Advancing Wind Power in Illinois Conference 2011

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Champaign County Board

City & County Zoning Perspectives Including Impact of Municipal Zoning Radius Breakout Session

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Impact of Municipal Zoning Radius

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APPROXIMATE REVENUE FOR VARIOUS TAXING BODIES FROM EACH WIND TURBINE PER YEAR

COUNTY WIDE TAXING BODIES

COUNTY	1,470
FOREST PRESERVE	155
PARKLAND COLLEGE	1,013

NEWCOMB TOWNSHIP

FISHER & MAHOMET SCHOOLS	9,800
SANGAMON VALLEY & CORNBELT FIRE	473
NEWCOMB TOWNSHIP	588
NEWCOMB ROAD & BRIDGE	688
NEWCOMB PERM. ROAD	311
MULTI TOWNSHIP ASSESSMENT DIST.	57

COMPROMISE TOWNSHIP

SCHOOL DISTRICT 188	6,463
HIGH SCHOOL DISTRICT 193	4,854
GIFFORD FIRE	880
OGDEN/ROYAL FIRE	493
COMPROMISE TOWNSHIP	920
COMPROMISE ROAD AND BRIDGE	782
COMPROMISE PERM ROAD	348
MULTI TOWNSHIP ASSESSMENT DISTRICT	69

AYERS TOWNSHIP

SCHOOL DISTRICT (HERITAGE)	8,983 (same district as Raymond)
BROADLANDS FIRE	634
HOMER FIRE	766
AYERS TOWNSHIP	739
AYERS ROAD AND BRIDGE	1,081
AYERS PERM ROAD	319
MULTI TOWNSHIP ASSESSMENT DISTRICT	95 (same district as Raymond)

THE FOLLOWING NUMBERS ARE BASED ON PROJECTIONS OF 200 WIND TURBINES IN THE COUNTY OVER A 20 A YEAR PERIOD.

All taxing bodies in Champaign Co.	$59,400,000
Champaign County	$ 5,880,000
Parkland College	$ 4,052,000
Champaign Co. Forest Preserve	$ 620,000

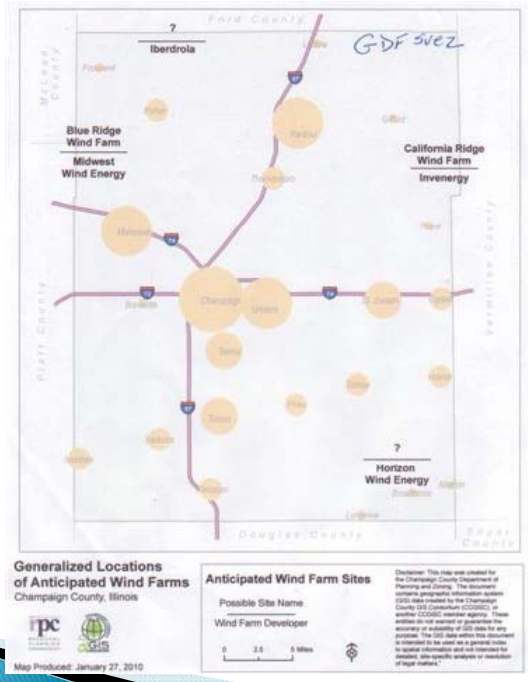
(The above estimates are based upon current tax rates and with no adjustments for depreciation.)

INCOME GENERATED FOR LOCAL ECONOMY (rent paid to landowners):

$9000 / year /turbine

200 turbines = $1,800,000 per year

For 20 years = **$36,000,000**



Noise

- Towers and nacelles are streamlined. Streamlining reduces any noise that is created by the wind passing the turbine. Turbines also incorporate design features to reduce vibration and any associated noise, e.g. soundproofing, and mounting equipment on sound-dampening buffer pads. The generator, gears and other moving parts located in the turbine nacelle produce mechanical noise. Wind turbines use special gearboxes, in which the gear wheels are designed to flex slightly and reduce mechanical noise. Wind turbine blades have become more efficient. The more efficient they are, the more the wind's energy is converted into rotational energy and the less aerodynamic noise is created. Small wind turbines tend to be noisier for their size than large machines, due to higher rotational speed of the blade tips, and more research money has been invested in reducing noise from large turbines.

Noise

- Wind plants are quiet compared to other types of industrial facilities, but most industrial plants are not located in rural or low-density residential areas. Wind turbines most commonly produce some broadband noise as their revolving rotor blades encounter turbulence in the passing air, typically a "swishing" or "whooshing" sound. Some wind turbines (usually older ones) can also produce tonal sounds (a "hum" or "whine" at a steady pitch). This can be caused by mechanical components, or by unusual wind currents interacting with turbine parts. This problem has been almost eliminated in modern turbine design. However, problems can occur in hilly terrain where nearby residences are in dips or hollows downwind that are sheltered from the wind – in such a case, turbine noise may carry further than on flat terrain. There are, though, strict guidelines on wind turbines and noise emissions to ensure the protection of residential amenity.

Shadow Flicker

- National Academy of Sciences
  Impacts of wind energy development on humans - Published 2007
- As the blades of a wind turbine rotate in sunny conditions, they cast moving shadows on the ground resulting in alternating changes in light intensity. This phenomenon is termed shadow flicker. Shadow flicker is different from a related strobe-like phenomenon that is caused by intermittent chopping of the sunlight behind the rotating blades. Shadow flicker intensity is defined as the difference or variation in brightness at a given location in the presence and absence of a shadow. Shadow flicker can be a nuisance to nearby humans, and its effects need to be considered during the design of a wind energy project.
- In the US, shadow flicker has not been identified as causing even a mild annoyance. In Northern Europe, on the other hand, because of the higher latitude and the lower angle of the sun, especially in winter, shadow flicker can be a problem of concern.

Do Wind Turbines Threaten Bats and Birds?

- We do know that many bats, like birds, die due to collisions with “lighthouses, communication towers, tall buildings, power lines, and fences” (Buffalo Ridge report). But, as with birds, the number of fatalities due to wind turbines is extremely low compared to collisions with other man-made structures.

Do Wind Turbines Threaten Bats and Birds?

- The interaction of bats with wind turbines is, like many other behaviors that bats exhibit, not well understood. While there have been numerous studies centered around birds and wind turbines, relatively few of these studies have included bats. The ones that have been done, however, suggest that wind turbines do not post a significant threat to bat populations.

Do Wind Turbines Threaten Bats and Birds?

- One of these studies, “Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting, and Mortality Information from Proposed and Existing Wind Developments” by WEST, Inc., released December, 2002, concludes that “bat collision mortality durng the breeding season is virtually non-existent, despite the fact that relatively large numbers of bat species have been documented in close proximity to wind plants. These data suggest that wind plants do not currently impact resident breeding populations where they have been studied in the U.S.”

Do Wind Turbines Threaten Bats and Birds?

- To most experts, though, there's a problem with the bird-mortality argument: The vast majority of research shows that wind turbines kill relatively few birds, at least compared with other man-made structures.

Man-made structure/technology	Associated bird deaths per year (U.S.)
Feral & domestic cats	Hundreds of millions [source: AWEA]
Power lines	130 million – 174 million [source: AWEA]
Windows (residential & commercial)	100 million – 1 billion [source: TreeHugger]
Pesticides	70 million [source: AWEA]
Automobiles	60 million – 80 million [source: AWEA]
Lighted communication towers	40 million – 50 million [source: AWEA]
Wind Turbines	10,000 – 40,000 [source: ABC]

- Collisions with wind turbines account for about 1/10 of a percent of all "unnatural" bird deaths in the U.S. each year. And of all bird deaths, 30% are due to natural causes, like baby birds falling from nests. [source: AWEA]

Myth: Wind Turbines Lower Property Value

- With concurrent increases in energy prices, concern about climate change, and growth of the wind industry, some homeowners are becoming alarmed by a rumor that wind turbines decrease property value. However, in reality, there is no connection between wind turbines and declining property values. In 2003, the Renewable Energy Policy Project (REPP) released a widespread investigative report after completing a research study entitled, "The Effect of Wind Development on Local Property Values." Intended to uncover the validity of the property value reduction tale, the document revealed that the presence of commercial-scale wind farms do not appear to harm "view shed" property values." The study looked at 25,000 homes across the U.S. that were located in the area known as the "view shed" of a wind farm, the area within a 5 mile radius of a wind farm. Wind farms selected were greater than 10 MW in generating capacity.

Myth: Wind Turbines Lower Property Value

- The study found that, like many other human-made structures that are visible in the immediate and distant horizon, including building, grain elevators, water towers, silos, telephone poles, utility poles, transmission line towers, advertisement billboards, and communication and cell phone towers, wind turbines do not have a negative effect on property value. Quite the contrary, the study discovered that, in many cases, the property value actually increased in the presence of a wind farm. In fact, the study states that "for the great majority of the projects, the property values actually rose more quickly in the view shed than they did in the comparable community. Moreover, values increased faster in the view shed after the projects came online than they did before." Although this cannot comprehensively be contributed to the wind farms, this trend is a fascinating possibility to consider.

Myth: Wind Turbines Lower Property Value

- In another study completed several years ago, Ben Hoen, a Bard Center on Environmental Policy graduate student, looked at actual home sales near a 30 MW wing project with 20 installed wind turbines in central New York State. Over a decade, he examined 679 home sales occurring within 5 miles of the project. He found no evidence to support a drop in property values. To greatly expand the sample, Hoen teamed up with Ryan Wiser, a scientist with the Electricity Markets and Policy Group at the Lawrence Berkeley National Laboratory to continue the study. Together, they began research on the first methodical, juried, and eventually published study on the documented effects of wind turbines on property values. Their preliminary results, as predicted, did not indicate a drop in property values due to wind farm installations.

Myth: Wind Turbines Lower Property Value

- The finished study examined 3,500 to 5,000 home sales near 8 to 10 operating wind turbine projects.
- In a presentation of preliminary findings from 4 sites with a total sample size of 2,195 home sales, the team stated that they had found “no statistical evidence to support that property sales with 4 to 7 miles of a wind facility were adversely affected.”
- No statistically significant data indicate that there should be a concern about loss of property value in the view shed of wind farms. Neighbors of wind farms, along with the rest of America, stand to benefit from wind energy developments as they help us stimulate the economy through the creation of green jobs and concomitantly mitigate climate change by increasing our use of our abundant clean energy resources.

--Posted by Kirsten Taylor

Myth: Wind Turbines Lower Property Value

- Multiple other research studies echo these same results. For example, a new report that studies wind farms across two states, spanning from 1998 through 2006, shows the wind energy facilities do not harm property values. In fact, some new-home buyers are embracing the benefits of such “green energy” growth in their areas. Conducted by Peter J. Poletti, Ph.D., MAI, President of Poletti and Associates, and an Illinois Certified General Real Estate Appraiser, the study compared property sales in the target areas with non-wind farm areas with similar characteristics.

Safety Features

- Wind turbines are often struck by lightning, but are equipped with lightning protection systems, while turbine blades usually have internal lightning conductor rods running all the way to the blade tips.
- Typically, a turbine fire is allowed to burn itself out, while protecting against the potential for ground fires that might start due to sparks or falling material. An effective method for extinguishing a turbine fire from the ground does not yet exist and the fires do not last long enough to warrant aerial attempts to extinguish them.

Safety Features

- The risk of fire at wind farms is low, as the flammable components are located high above the ground and there is normally no vegetation around the base of the turbine towers. Similarly, high voltage connections are underground, and access tracks act as firebreaks and provide fire-fighting access. Lightning protection devices are installed on every wind turbine, while dedicated monitoring and control systems shut down the turbines when the threshold temperatures of critical components are reached.

Safety Features

- Wind turbines have special inbuilt safety equipment to deal with emergencies, e.g. vibration sensors to detect rotor problems and complete shutdown during excessive wind speeds. Many of the potential risks are reduced by the use of enclosed tubular steel towers (rather than open lattice towers), locking systems on doors, intruder alarms, and protective safety fencing around open switchyards. The only potentially toxic or hazardous materials involved in the operation of wind farms are relatively small amounts of lubricating oils, hydraulic and insulating fluids.

Amount of Irrevocable Letter of Credit Required for Decommissioning

- At the time of approval, the amount of the irrevocable letter of credit shall be 210% of an independent engineer's cost estimate to complete the work described or less if specifically authorized by the Board. The GOVERNING BODY has the right to require multiple letters of credit based on the regulations governing federal insurance for deposits.
- The applicant or WIND FARM owner shall gradually pay down the value of the irrevocable letter of credit by placing cash deposits in an escrow account over the first 13 years of the WIND FARM operation…

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