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## ***Technical Memorandum***

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### **Impacts of The Alabama Ledge Wind Farm Project on Local Property Values**

**Prepared for:** Alabama Ledge Wind Farm, LLC and the Town of Alabama  
**Prepared by:** P. Barton DeLacy, MURP, MAI, CRE, FRICS, Cushman & Wakefield, Inc.  
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This property value analysis addresses the potential impact of a proposed 40+ turbine wind farm to be located across 15 square miles on leased land round the Town of Alabama and Hamlet of Oakfield; all in Genesee County, New York. Most of this land is in farm use with some areas in wetlands or ponds. Farms and rural residences occur along the public roads within the projected area.

We have inspected many of the individual tracts where turbines will be placed as well as considered the functional and esthetic impacts of the project on individual property values. We have reviewed literature and consulted with local experts regarding the area's economic condition. We have reviewed academic and professional literature for guidance in crafting this analysis. Based on these expert recommendations, we conducted a statistical analysis of property value trends within the project area as well as other comparable communities that already host wind farms,

Our evaluation of area properties and existing conditions suggests that the economic impact of the wind farm will be positive. The construction and ongoing maintenance and operation of the Alabama Ledge Wind Farm will generate revenue for local contractors and good paying permanent jobs. Similarly, royalty payments to project participants will increase local spending that multiplies the benefits beyond individual recipients. Licensing fees and other payments to the host communities will possibly facilitate investment in local infrastructure needed to attract new business to the area.

At the household level, we found most of the project will be situated on large tracts of agricultural acreage where turbine placement will be designed to minimize interference with ongoing farming activities, whether it be row crops or dairy stock. The incremental rental income from the land

leases will diversify the revenue streams for participating farms; providing a hedge against increasing agricultural production costs and cyclical commodity prices. an economic boost to the affected property owners, as well. In fact, visual impacts cannot be said to have any impact on farm properties where value is in the productivity of the land.

We also found that the main area of concern regarding turbine placement is from the affected viewshed for strictly residential properties in the vicinity. There is no question that wind turbines are significant structures, yet the reasonable setbacks required to prevent excessive noise and shadow impacts on such properties can significantly diminish the visual impact, as well. In assessing existing studies and newly collected data from communities where wind farms have been built and coexisted with residential development, we found that wind farms have no demonstrable impact on property values, even near high end or executive home development.

Our scope of work includes a review of the project with the developer and a site inspection. We have also reviewed topographical overlays and a viewshed analysis as well as other tools to understand linkage and settlement patterns in the area. We attended a Town meeting and reviewed materials and testimony prepared both by proponents and those with concerns.

We have considered the functional and esthetic impacts wind projects of this size will have on properties in a predominantly rural, as opposed to an urban landscape. We have reviewed literature and consulted with local experts regarding the area's economic condition. We have reviewed academic and professional literature for guidance in crafting this analysis.

The most significant new information is the publication of a Bard College Masters Candidate thesis, studying the impacts of wind turbines on property values in Madison County, New York at Fenner.<sup>1</sup> Ben Hoen was able to conduct an hedonic regression analysis on 280 home sales that had occurred within view of this project over a five year period commencing in 2001, when the project first began operations.

Mr. Hoen concluded that his analysis could not uncover any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes. We have found that would the quality of housing stock in the vicinity of the town of Fenner in Madison County, as well as the general pattern of land use, is very similar to the Alabama area as are the concerns of residents. What is fortunate about Madison County is that the relative density of population, even for a rural area meant that there were sufficient numbers of transactions to track an impact of wind turbine views. Further, the project, having opened in 2001, has had plenty of time to impact property values in the vicinity if that was going to occur.

As we will note later, the hedonic pricing model can rigorously predict changes in residential transaction values based on home characteristics. This makes it a reliable tool when there is sufficient data to apply it.

### **Statement of Qualifications**

I am presently Managing Director of Valuation Services at Cushman & Wakefield, Inc. I am a Certified General Real Estate Appraiser (No. 46000046642) by the State of New York, Department of State. I perform and review fee engagements relating to the evaluation of real

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<sup>1</sup> Hoen, Ben, "Impacts of Windmill Visibility on Property Values in Madison County, New York," Bard Center for Environmental Policy, Bard College, Annandale on the Hudson, New York, 2006

property. I also prepare analyses to support litigation regarding real estate values, land uses impacts and for eminent domain proceedings. Attached to this report as **Exhibit A** is a résumé of my educational background and employment experience.

I have recently prepared similar property impact analyses for two proposed small farms near Cohocton in Steuben County and a 109 turbine wind farm, Marble River, in Clinton County, New York. We have also studied property impacts around the operating 195 turbine wind farm at Maple Ridge, near Martinsburg, New York, in Lewis County.

My personal experience with the siting of controversial structures and land uses in rural areas spans over 25 years. This experience includes evaluations of property value impacts for the placement of transmission towers, power lines, substations, underground pipelines, the extension of gravel mines, siting of prisons, power plants, land fills and evaluation of air emissions from a cement kiln.

In 2004, a peer-reviewed article I authored, “A LULU of a Case: Gauging Property Value Impacts in Rural Areas” was published in *Real Estate Issues* by the Counselors of Real Estate.

I have been a licensed or certified appraiser since 1979 and am also certified in the States of Washington, Oregon, Alaska, Montana, Idaho, California, Colorado, Illinois, Missouri and Kansas. My professional credentials include the MAI designation (Appraisal Institute), the CRE designation (awarded by the Counselors of Real Estate) and a Masters Degree in Urban and Regional Planning. I have also been elected a Fellow in the Royal Institution of Chartered Surveyors, an international professional society of valuers and real estate professionals who advise governments and global organizations. One of their studies is reviewed here.

I previously served five years on a city planning commission and was appointed to a statewide emergency siting authority in Oregon to site four youth prisons in 1995.

I have qualified as an expert witness before the State of Washington Energy Facility Site Evaluation Council (“EFSEC”), giving written and oral testimony. I have also qualified as an expert witness for real estate valuation and land use impact studies in both State and Federal Courts in Oregon and California.

### **Purpose of Report**

This report has been prepared as a summary of my analysis addressing whether the proposed Alabama Ledge Wind Farm Project might affect property values in the vicinity of the wind turbine generators.

The contents of this analysis are based upon my own knowledge and field experience, or upon evidence from studies and reports which persons in my field of expertise are accustomed to rely on in conducting the type of analysis included in this report.

We recognize that understanding the long-term land use impacts of certain energy facilities is an emerging area of study. We also recognize that new approaches to evaluating these impacts may further inform our perspective. This study represents our best efforts to use available data and acceptable methodology.

### **Methodology**

The scope of our work included analyzing aggregate statistics from the subject and comparable areas in order to derive suitable benchmarks and valuation trends. We did not appraise individual

properties but did consider the types of dwellings that might be most impacted by a change in their viewshed. Our focus concentrated on discerning what types of factors cause changes in value.

Our research included field inspections of the affected areas in Genesee County. These occurred the week of November 13, 2006. We also investigated property impacts near the Fenner project (which came on line in 1999) in Madison County and the new Maple Ridge project (2005) in Lewis County (near West Martinsburg). We have investigated impacts from small projects at Wethersfield, five miles west of Perry, and Searsburg in Bennington County, Vermont. These came on line in 2000 and 1997, respectively.

This report also draws from extensive experience on two different wind farm projects in Kittitas County, Washington. There, we have been monitoring land, farm and residential subdivision activity for over two years during the permitting process. The Alabama Ledge Wind Farm is roughly in between these projects with respect to the number of turbines. Maple Ridge and Kittitas Valley are nearly double in size, while Fenner, Wethersfield and Searsburg, one half the size. Just the same, analyzing these other projects helps shed light on the correlation between wind turbines and property values.

In this case, we have analyzed a comprehensive compilation of properties which abut, or may be in sight of, the proposed Alabama Ledge Wind Farm project. We have collected assessor sale data from Genesee County, going back 5 years to establish baseline trends. We further examined sales and sales trends within the Towns of Alabama and Batavia. We have collected and studied current Genesee County Multiple Listing Records for properties now on the market in the general area.

We carefully examined sales activity within the project area. We then attempted to collect and analyze similar data from affected areas near established wind projects, as well as data from otherwise similar areas, not affected by a wind project. Significant deviations from long-term patterns of value may, or may not be attributable to the impact of the wind project. However, where we find normal or above normal sale and development activity near a project, or near a proposed project, this suggests that negative impacts cannot be proven, or that impacts may even be positive.

We considered demographic profiles for each of the study areas and found high correlations in terms of population density, growth, average household incomes and average housing values.

To augment statistics from multiple listing and county assessor records on property sales in the area, we have interviewed local real estate brokers, appraisers and town assessors regarding specific transactions and the anticipated effect of the Project on the area.

We have reviewed additional technical memoranda prepared by independent outside consultants and examined computer generated visual impact exhibits that accompany the application. Not all information has been positive. A survey of valuers published by the RICS in England suggested wind farm developments had adverse impacts in that country.

Personal preference, it should be noted, does not necessarily affect property values. The RICS survey, for instance, did not test transactional data, but merely queried professional valuers on their preferences. It was little better than an opinion poll. Notwithstanding reported apprehensions that people may have regarding how nearby wind farms may impact property values, this poll lacks any statistical data demonstrating such an effect.

Our analysis of changes in local real estate values, attributable to the proposed project, is more limited because of the relatively recent date of the Alabama Ledge Wind Farm announcement. Therefore we have relied, by analogy, on the observed real estate experience at the more mature wind farms in New York State.

## **Review of Literature**

Property value impacts created from siting industrial facilities or power plants have long been studied (see attached bibliography) because of concerns voiced by neighbors, particularly residential homeowners. However, the scope of alleged impact can be vast while the body of relevant observable market transactions non-existent. This lack of market data is most acute in rural areas where environmental concerns about encroaching infrastructure can be strongest.

The predominant activity stimulating academic and industry research over the past 30 years has been the emergence of large scale and public environmental clean ups. Much of the available literature deals with the consequences of discovery and clean up of Superfund sites. Once remediated, a second question regarding the prospects of recovery back to some pre-event equilibrium raises concerns of long term “stigma.” A follow-on question is whether such stigma is compensable as a consequential damage when government sanctions are involved.

Most of the studies focus on that most sensitive of real estate types, the single-family dwelling. Commercial properties can also be adversely affected by externalities but the nature of their investment value (i. e. passive rent collection) allows for capitalization of diminution affects through rent reductions and vacancy increases. The value of residential property is much more susceptible to consumer preferences.

The case studies reviewed here include a University of Wisconsin paper measuring the impacts on suburban housing values from a coal burning power plant<sup>2</sup>, a report on housing values in the aftermath of the Three Mile Island nuclear power plant failure<sup>3</sup>, a series of studies on value and stigma impacts of a closed lead smelting plant in Dallas, Texas<sup>4</sup>, a study on the effects of wind turbine development on local property values<sup>5</sup> and a comprehensive analysis on effects of overhead transmission lines on property values.<sup>6</sup> The latter two cases do address rural property concerns, but without resolution.

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<sup>2</sup> Blomquist, Glenn, “The Effect of Electric Utility Power Plant Location on Area Property Value”, *Land Economics*, Vol.50, pp 97-101 (1974)

<sup>3</sup> Gamble, H. B., Downing, R. H., *Effects of the Accident at Three Mile Island on Residential Property Values and Sales*, Pennsylvania State University for Division of Safeguards, Fuel Cycle and Environmental Research, Office of Nuclear Regulatory Research, U. S. Nuclear regulatory Commission, April 1981

<sup>4</sup> McCluskey, Jill J. and Gordon C. Rausser, 2001. “Estimation of Perceived Risk and Its Effect on Property Values,” *Land Economics*, Vol. 77(2001):42-55

<sup>5</sup> Sterzinger, George, et al., “The Effect of Wind Development on Local Property Values”, Renewable Energy Policy Project, Washington, D. C., 2003

<sup>6</sup> Kroll, Cynthia A., and Priestley, Thomas. “The Effects of Overhead Transmission Lines on Property Values. A Review and Analysis of the Literature.” Prepared for Edison Electric Institute Siting and Environmental Task Force. July 1992

These studies all relied on some form of statistical analysis using multiple regressions. The urban-area studies were able to construct hedonic models to predict outcomes.

A residential hedonic pricing model regresses a series of descriptive statistics regarding a population of observations. When data is available, this is clearly the preferred tool. For housing models, typical characteristics include house size, lot size, bathroom number, age, fireplaces, and distance from some node of value such as a downtown. The models are used to predict outcomes, testing variables for significance. Thus a researcher may take into account other variations in property characteristics in determining the impact of projects like a wind farm on property value.

The key to any reliable statistical model is a sufficiently large data pool, or population, to allow random sampling. In general, these studies have proven most effective in urban or suburban residential areas where a high number of transactions involving fairly homogeneous properties can be observed. Given a significant sample size, fairly conclusive outcomes can be predicted using this method.

Even in urban areas, statistical studies attempting to predict value impacts on residential properties lack consistency in model design and applications of uniform adjustments to the data.<sup>7</sup>

Sparsely populated rural areas are much more difficult to study because the population of transactions available for observation is so limited. More indirect methods must be used instead.<sup>8</sup>

While so-called “sensory cues” are key to impacts, (i. e. what can be seen, smelled or heard) the concept of stigma has much more to do with reputation and the intangible components of human desire that influence “marketability.” Marketability is defined by appraisers as the state of being salable.<sup>9</sup> Thus anticipating the future impact of a wind farm has as much to do with attendant publicity as with the event or source of concern.

The breadth of the studies reviewed suggests that a continuum would be useful along which obtrusive projects or sights might be arrayed. At one end would be undisputed undesirable land uses, like a Superfund site, at the other end positive amenities like lake frontage or a panoramic view of a mountain.

Wind farm projects, common place in Europe, have only begun to punctuate skylines and rural vistas in the United States for the past 10-15 years. A renewed energy crisis, coupled with Federal mandates compelling energy companies to invest in renewable energy has triggered the siting and expansion of projects throughout the country. Further, new designs allow for building fewer but more efficient turbines, planted in so-called wind farms where natural wind energy can be found. Installed capacity, nationwide, has grown at a compound rate of 26% since 1998.

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<sup>7</sup> Kroll, Cynthia A., and Priestley, Thomas. “The Effects of Overhead Transmission Lines on Property Values. A Review and Analysis of the Literature.” Prepared for Edison Electric Institute Siting and Environmental Task Force. July 1992, p. iii-iv

<sup>8</sup> Ibid., p. 10

<sup>9</sup> *The Dictionary of Real Estate Appraisal*, Appraisal Institute, Chicago, Third Edition, 1993, p. 219

Opponents, however, have questioned whether property values will be lowered when in view of the turbines. Systematic research was undertaken to establish whether there is any basis for the claims. The Renewable Energy Policy Project (REPP) (Sterzinger et al 2000) reviewed data on property sales in the vicinity of wind projects and used statistical analysis to determine whether and to what extent the visual presence of turbines has had influence on prices of properties which have been sold.<sup>10</sup>

The REPP report hypothesized that if wind development can reasonably be claimed to hurt property values, then review of sales data should show a negative effect on property values within view sheds of the projects. The study found no significant empirical support that property values were diminished in any of 10 test cases from around the country.

In fact three of the projects studied (Madison, Fenner and Searsburg) were investigated for purposes of this report and will be discussed further, below.

In the REPP study view sheds or visual impacts were defined as areas within 5 miles of a wind farm where the turbine clusters can be seen. The limitations of the study involved the fact that most of these wind projects have been sited in remote rural locations where numerous homogenous sales were unavailable, compared with the urban areas referenced above. The simple regression model cannot explain all influences on property values. The REPP study authors suggested that future studies might expand variables. Refinements might include consideration of relative distances.

The REPP regression analysis used monthly average change in price for all aggregate sales in the defined view shed areas and a control community unaffected by the view. Comparable communities were selected based on comparable demographics and discussions with local assessors and was admittedly subjective.

Most of the weaknesses in the REPP study were addressed and corrected by Hoen in his study of the Fenner project in Madison County. The Fenner study area is located about 75 mile northeast of Cohocton on the eastern edge of the Finger Lakes Region. The 20 turbines, perched on high ridges of rolling hills, are 328 feet tall or 440 feet from top of the blade sweep. The project was completed in 2001 and is placed over 2,000 acres.

The purpose of the study was to test if views within 5 miles of the turbines had affected transaction values of homes which had sold. The study looked at distance and time relative to home values.<sup>11</sup> Hoen collected sales data from the assessors' offices for a period before and after the project, then ground-truthed the data by inspecting each sale property to rate and grade the relative view of the turbines from the house. Aside from statistical tools, Hoen was able to use a geographic information system ("GIS"), in essence a computerized map that is able to display select layers of

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<sup>10</sup> Sterzinger, George, et al., "The Effect of Wind Development on Local Property Values", Renewable Energy Policy Project, Washington, D. C., 2000

<sup>11</sup> Hoen, op. cit., p. 20

data, to model distance and confirm what was apparent in the field. Hoen developed viewshed variables involving distance and the level that the turbines intruded.<sup>12</sup>

The descriptive statistics of the homes were found to be highly similar to those in Genesee County. Hoen's conclusions are significant:

Our analysis of 280 home sales within 5 miles of the Fenner wind farm...failed to uncover any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes.<sup>13</sup>

It should be noted that none of Hoen's sales were closer than  $\frac{3}{4}$  of a mile, but his emphasis on actual sales rather than mere preferences is powerful. This is because the transactional event, i.e. the sale of a property, is the only factual event that, when aggregated with similar transactions, can demonstrate a trend or bracket a value range. A transaction price represents the meeting of the minds, ultimately so critical to any concept of market value.

Some of the other studies are also helpful for understanding when an impact *does* occur.

Overhead transmission lines have received the most scrutiny from the standpoint of their visual impact in rural areas. A 1992 study by Cynthia Kroll and Thomas Priestley concluded that fee appraisal offices have the longest history of evaluating line-of sight impacts, but lack any in-depth statistical analysis to verify obtained results. Interviews and personal opinions can produce dramatically varying results (and do not have the finality of actual transaction data).<sup>14</sup>

The Kroll-Priestley study found that the presence of a transmission line may not affect some individuals' perceptions of a property's value at all. Some people tend to view transmission lines as necessary infrastructure on the landscape, similar to roads, water towers, or antennae.

The most sensitive rural properties were found to be those located in areas of recreational or second homes. Thus, more remote farming communities will be less impacted than those near recreation or scenic destinations. Effects are most likely to occur to property crossed by or immediately next to the line, but some impacts have been measured at longer distances. This overview on transmission lines suggests that the most serious impact is physical impairments of views for higher valued residences or vacation homes.

Finally, surveys of consumer preference and even of expert preference have been published in Europe, including one by the Royal Institution of Royal Chartered Surveyors ("RICS"). The RICS survey did not test transactional data, but merely queried professional valuers on their preferences. It was little better than an opinion poll, and in fact was unable to demonstrate any measurable diminution in value near wind farms which now proliferate across the British Isles. Notwithstanding reported apprehensions that people may have regarding how nearby wind farms may impact property values, this poll lacks any statistical data demonstrating such an effect.

In conclusion, the academic literature tells us:

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<sup>12</sup> Ibid. p. 25-28

<sup>13</sup> Ibid., p. 34

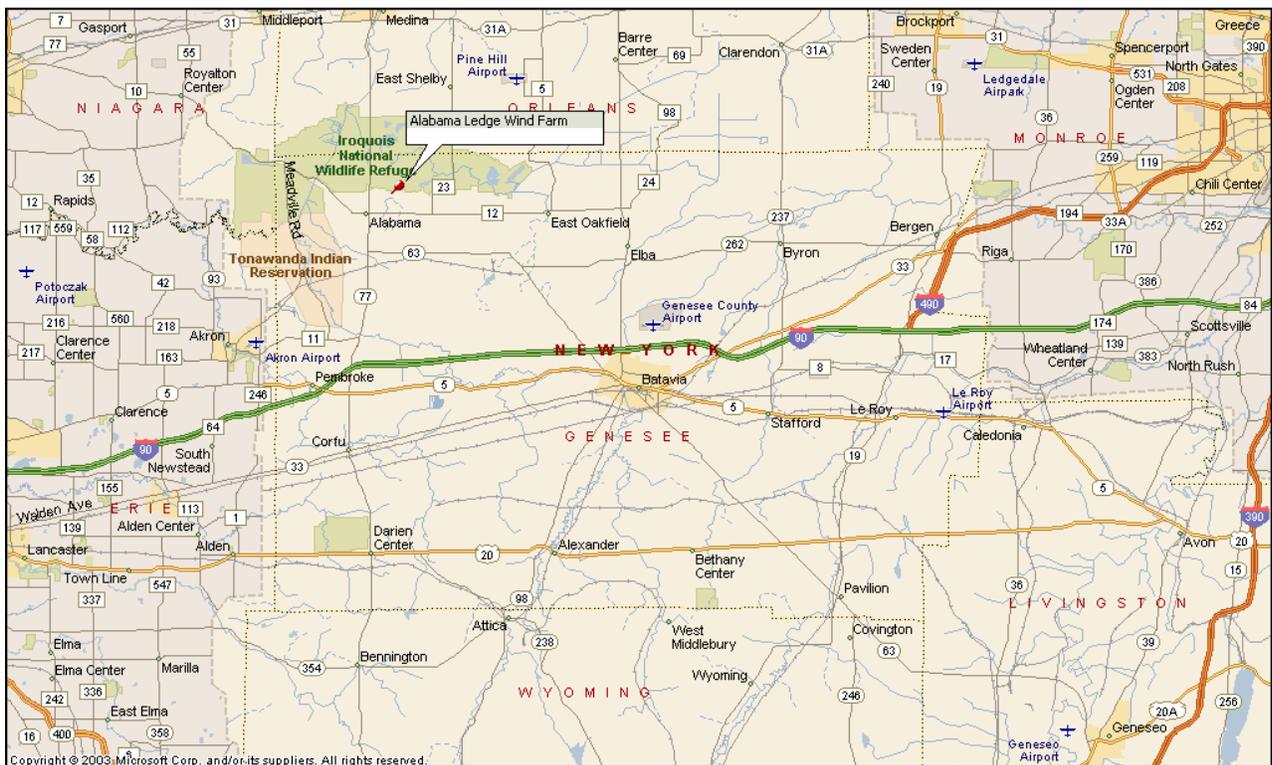
<sup>14</sup> Kroll, op. cit. pp 17-24

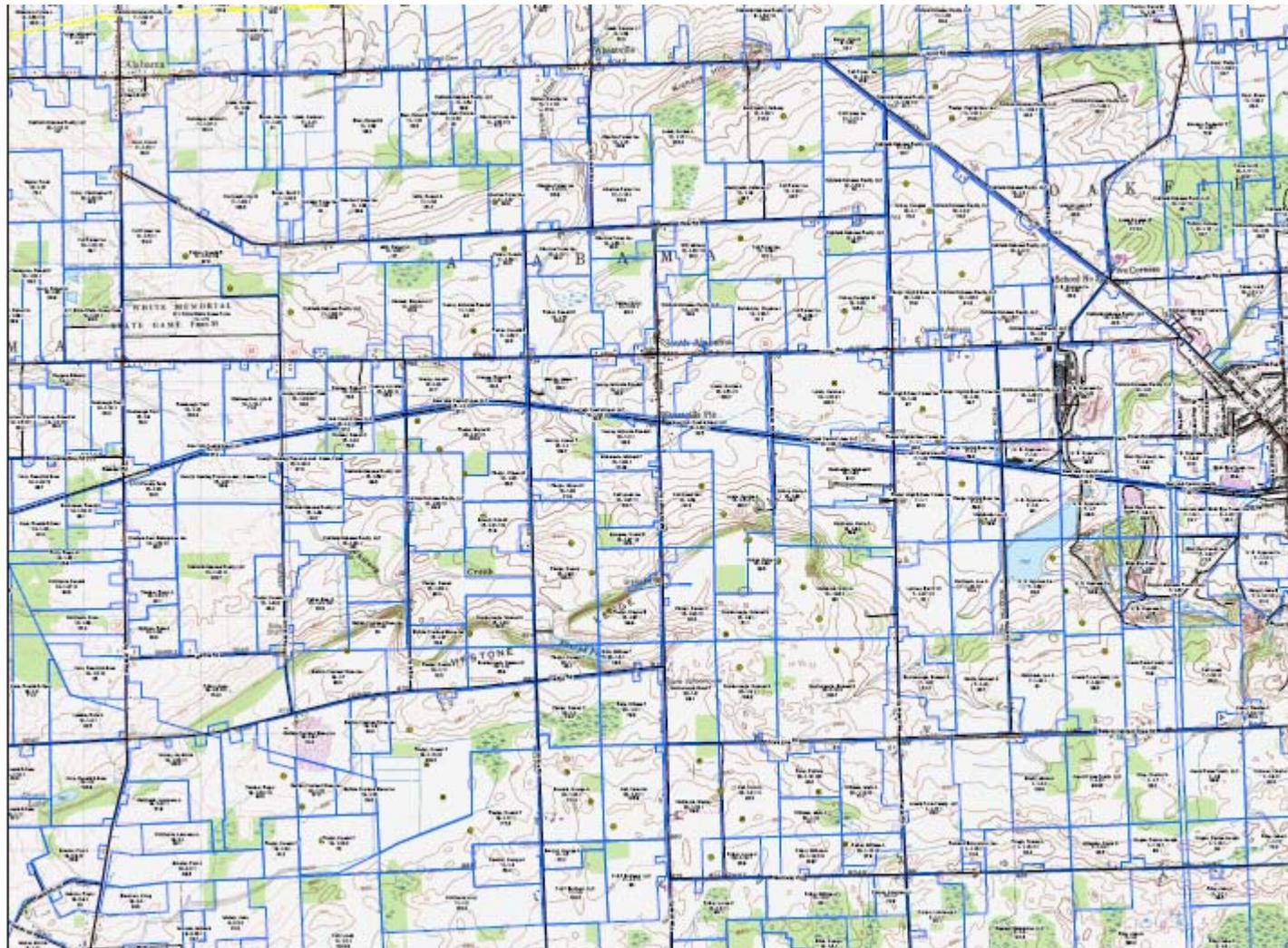
- That residential values are most sensitive to aesthetic impact and that high-end residential development is more sensitive than low-end housing;
- That urban concentration and homogenous properties with high volumes of sale transactions are necessary to do appropriate statistical analysis;
- That such analysis cannot be performed in sparsely populated rural areas;
- That caution must be taken when considering opinion surveys since personal preference is no substitute for transactional evidence;
- And that the Hoen study can be applied to the Alabama Ledge Wind Power project. The Hoen project studied value impacts in a highly similar rural western New York area where the effects of a mature project could be studied, over time.

### Local Analysis

The proposed 40+ turbine project will be located in northeastern Genesee County, predominantly in the Town of Alabama, bordering the Hamlet of Oakfield on the west.

Currently nearly 50 landowners representing almost 5,000 contiguous acres have signed option agreements to participate in the project. As with other projects completed in New York state, the actual area to be used to site and access improvements will total no more than one or two percent of the area; in this case maybe 100 acres. Those areas directly impacted with turbine placements have agreed to long term annual leases. Once turbines are in place and restoration work completed, agricultural use (pasture or even row crops) can be resumed in the staging and construction areas right up to the turbines. The map following depicts the project area along with surrounding parcels.





**TETRA TECH EC, INC.**

**Horizon Wind Energy  
Tax Parcel Map**

Genesee County, New York  
Tax Parcel Data with  
USGS Topographic Map

- Turbine Locations
- Streets
- +— Rail Road
- ▭ Parcels > 20 acres
- Transmission Lines
- Voltage**
- 230kV - 345kV
- 345kV - 499kV
- Below 230kV

Source:  
 Topo: USGS 1:25000 Quadrange  
 Bound: ESRI, processed by USGS  
 County: ESRI, processed by USGS  
 Tax Parcel: Genesee County Planning Department  
 Transportation and Transmission Line: ESRI, data not edited

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Demographics and an overview of the local economy are integral to assessing value impacts on specific properties. Land use in the vicinity of the project is dominated by small family-owned dairies and larger commercial agricultural operations, interspersed with rural residential tracts that tend to line public roads and highways.

Aside from agriculture, economic drivers for the area are limited to the public sector (anchored by the Attica and Wyoming Corrections facility), and a declining manufacturing base. United States Gypsum terminated and closed its mines near Oakfield in 1999 leaving abandoned plants and mined out veins. Unemployment rates are advertised as high and appear to average 5.5-6.0%, well above regional and national levels.

The greater Buffalo and Rochester economies are rated in the fifth quintile, or “worst” categories for employment growth prospects, according to Economy.com Research. The major manufacturers in the area (Kodak, Bausch & Lomb, Delphi, Xerox, GM) have all experienced hard times in recent years.

Genesee County population hovers around 60,000, centered in the Town of Batavia with 16,000 residences. The county reported almost no growth between 1990-2000, and estimates for 2005 actually report a decline. The Town of Alabama reported 1,881 residents in 2000, a decline of 5.0% from 1990, and that trend is expected to continue.

Genesee County lies in western New York State, about an hour’s drive east of Lake Erie and Buffalo and about 40 miles south of Rochester. Genesee County continues to be predominantly rural area with a dairy based economy. However, the dairy industry is also cyclical and low or variable commodity prices are expected to depress the industry in the future, while further growth opportunities are limited. In fact, land lease income from wind turbines will help stabilize operating revenues on those farms where turbines are slated.

The hamlet of Alabama, while historic, offers few amenities aside from roadside gas and conveniences at the juncture of Routes 63 and 77. The northwest portion of the Town, just beyond the Project area is dominated by the Tonawanda Indian Reservation and a State Wildlife management area.

Median household income hovers around \$40,000. The average housing values for the county were pegged at \$83,000, half the average for the state as of 2000, and as we will note below, have changed little over the intervening decade.

The Alabama Ledge Wind Farm was announced in late 2005 and Horizon, the developer, has decided to include this land use impact study as part of the application process. The discussion below reports on local property value trends and compares them to county-wide averages. Given the limited time since announcement and the lack of many post-announcement transactions to analyze, we have also examined real estate activity surrounding the recently completed 195-turbine Maple Ridge project near Martinsburg in Lewis County.

Further we have studied real estate markets near two smaller projects in Fenner in Madison County and near Bennington, Vermont which have now been operating for at least five years. We will report our findings based on this research.

## **Real Property Market Activity- Vicinity of Alabama Ledge Project**

There has not been sufficient time since project announcement to observe any impacts on property values within the vicinity of the proposed Alabama Ledge Wind Farm. However, we can attempt to characterize the local real estate market by studying recent statistics. These can help us forecast to what extent, if any, neighboring properties may be impacted once turbines have been erected.

New York is a full disclosure state in that all real property transactions are of public record and may be accessed through county and town assessors. This information is particularly useful in plotting long term trends. Further, we have been able to track and trend related data in other counties where wind farms have been built, or as a test to help benchmark market performance in comparable areas unaffected by pending wind projects.

In the tables and charts below we have arrayed year by year statistics reporting the number and average sale price for various categories uniformly accounted for by the Genesee County Assessor. This data can then be enhanced with some commentary on current sales and listings we have researched within the project area.

These values were tracked for six years, 2000 through 2005. We calculated the percent change from year to year. The problem with this indicator, when there are relatively few observations, is that trending can be distorted by outlier transactions, either way high or way low. A larger population would smooth these variances out.

With each category we tracked the following data:

- number of sales per year,
- average sale price per year
- average acreage of parcels that sold
- average sale price per acre per year

We selected four categories of property sales because they exhibited higher volumes year in and year out and because they represented the types of property that are proximate to the wind project. Therefore we did not consider sales of commercial properties, since none are really impacted by the project. We also excluded pure wood lot or wetland sales since those parcels were likely not buildable or found particularly sensitive to viewshed considerations.

The first table below shows the average price of single family residences in Alabama, compared with the same indicator, county wide. These statistics show a generally positive trend, but also show that Alabama single family residences lag behind the county in terms of average sale price. While more of the affected properties will be farms and rural residences, county sale trends are much more variable.

**Town of Alabama**

Property Type	Sale Year	# of Sales	Average \$SP	% change
SFR	2000	6	\$ 66,717	n/a
SFR	2001	12	\$ 66,268	-0.7%
SFR	2002	11	\$ 74,495	12.4%
SFR	2003	13	\$ 81,988	10.1%
SFR	2004	16	\$ 80,827	-1.4%
SFR	2005	4	\$ 70,468	-12.8%
SFR	2006*	7	\$ 71,429	1.4%
<b>Totals</b>		<b>69</b>	<b>74,723.39</b>	

This first table shows that over 7 years (2000-2006) the average price of homes sold in Alabama was less than \$75,000 and has been stagnant to declining for at least the past 5 years. We find it difficult to gauge adverse impacts created by land use changes when property values already seem depressed.

**Genesee County**

Property Type	Sale Year	# of Sales	Average \$SP	Average Acres**	% change
SFR	2000	375	\$ 84,937	2.16	n/a
SFR	2001	392	\$ 88,042	2.18	3.7%
SFR	2002	392	\$ 91,782	1.85	4.2%
SFR	2003	449	\$ 96,706	2.08	5.4%
SFR	2004	420	\$ 101,425	2.14	4.9%
SFR	2005	436	\$ 103,865	2.10	2.4%
SFR	2006*	272	\$ 113,250	2.32	9.0%
		<b>2,736</b>	<b>\$ 96,656</b>		

The same category and time frame are reported county wide, above. This shows the average price of homes sold in the County averaging over \$96,000 and trending upward year after year.

Another table is also helpful for review. Vacant farm land for the county shows average acreage going up and down between \$600 and \$1,100 per acre, \$865 per acre. This suggests modest soil productivity and fairly stable values, county-wide.

**Genesee County Farm Land**

Property Type	Sale Year	# of Sales	Average \$SP	Average Acres**	Average \$SP/Acre	% change
Farm Vacant	2000	6	\$ 62,117	78.81	\$ 788	n/a
Farm Vacant	2001	4	\$ 79,313	132.70	\$ 598	-24.2%
Farm Vacant	2002	4	\$ 61,955	80.90	\$ 766	28.1%
Farm Vacant	2003	4	\$ 76,200	87.13	\$ 875	14.2%
Farm Vacant	2004	6	\$ 110,192	133.93	\$ 823	-5.9%
Farm Vacant	2005	3	\$ 87,000	88.43	\$ 984	19.6%
Farm Vacant	2006*	9	\$ 100,644	89.58	\$ 1,124	14.2%
		<b>36</b>		<b>691.48</b>	<b>\$ 865</b>	

These observations tell us a couple things. First, they support the U.S. Census projections relating to average home prices in the subject area, versus the County as a whole. Second, these statistics show that Genesee County has a very stable real estate market where average farmland prices of properties that have sold varies within a range, but cannot be said to be consistently appreciating.

Home values may or may not be going up, but the average home prices are well below county and statewide averages. Our research tends to indicate that rural properties with these value characteristics are much less vulnerable to impacts to their view sheds than recreational or high-end executive dwellings.

In such a stagnant real estate market with a no-growth local economy, some of the benefits to be conferred by wind development, including so called PILOT payments (payments in lieu of taxes), might actually bolster demand for housing by improving schools and other community facilities.

### Discussion of Comparable Wind Projects

In this section we will focus on a large project just opened near Lowville, New York and the mature, but smaller Fenner project in Madison County, New York, about 50 miles east of Syracuse. We will then discuss our experience at some other projects from around the country.

#### *Maple Ridge, Lewis County, New York*

The 195 turbine Maple Ridge Wind Farm has just become operational near Martinsburg (population ~ 1,200) and Lowville (population ~ 5,000), in Lewis County, New York, on the west side of the Adirondack Park. Lowville has an historic area, where turbines are barely visible. The wind project is located west of Lowville on Tug Hill, an elevated plateau known for its strong wind resource. The turbines have been under construction for the past year and have permanently altered the landscape. They are visible from 5 miles away and easily in sight of many residential developments in Lowville.

The Lowville population, according to the 2000 census, was 3,476, while all of Lewis County is 26,944. This is highly comparable to Alabama and Genesee County. Most of Lowville lies within a five mile radius of the Maple Ridge project, which is centered off Eagle Factory Road and US 12, west of town. Population surrounding the 100 turbine project is very similar to Alabama. However while population projections show a marginal drop in counts, local Realtors and the Maple Ridge manager argue that an expansion of nearby Fort Drum, to the north, has triggered both a housing shortage and unexpected population growth.

Average estimated housing values range from \$80,000 to \$90,000 within a five mile radius, at least 10% higher than the corner of Genesee County where the Alabama farm is planned.

<b>year</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
<i>no. sales</i>	13	29	22	36	49
<i>Avg. SP</i>	\$ 57,569	\$ 67,810	\$ 53,262	\$ 88,159	\$ 84,763
<i>Avg. DOM</i>	137	160	200	68	88
Average annual increase 2001-2005					9.4%

Sales statistics from the assessor's office in Lewis County tell much the same story.

Property Type	Sale Year	# of Sales	Average \$SP	Average Acres	% change
All SFR	2001	75	\$ 61,796	5.41	n/a
All SFR	2002	93	\$ 69,960	4.68	13.2%
All SFR	2003	78	\$ 69,744	5.79	-0.3%
All SFR	2004	99	\$ 79,024	6.91	13.3%
All SFR	2005	112	\$ 88,981	5.17	12.6%
Average annual increase 2000-2005					8.8%

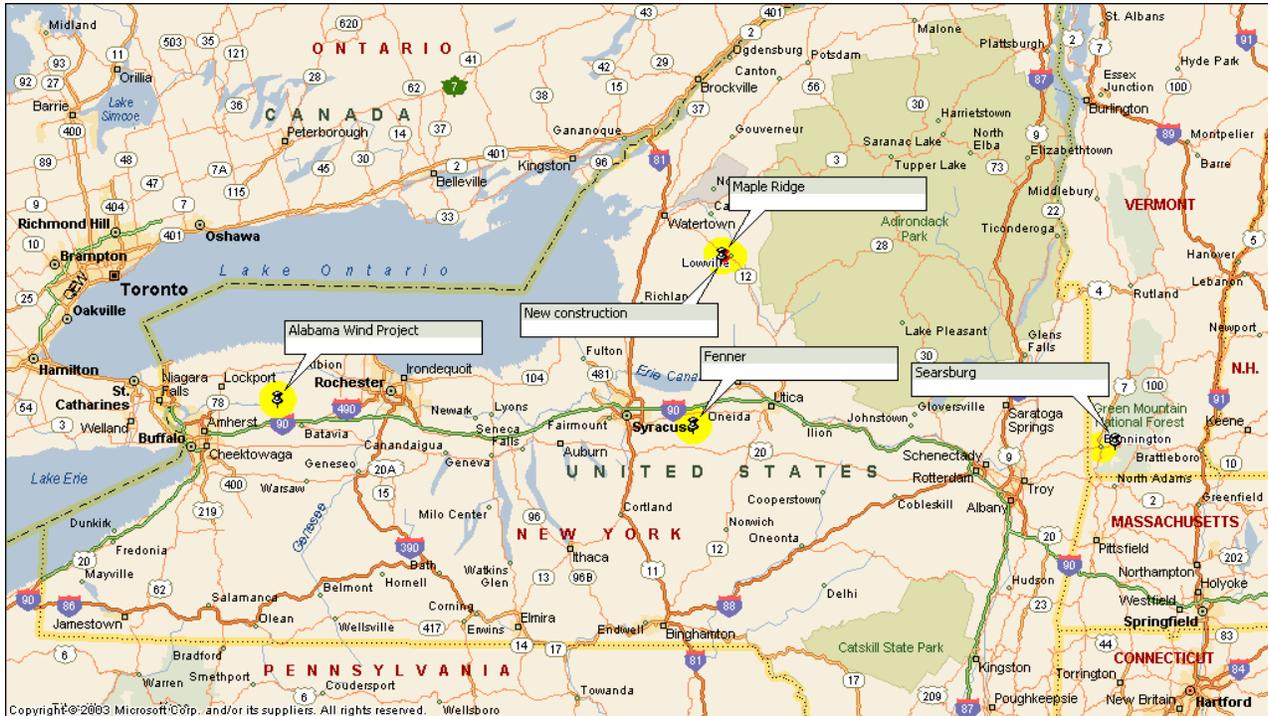
The picture below is of a custom residence under construction on Swernicki Rd amidst the Maple Ridge project in Lewis County. The site has a commanding view of Lowville and the fields below this ridge. It demonstrates that, at least for some, the turbines are just part of the rural landscape.



Ken Erb, a Lowville Realtor and appraiser, declared that he bought his home in the exclusive Hillcrest neighborhood where wind turbines are clearly visible 3-5 miles to the west. Home prices

there, for popular raised ranch style homes, range from \$110,000 to \$125,000, well above city and county averages.

Mr. Erb also reported that the wind farm was not affecting recreational use in the Tug Hill area. As proof he cited a “seasonal” 5 acre tract that sold for \$30,000 off Sweet Road and NY 177 in January 2006; practically beneath the turbines. He had understood that the buyer bought the site in part because the wind farm had improved infrastructure in the area. In contrast, vacant small lots elsewhere in Lewis County sold, on average, for only \$11,279 in 2005 (29 transactions averaging about four acres in size), up 10% from 2004.



The experience observed and reported at the Maple Ridge project suggests that in a market where average home values are demonstrably higher and where recreational uses more prevalent, demand and property appreciation have kept pace with areas elsewhere in the county, where a wind farm is not evident. Further it underscores the influence of exogenous influence (like the Fort Drum expansion) which can swamp demand in local markets, notwithstanding any concerns about wind farm impacts.

#### *Fenner, Madison County, New York*

The Fenner project in Madison County was constructed on a ridge where Oneida Lake and Syracuse can be seen to the north on a clear day. Fenner is a 30 MW project with 20 turbines and was opened in 1999. The REPP study (2003) found no evidence of adverse impacts at Fenner, or its vicinity. The Hoen study (2006) corrected some of the weaknesses in the REPP study with an hedonic model, but reached the same conclusion. We found that the Fenner project is both smaller in scope and somewhat more difficult to observe, except from neighboring ridge tops in this much hillier terrain.

However, while residential values appear generally higher in Madison County than Genesee County, some very positive trends since the project opened (now over 7 years ago) would belie concerns about adverse impacts.

First, household incomes within a 3-mile radius of Fenner exceed \$60,000, 50% higher than Alabama. Average dwelling values, reported at \$77,000 near Alabama average \$115,000 near Fenner. The average sale prices on rural residential properties tracks with typical single family dwellings.

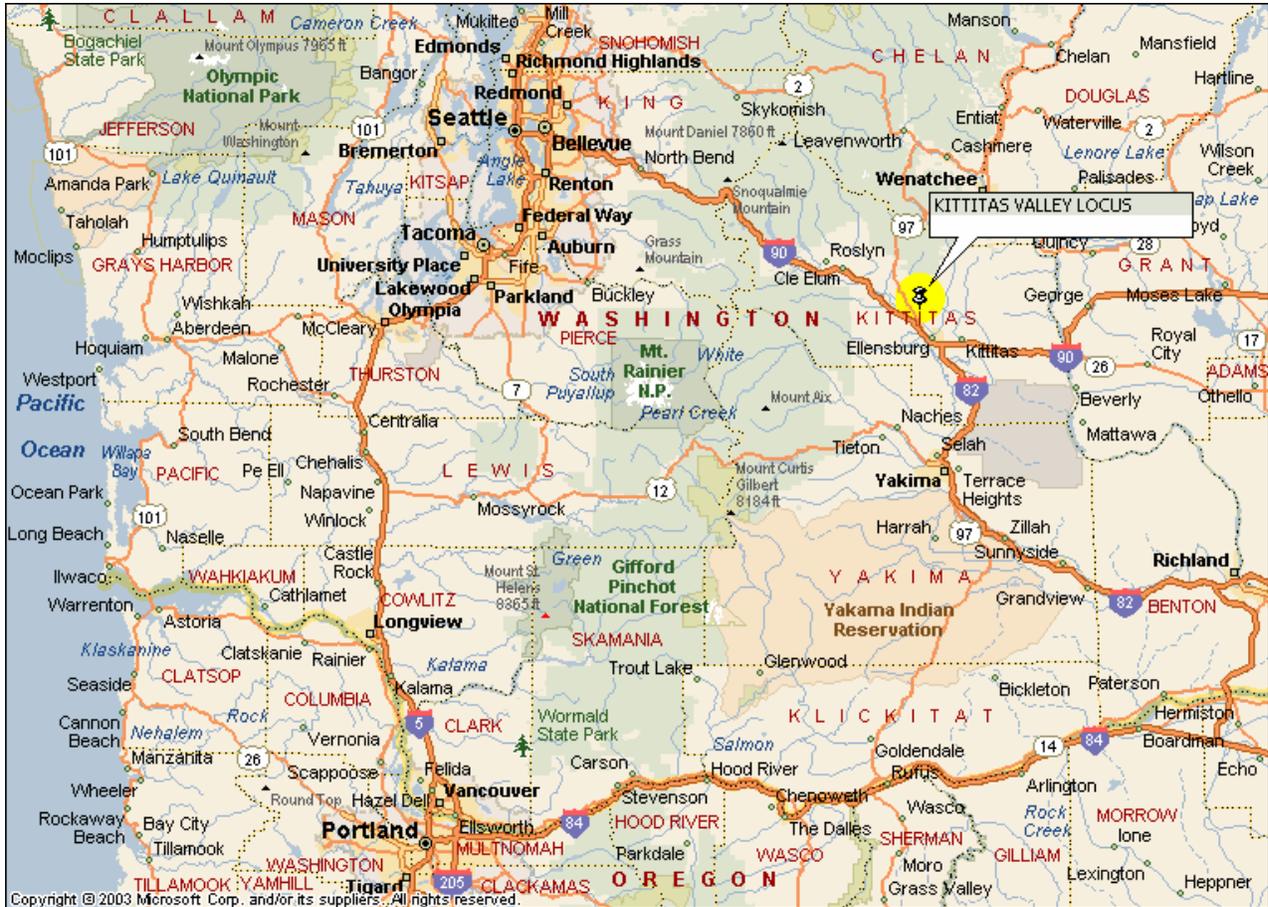
#### *Searsburg, Vermont*

A small 11 turbine project opened in Searsburg, Vermont at the juncture of State Roads 8 and 9, between Bennington and Wilmington in 1997. The REPP study showed that area sales before and after indicated no adverse impacts before and after operations began, as of 2003. We interviewed local brokers and tracked sales activity of the nearby resort at Chimney Hill. There, we found sales of rather modest recreational cabins in the \$225,000 to \$300,000 price range.

This wind project sits on a ridge line where the turbines tower over the canopy and can be seen from several vantage points from Route 8. A feature story in the Cape Cod Times (May 12, 2002) noted that a parking lot had been created to accommodate sightseers. While Searsburg is a much smaller project, it was sited on a very visible Green Mountain Ridge in the heart of scenic Vermont where tourism and recreational uses abound. Our studies have shown that such areas are much more sensitive to esthetic concerns than would be the case in a more traditional farming communities.

#### *Kittitas Valley, Ellensburg, Washington*

In Central Washington state, near the University-town of Ellensburg, the Kittitas Valley Project (“KV”) has been in the planning stages for nearly four years. The valley is traversed by Interstate 90 and at least 80 2 MW turbines will be erected. The view shed in this area is rimmed with windswept, treeless mountains, yet has long been compromised by multiple electric transmission towers and overhead lines, so characteristic of the power corridors that extend from the hydro-electric dams to large Northwest cities. However, some of the affected property on the eastern slope of the Cascades still enjoyed pristine views. Yet even though turbines were planned for these limited view sheds, speculative land sale activity and recreational housing continues, because of strong demand spilling over from a nearby resort, Suncadia.



What was remarkable about the study area was the relative high number of paired sales which were reported since announcement of the Project. We confirmed 12 transactions, or nearly 20% of the parcel inventory, a very high rate for a rural area. In virtually every case, robust appreciation rates were indicated. This suggests that the marketability of the sites was unaffected by the proposed project and that land values were unaffected as indicated by the rates of value appreciation.

We found that paired sales in the area surrounding the KV Project were appreciating at rates well above that of the county in general and the city of Ellensburg. This holds true for the four-year pre-announcement period and the 2-year post-announcement period with rates above the 10% range in the vicinity of the Project versus rates below 10% in Ellensburg and Lower Kittitas County.

## **General Findings**

- Given the relatively low median incomes, slow growth and limited base economy near the Town of Alabama, the proposed Alabama Ledge Wind Farm may yield net economic benefits, which could in turn, spur demand for housing and increase property values over time.
- Having reviewed the inventory of affected parcels, we find that they include a mix of rural residential tracts interspersed with commercial dairies and small farming operations. Our studies show that the most sensitive of these properties will be the rural homesites.
- We find that dairy farms, hay fields and vacant land are unlikely to be affected since value of such lies in the relative productivity of the soil and the age and functional utility of farm and dairy related structures. Residences are incidental to the business not located for the view shed.
- We have reviewed the age, quality and values of housing stock in the area and extensively surveyed property sale records going back to 2000. We have found that property values in the affected area are as low as anywhere in New York state. This is due to slow growth, depressed economies in Buffalo and Rochester and a cyclical dairy industry. We did not find any new development and little executive type housing near the revised project area where view considerations would be significant.
- The general characteristics of the area around the proposed Alabama Ledge Wind Power Project suggests that adverse property value impacts may be negligible, if measurable at all. This observation is based on our study of property values at Maple Ridge near Lowville and the Hoen study at Fenner in Madison County. In fact, there is yet to be demonstrable evidence that wind power projects have any adverse impact on property values anywhere. Further, there is anecdotal evidence that the presence of a wind farm may even have improved values of some types of recreation or seasonal properties.

## **Summary of Property Value Impacts**

The Alabama Ledge Wind Farm Project should have no impact upon property values for undeveloped properties or existing farms. There appear to be no premium-priced executive or second homes located in the project area or viewshed, which would derive such a premium from their views. The value of the existing stock of rural residential housing is fundamentally based on its utility in terms of access to employment and services, and the quality of such. The data shows that the existing stock of rural residential housing in the study area does not trade at a premium versus other comparable communities in Genesee County and is significantly lower valued compared with otherwise comparable communities in the Western New York. Local property values will be much more susceptible to the local economy than to changes in the view shed created by the Project.

The value of the existing stock of rural residential housing is fundamentally based on its utility in terms of access to employment and services, and the quality of such. Local property values will be much more susceptible to the local economy than to changes in the view shed created by the Project. To the extent that the wind project brings in jobs, reduces local property taxes and its

PI:LOT (payments in lieu of taxes) contributions benefit local schools and infrastructure, then property values should be supported in the participating jurisdiction.

We find that the Project should have no impact upon the future sales or values of developed properties given these prevailing conditions.

## CERTIFICATION OF CONSULTING ENGAGEMENT

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I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct.
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
3. I have no present or prospective interest in the property that is the subject of this report, and no personal interest with respect to the parties involved.
4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
5. My engagement in this assignment was not contingent upon developing or reporting predetermined results.
6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of professional Ethics and Standards of Professional Practice of the Appraisal Institute which include the *Uniform Standards of Professional Appraisal Practice*.
8. I have made a personal inspection of the property that is the subject of this report. No one provided significant consulting assistance to the persons signing this report.
9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
10. As of the date of this report, I have completed the continuing education program for the Appraisal Institute.



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P. Barton DeLacy, MAI, CRE  
Managing Director  
Certified General Real Estate Appraiser  
New York ID No. 46000046642

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### **Parties Interviewed**

Amy B. Mattoon, licensed real estate broker, 7570 Route 20A, Perry, NY, (716) 237-2549

Joe Gozelski, County Supervisor, Town of Castile, NY (March 10, 2006)

Jill McCluskey, PhD, Associate Professor, School of Economic Sciences, Washington State University, Pullman, WA (509) 335-2835; [mccluskey@wsu.edu](mailto:mccluskey@wsu.edu)

James Strathman, PhD, Director, Center for Urban Studies, College of Urban and Public Affairs, Portland State University, PO Box 751, Portland, OR (503) 725-4069; [strathmanj@pdx.edu](mailto:strathmanj@pdx.edu)

Thomas Priestley, PhD, CH2M Hill, 155 Grand Avenue, Oakland, CA 94612, (510) 587-7653; Analysis of the Visual Resources Impacts of the Revised KV Wind Power Project, internal technical memorandum prepared for Horizon Energy, November 7, 2005.

Arne Nielsen, Wind Engineers, Inc., Shadow Flicker Briefing re: KV Wind Power Project, November 23, 2005.

Martine Gonyo, Assessor, Town of Clinton, Churubusco, NY 518-297-2482

Laura Burns, Clinton County MLS; 518-561-8777

Eric Rohver, Coldwell banker Whitbeck Associates, Plattsburgh, NY; 518-562-9999  
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Roger Abbey, Ken Erb, with Good Morning Realty, Inc. and Abbey Appraisal; 7613 N. State St., Lowville, NY; 315-376-8600

Linda M. Brophy, Chimney Hill Real Estate, 9 Haystack Rd., Wilmington, VT, 802-464-3239

Ben Hoen, MS candidate, Bard College; [benhoen2@earthlink.net](mailto:benhoen2@earthlink.net) ; 718-260-8004

David Domm, Cohocton Town Assessor; 585-534-5102

### **Websites Researched**

The British Wind Energy Association: [www.bwea.com](http://www.bwea.com); BWEA Briefing Sheet- "Public Attitudes to Wind Energy in the UK," October 2005

Cohocton Wind Watch <http://batr.net/cohoctonwindwatch>

## **PROFESSIONAL QUALIFICATIONS**

### **P. BARTON DELACY, MURP, MAI, CRE, FRICS**

*Managing Director, Corporate Valuation Consulting  
Valuation Services, Capital Markets Group*

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Mr. DeLacy began appraising real estate in 1977. Before joining Cushman & Wakefield of Oregon, Inc. (“C&W”) in 2004, he spent over 18 years as a partner or principal of fee appraisal and consulting firms based in Portland, Oregon. From 1998-2002 he led the real estate consulting practice in the Pacific Northwest (Oregon, Washington and Idaho) for Arthur Andersen LLP.

Named a Managing Director in 2006, DeLacy is National Practice Leader for Corporate Valuation Consulting (“CVC”) at C & W. CVC focuses on corporate engagements involving real estate related consulting services. His professional contributions include teaching, writing and service on local non-profit boards and public commissions.

In addition to conventional appraisal assignments, Mr. DeLacy’s practice centers on problem solving engagements where valuation is incidental to the solution. This includes advising on highest and best use opportunities for portfolios, determining value impacts in land use cases, expert testimony, eminent domain consulting, litigation strategy, land use planning and site selection.

### **Specialized Experience Studying Land Use Impacts**

Mr. DeLacy has developed extensive valuation and consulting experience studying property impacts made by energy generating facilities including wind turbine “farms” and power generating plants. He has prepared testimony for Federal and state energy siting councils and the Environmental Protection Agency in Oregon, Washington, New York and Montana. Select experience includes:

- Expansion of aggregate mine in Scappoose, Oregon (Lone Star NW)
- Alternate site analysis for Women’s Correctional Facility (Neighborhood Group)
- Impact study of change in fuels for cement plant in Trident, Montana (Holcim)
- Kittitas Valley and Wild Horse Wind Projects, Ellensburg, Washington (Horizon Energy)
- California/Oregon gas power generation plant, Klamath Co., Oregon (Peoples’ Energy)
- Scotia, California co-generation power plant, lumber mills, townsite (PALCO)
- Marble River, Dairy Hills and Burke Wind Farms, New York (Horizon Energy)
- Cohocton Wind Project, Steuben Co., New York (UPC Energy)

Chaired Consulting Corps study committee for the Counselors of Real Estate advising City of Orlando, Florida on siting of Homeless Shelter (2005-6).

### **Academic Credentials**

*Master of Urban and Regional Planning (MURP), Portland State University 1988*

*Bachelor of Arts (BA), Willamette University, Salem, Oregon 1975*

*University of Oregon School of Law, Eugene, Oregon 1976-7*

**Professional Designations and Licenses**

- Fellow, the Royal Institution of Royal Chartered Surveyors (FRICS)- 2005
- CRE Member, Counselors of Real Estate- 2003
- MAI Member, Appraisal Institute- 1983
- SRA Member, Appraisal Institute- 1980
- ASA Member, Urban Properties, American Society of Appraisers- 2002

Mr. DeLacy is a duly Certified General Real Estate Appraiser in the following states:

- Oregon, license number C000089
- New York, license number 46000047021
- Washington, license number 1100107
- Idaho, license number CGA-255
- Montana, license number 445
- California, license number AG034219
- Kansas, license number G-2235
- Missouri, license number 2005035957
- Colorado, license number 1000006312
- Illinois, license number 553.001797
- Alaska, license number 637

**Teaching**

Adjunct Instructor, Portland State University teaching land use planning and appraisal courses

National Business Institute, Lorman Education Services, Clackamas Community College, Lane Community College

Guest Lecturer: University of Portland, past instructor at Marylhurst University

**Articles Published, Major Presentations:**

- “Turbine land-use challenges should blow over” *Daily Journal of Commerce* Value Added column February 2, 2006.
- “A LULU of a Case: Gauging Property Value Impacts in Rural Areas,” *Real Estate Issues*, Counselors of Real Estate, Fall 2004.
- “Shall We Hallow Fallow Ground?” *Daily Journal of Commerce* column with Bob Stacey of 1000 Friends of Oregon, March 4, May 28, 2004.
- “Open Spaces, Empty Vistas”, *Brainstorm NW*, July 2003.
- “Seattle Creek Initiative Has Profound Implications”, *Puget Sound Business Journal*, Vol. 23, No. 49, April 10, 2003.

- “Real Estate Strategies: Using Technology to Help Convert Secondary Lands to Highest and Best Use”, presented at 2002 OSCPA Forest Products Conference, Eugene, OR, June 2002.
- “Health Care Clients Rely on GIS and Web Portal to Manage Real Estate”, white paper presented in Washington DC at ESRI Global Healthcare Conference November 2001, published on website, Feb. 2002.
- “Highest and Best Use Should Guide Prison Siting” *Corrections Compendium*, American Correctional Association, February 1998.
- “The Emerging role of GIS in Real Estate Development Planning” with Kenneth J. Dueker, *Journal of the American Planning Association*, American Planning Association. 1990.
- “Creative Financing Concessions in Residential Sales: Effects and Implications,” James Strathman, Barton DeLacy, and Kenneth J. Dueker, *Housing Finance Review*, Vol. 3, No. 2, Spring 1984, pp. 149 - 163. PSU Catalog Number R006.
- “Cash Equivalency for Residential Appraising,” *The Appraisal Journal*, American Institute of Real Estate Appraisers, January 1983.

**Community Service:**

*Current Activities:*

- Mt. Angel Abbey Foundation Trustee (2003 to date)
- Appraisal Standards Council of the Appraisal Institute (2005)

*Select Past Activities:*

- Emergency Siting Authority: Juvenile Corrections Facilities (1995, 1998), appointed by then Oregon Senate President, now U.S. Sen. Gordon Smith.
- Planning Commissioner, City of Lake Oswego, Oregon two terms (1989-1993)
- Board of Trustees, Willamette University (1991-1994), and President Alumni Association (1992-1993), Alumni Board (1986-93)
- Panel Member, Regional Advisory Board to the Oversight Board, Resolution Trust Corporation (RTC) – oversaw disposition of real estate assets in six state western region (1990-1991); appointed by then HUD Secretary Jack Kemp
- Consulting Corps for the Counselors of Real Estate (“CRE”): panel member advising Tougaloo College in Jackson, Mississippi on disposition of excess land (2004); chaired panel mediating land use neighborhood dispute at Pace Academy in Atlanta, Georgia (2005)
- Delegation Member representing CRE on China tour sponsored by China-US Center for Sustainable Development (2006)