shall be paid by Lessor; provided, however, that in the event that such an audit establishes that there has been an underpayment, and that the amount of the underpayment is equal or greater than three percent (3%) of the Extended Term Rent that in aggregate should have been paid to Lessor for the period of time which is the subject of such audit, then Lessee shall reimburse Lessor for all its reasonable and verifiable out-of-pocket costs incurred in such audit.

3.4.3. If an audit is not demanded within eighteen (18) months following a particular Computation, then Lessor shall conclusively be deemed to have waived his right to an audit with respect to such Computation, and shall forever thereafter be precluded from bringing any legal action or proceeding to compel an audit of such Computation or to recover any underpayment of Extended Term Rent associated with or forming the basis of such Computation.

3.4.4. Any Computations, materials, data or information obtained or reviewed by the Accountant, as well as such Accountant's determination, shall be deemed Confidential Information and shall be governed by Section 13.3.

BIBLIOGRAPHY

A. Personal Communications

Coleman, Clint, Northern Power, President, Waitsfield, VT. April 2005.

Kaplan, Carolyn, Nixon Peabody LLP, Boston, MA. April 2005.

Kiraly, Mariane, Landowner, Franklin, NY. February 2005.

Merrick, Mike, Vestas Site Supervisor, Madison, NY. April 2005.

Spitzer, Daniel A., Hodgson Russ LLP, Buffalo, NY. March 2005.

Walcott, Paul, Landowner, Cohocton, NY. March 2005.

B. Websites

American Wind Energy Association. 10 March 2005. http://www.awea.org. 23 March 2005.

Guided Tour on Wind Energy. Danish Wind Industry Association. 2005. www.windpower.org. 23 March 2005.

Kemp, Loni. Harvesting the Wind: An Assessment of Farmer Interest in Wind Energy for Economic Development. The Minnesota Project and Clean Water Fund. June 1995. www.mnproject.org/Text/Harvesting%20the%20Wind.htm. 26 April 2005.

Milian, Chris. Wind Farms= Clean Energy. Photos From On High. www.photosfromonhigh.com. 26 April 2005.

Power Naturally: Utility Scale/ Large Wind. NYSERDA. 2004. www.powernaturally.org. 15 February 2005.

Wind Farm Photos. Oklahoma Municipal Power Authority. 2003. www.ompa.com/windfarm.htm. 26 April 2005.

C. Publications

Brian, Jerry and Duane Chapman. Timber Prices: A Guide for Woodlot Owners in New York State: EB 2005-01. Cornell Department of Applied Economics and Management Extension Bulletin (2005), January 2005. http://aem.cornell.edu/outreach/extensionpdf/eb0501.pdf.

Dunn, Kara Lynn. "Before You Sign: Experts Advise Educating Yourself About Wind Turbine Leases." Farming, April 2005: 36- 43.

Logozar, Bernadette. Farming the Wind. Franklin County, New York: Cornell Cooperative Extension, 2005.

McEowen, Roger A. and Bernard E. Nordling. Guidelines for Kansas Landowners in Creating and Negotiating Equitable Wind Energy Leases. Kansas: Wind and Prairie Task Force, 2004.

Ochterski, Jim. Gas Exploration and Leasing on Private Land. Schuyler County, New York: Cornell Cooperative Extension, 2005.

Ouderkirk, Brad and Meghan Pedden. Windfall from the Wind Farm: Sherman County, Oregon. Portland: Renewable Northwest Project, 2004.

Park, Jung-Chae. New York Wind Energy Policy and Its Implications in Developing Countries: A Case Study of Fenner Wind Power Project. Ithaca: Cornell University, 2003.

Perloff, Jeffery M. Microeconomics. New York: Addison- Wesley, 2001.

Spitzer, Daniel A. Accommodating Local Wind and Solar Energy Development. Lake Placid, New York: New York Planning Federation, 2004.

Spitzer, Eliot. Comments on NYSERDA's Phase 1 Study of Wind Power Impacts on Transmission System Planning. New York: New York State Public Service Commission, 18 March 2004.

United States. Senate. United States Government Accountability Office. Renewable Energy: Wind Power's Contribution to Electric Power Generation and Impact on Farms and Rural Communities. Washington: GPO, 2004.

Wind Energy: A Guide for Wind Site Development, New York: NYSERDA, 2004.

Ziegenfuss, Katherine and Duane Chapman. Leasing of Natural Gas and Drilling Rights on Public and Private Land in New York: EB 2003-15. Cornell Department of Applied Economics and Management Extension Bulletin (2003), September 2003. http://aem.cornell.edu/outreach/extensionpdf/eb0315.pdf.