

FINDINGS ON THE IMPACT OF WIND TURBINES ON RESIDENTIAL PROPERTY VALUES: A Reference Guide as of 2011

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This document provides a summary of information gleaned from seven studies conducted over the last five years that have attempted to quantify the effect of wind facilities on property values. Two of the studies included were contracted by a wind developer, two were produced by real estate appraisers, one by a US Department of Energy laboratory, one from an American university and one from a British university. Impacts to individual properties were found to be neutral by the wind developer and the laboratory, negative by the appraisers and uncertain by the British university and negative by the American university.

It is logical for property owners to be concerned that having a good view of a wind turbine may lower the potential resale value of their property. Unfortunately, this guide does not relieve that concern nor does it provide for an expectation of devaluation. This is the state of analysis, based on limited available data. Primary points:

- Defined area is very important for this topic, as being five miles from a wind turbine is very different than being half a mile away.
- Aggregate findings are not useful for properties located very near a wind turbine.
- Relatively few property transactions have occurred very near (less than one mile) turbines and the dispersion of those transactions combined with the complexity of property features makes it difficult to accurately observe trends or correlations.
- Many characteristics of a property create value in combination; without observing all characteristics across comparable properties in similar geographic areas the contribution of wind turbines to value can't be measured.
- Properties in poor condition may be more negatively impacted by turbines than properties in good condition. Evaluating wind facility impacts near groups of homes that are below-average is more complex due to a likely tendency for turbines to be located on lower value land in an area.
- The impact to an individual property is a function of site-specific variables including existing property features, topography, geographic features between a property and a turbine and orientation in relation to turbines and prevailing winds.
- Although they do not move, analysis of high-voltage transmission lines could provide some indicators of where and when impact may be negative.
- To better understand the impact of wind turbines on property values more transactions data must be collected and evaluated according to industry standards.

There is no indication that wind turbines cause a persistent negative impact on property values in the area (5-mile radius) around a wind facility.

One of the larger-scale analyses of this issue is a Lawrence Berkeley National Laboratory (LBNL) study which found that valuation for a collective set of properties sold within five miles of wind turbines was no different than the set of properties sold outside of five miles (Hoen 2009).

These aggregate findings can't be transferred to individual properties and it can't be promised that no impact will occur. Properties located within a mile of a wind facility can't be evaluated the same as those located more than two miles away.

In the literature of impact studies, findings of negative impact are most often found in those based on surveys of homeowners or appraisal experts that were conducted prior to construction of a wind facility.

A series of interviews with participants in the real estate market in Tucker County, WV found no indication of a perceived negative impact from the Mountaineer wind facility. However, due to sparse sales, not enough quantitative data was available to make an absolute statement (Goldman Associates 2006).

Not enough data has been collected on home sales very near wind turbines to establish whether turbines impact these homes differently compared to homes further away.

The LBNL study included only 125 transactions within one mile of 1,345 turbines surveyed at 24 wind projects and analysis was thus based on pooled data from nine different states. A persistent negative sales impact was not observed within these 125 transactions. This study suggests that if an impact does exist at close proximity, it may exist in the time period immediately following project announcement but before construction, and could fade following construction.

The LBNL study observed sales volumes were slightly lower within one mile of wind turbines, less than two years after construction, but not significantly different more than two years after construction. Reduced sales volume is another possible impact.

A study of sales data from homes near six wind facilities in three New York counties, using the date of the draft EIS document as the before and after point, evaluated results by census block-group, census block, and parcel-level fixed effects. The study found consistently more negative impacts the closer a property was to a turbine, with exceptions for properties close enough to receive direct payments from the developer or in some cases from properties in relatively good or very good condition (Heintzelman and Tuttle 2011).

A study by McCann Appraisal found that 15 homes located within two miles of a wind facility were on average valued 25 percent less per square foot than 38 homes located more than two miles away (McCann Appraisal 2010), but the firm did not correlate value with other property characteristics or earlier sale values, and thus does not show causation. A study for Invenergy using the same data notes that the homes located closer to the facility were as a group quite a bit older than the homes located further away, making the two groups not comparable (Poletti & Associates 2007).

A survey of realtors, some of which had sold homes near turbines, conducted by Appraisal One found high expectation for wind turbines to negatively impact improved residential property, with increasing expectation the closer (“bordering,” “close” or “near”) the home to a turbine (Appraisal One Group 2009). Having a turbine visible from the front of a home was found to be more negative than a view from the back.

The paucity of data negates extrapolation to any specific area, although more turbines are located close to homes in the East and Midwest due to population density and geography.

It is possible to have relatively depreciating home values while living near wind turbines, and some depreciation may be attributed to the turbines.

Without a more thorough sample, it is unknown to what extent any lower observed transaction price is due to close proximity to turbines or if the difference is due to other features of the property or an area.

Both positive and negative impacts found in the New York study show the importance of the state of the underlying property. Homes in poor condition were more likely to be negatively impacted while homes in good condition were less likely to be impacted.

Like with transmission lines differences may be temporary, as perceived impacts may be realized in lower prices after a facility is announced but may recede following actual construction. This finding is consistent with the International Association of Assessing Officers (IAAO) finding of a u-shaped response curve resulting from the presence of industrial facilities, where values drop but then recover over time (Kinnard 1995). The New York study also includes transactions that occurred before actual construction but after facility announcement, using the date of the draft EIS document, because using a later date would have made the statistical results insignificant (Heintzleman and Tuttle 2011).

In the United Kingdom, there have been cases of taxing authorities lowering valuations for properties due to their proximity to wind turbines (BBC News 2008) and of individuals being

awarded damages for a reduction in home value due to visual and sound impacts of wind turbines (The Telegraph 2004).

It is possible to have appreciating home values while living near wind turbines, even within one mile of a turbine, but the appreciation can't be attributed to the turbines.

The LBNL study found that sales of homes with an “extreme,” “substantial” or “moderate” view of turbines sold at prices that were no different than homes with no views of turbines, although there were only 28, 35 and 106 of these sales respectively, and thus no ability to extrapolate.

Properties that are involved in lease arrangements with a wind facility may experience value appreciation relative to properties that are not in such leases. In New York, properties within 0.1 miles of a turbine were found to appreciate in value relative to properties at further but varying distances possibly due to this factor (Heintzelman and Tuttle 2011).

Wind development can influence values positively due to direct property purchases.

Other home or area features are probably just as important in influencing resale price as are the presence of wind turbines.

The IAAO, the most respected organization for property valuation guidelines, does not include wind turbines as a factor influencing value, but differences in view or proximity to a potential “nuisance” can influence an appraisal. Under accepted appraisal standards of both the IAAO and The Appraisal Institute (AI) whether any factor does constitute a nuisance which reduces the value of the property is determined by using market comparables. Under this approach properties that are considered “suitable substitutes” of the subject property are collected and their features are compared. These suitable substitutes are called comparables. There can be many differences between the subject property and the comparables. The appraisal must adjust the value of the subject property to the comparables by either adding value or lowering value. The presence of a nuisance may appear to reduce the value of the subject property but the only way that can be determined is to compare ALL the differences between the subject and each comparable. The mere presence of a potential nuisance and a lower sale price for a property does not mean the nuisance caused the lower valuation if other factors are present which might account for the difference.

Appraisal standards indicate that at least the following variables should be compared to the subject property.

- Proximity to the subject

- Time of sale
- Location
- Site characteristics (including nuisances)
- Design
- Quality of construction
- Age of structure
- Condition
- Number of rooms (bed and bath)
- Living area
- Functional utility
- HVAC
- Garage
- Porches, patio, pools
- Other (fireplaces, kitchen equipment, date of remodeling, decoration)
- Sales or financing terms

To determine whether a potential nuisance detracts from value all the differences from the comparable property must be valued. This can only be accurately done if there are multiple sales of suitable substitutes. There are methods of regression analysis and appraisal manuals which indicate the value of the variables, but these are of little value in rural areas where there are few sales.

Evidence from high-voltage transmission lines (HVTLs) can provide some insight.

Scenic areas, custom homes and houses next to poorly maintained properties may be more impacted due to their unique or undesirable features (Pitts 2007).

A negative impact is more likely when a property has an encumbered view because of a HVTL (Hamilton 1995).

It is too early to make generalized conclusions about the impact of wind turbines on individual home values.

Applied to the question of the appraisal of properties in the vicinity of wind towers, until there are sufficient sales in an area there can be no defensible conclusion that a wind facility detracts (or possibly adds) value. Any conclusions must be very specific to the site involved. Studies that include a number of sites in different locations are of little value, but they may provide an

indication of whether the presence of wind facilities might influence value. A scenic vista is possibly an important feature of a home and may be highly correlated with sale value but it is unlikely to be the only factor in the determination of value.

The universe of properties that are potentially impacted by wind turbines is growing as installed wind capacity increases. As wind increases market share, more transactions will be observable.

Hub heights are getting higher. Most studies have assessed turbines with hubs heights of up to 80 meters, but some firms now install turbines with 100 meter hub heights. The taller and larger turbines could have different impacts.

Evidence from both U.S. and U.K. studies show that it is often difficult to separate effects of existing area stigmas such as other industrial facilities and HVTLs that already affect values (Sims 2007).

Evidence from New York shows it is easy to overestimate the contribution of wind turbines to value declines of marginal property due to a tendency to site wind turbines on properties that already have relatively low values (Heintzelman and Tuttle 2011).

Works Cited

- Appraisal One Group. *Wind Turbine Impact Study - Dodge & Fond Du Lac Counties Wisconsin*. Oshkosh: Appraisal Group One, 2009.
- BBC News. *Wind farm blights farmhouse*. July 2008.
- Goldman Associates. "A Study on the Impact of Windmills on Property Values in Tucker County, West Virginia for the Proposed Beech Ridge Energy, LLC Project in Greenbrier County, West Virginia." 2006.
- Hamilton, S and Schwann. "Do high voltage electric transmission lines affect property value?" *Land Economics*, 1995: 436-444.
- Heintzelman, Martin D., and Carrie M. Tuttle. *Values in the Wind: A Hedonic Analysis of Wind Power Facilities*. Potsdam, NY: Clarkson University School of Business, 2011.
- Hoen, Wiser, Capper, Thayer and Sethi. *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*. US Department of Energy, Lawrence Berkeley National Laboratory, 2009.
- Kinnard, W. and Dickey. "A primer on proximity impact research: Residential property values near high-voltage transmission lines." *Real Estate Issues*, 1995: 23-29.
- McCann Appraisal. "Written testimony to Mike McLaughlin, Chairman of the Adams County, IL Board." 2010.
- Pitts, J and Jackson. "Power Lines and Property Value Revisited." *Appraisal Journal*, 2007.
- Poletti & Associates. "A REAL ESTATE STUDY OF THE PROPOSED WHITE OAK WIND ENERGY CENTER MCLEAN AND WOODFORD COUNTIES, ILLINOIS." 2007.
- Sims, S and Dent. "Property Stigma: wind farms are just the latest fashion." *Journal of Property Investment & Finance*, 2007.
- The Telegraph. *Giant blades are slicing prices*. October 2004.