



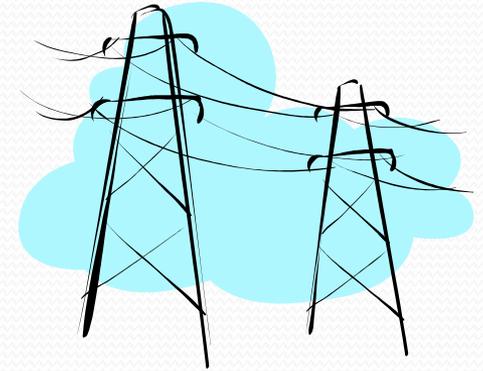
Wind Turbines & Property Value

A presentation by
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Focus on Value

- PERCEPTION = VALUE
 - The key to understanding real estate value is to understand it is based on perception.
 - Perception drives the buying decision.
 - E.g. perceived enjoyment of home.
 - E.g. perceived income stream of investment.
 - Perception need not be based on a proven, scientific fact. (e.g. the haunted house or electric power lines)
 - When the buyer acts on this perception through a buying action you have established value and the effects of this perception.

E.g. Perception of Electric Transmission Lines



Perception

- They cause health problems especially cancer.
- They are noisy.
- They are unsightly, ruin view shed

Fact

- Not proven as a scientific fact, however the jury is still out and there is published literature on this issue.
- True, depending on humidity, power and distance.
- True both near and far.

Perception of Wind Turbines

Perception

- They cause health problems though noise and deep ultrasonic sound waves, sleep deprivation
- They are noisy.
- They cause light flicker.
- They are unsightly, ruin view shed

Fact

- Not proven as a scientific fact, however the jury is still out and there is published literature on this issue.
- True, depending on wind, size, age and distance.
- True depending on location and distance.
- True both near and far.



What Drives Perception?

- Media
 - Printed media
 - Electronic media
 - Internet

To measure this perception of media
we conducted a **Literature Review**

Literature Review

- Health Issues
 - Articles found on health disorders including:
 - Sleep deprivation
 - Headaches
 - Dizziness
 - Anxiety
 - Depression
 - Vibroacoustic Disease (VAD) & Wind Tower Syndrome
 - WHO Community Noise Paper of 1995 counters claims.
 - Doesn't affect everyone.
 - Wind industry has counter claims stating “no health impact”
 - Similar to the EMF issue relating to power lines.



Measuring Perception

- To measure the impact of this perception we did two things:
 - Conducted a **Realtor Survey** of Realtors who worked in a wind turbine area.
 - Conducted an **Impact Study** using sales of properties impacted by wind turbines compared to those that were not.

Realtor Survey



Purpose: learn from the guys in the trenches of buying and selling

Focus: residential land use, both vacant and improved.

Visual field proximity: 3 different levels

600ft from turbine (border)

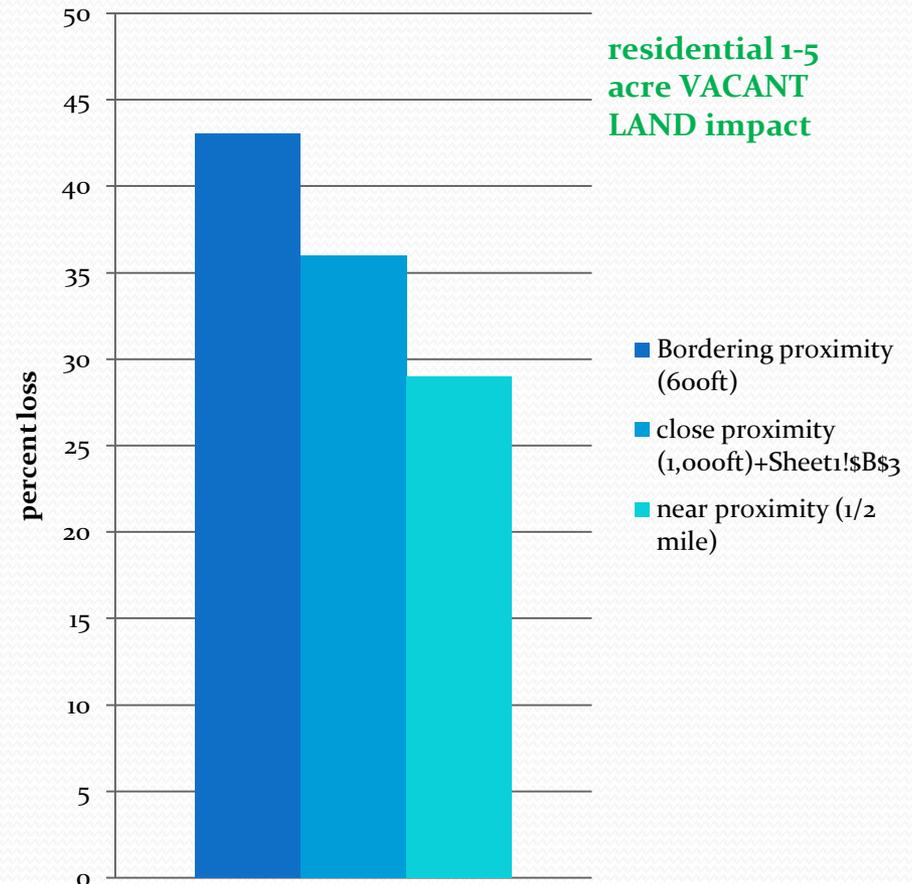
1,000ft (close)

½ mile (2,640ft) (near)

- Survey utilized graphics and pictures to standardize the concept being portrayed.
- Survey was to Realtors that were in a wind turbine area.
 - Fond du Lac County
 - Northeast Dodge County
- Surveys were given in person, on-site, verified with date, person's name and contact

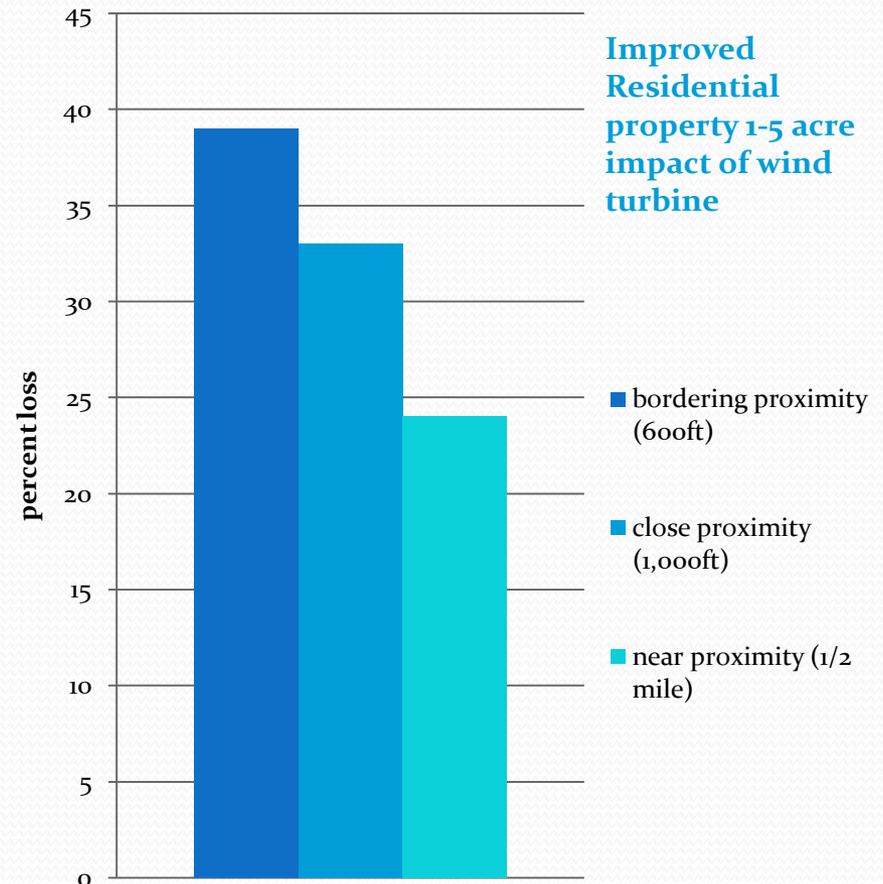
Realtor Survey results . . .

- Question to impact of wind turbine to vacant land
 - 82% negative if border
 - Loss estimated at -43%
 - 69% negative if close
 - Loss estimated at -36%
 - 59% negative if near
 - Loss estimate at -29%



Realtor Survey results . . .

- Question to impact of wind turbine to improved property
 - 91% negative if border
 - Loss estimated at -39%
 - 86% negative if close
 - Loss estimated at -33%
 - 60% negative if near
 - Loss estimate at -24%



Realtor Survey results . . .

Hobby Farm



- Bordering proximity (600ft)
 - 70% said negative impact
 - 23% said no impact
- Close proximity (1,000ft)
 - 47% said negative impact
 - 47% said no impact
- Near proximity (1/2 mile)
 - 44% said negative impact
 - 47% said no impact

Position of Turbines

- 83% said the impact was negative if the turbines are in the front yard of a 1-5 acre residential parcel
- 71% said the impact was negative if the turbines were located in the back yard of a 1-5 acre residential parcel.



Impact Studies

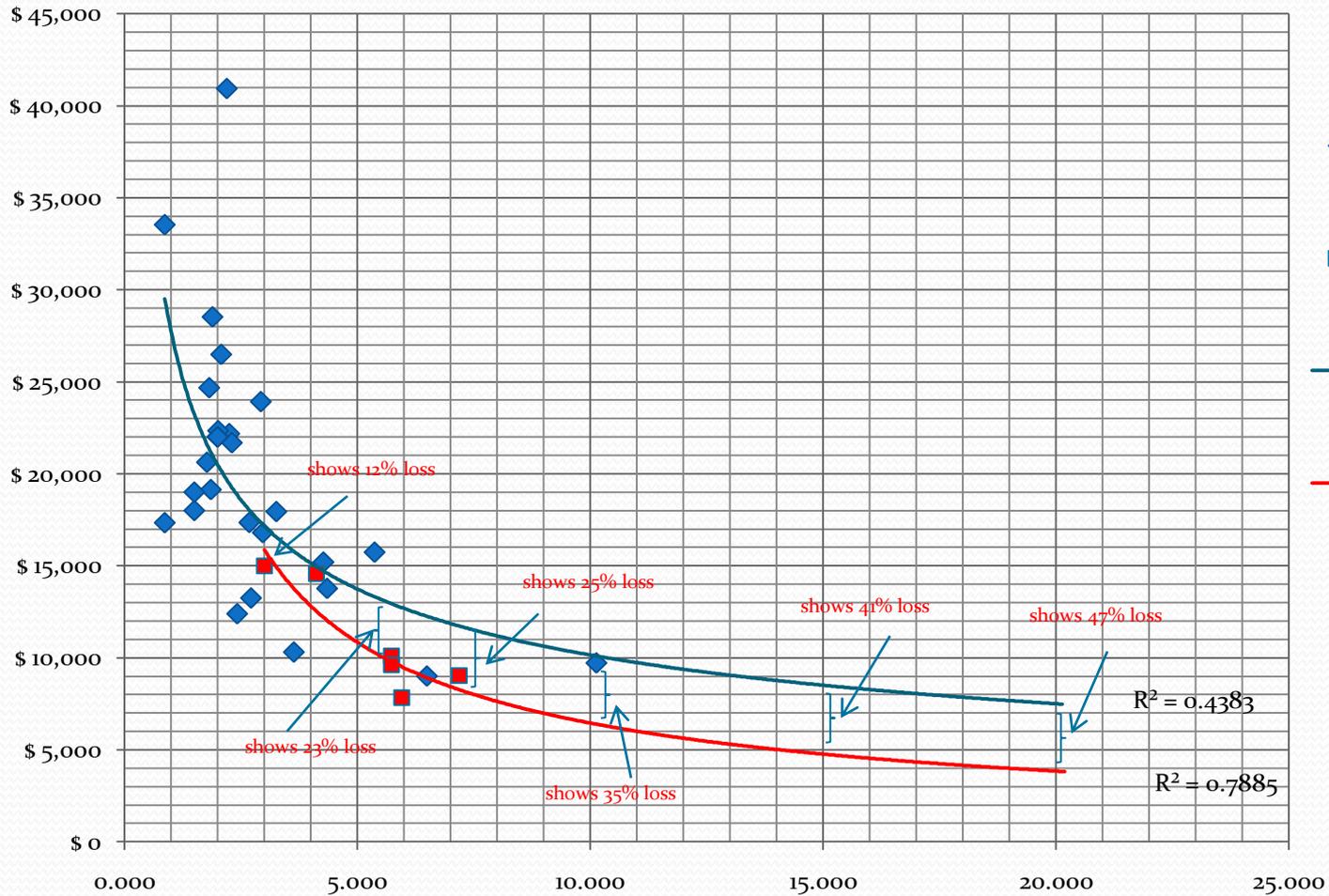
Checking perception with buying action

Blue Sky Green Field results . . .

- Sales within the wind turbine area sold for less than comparative sales outside of the area.
- There were less sales available within the wind turbine area than without – substantially less.
- The impact of the wind turbines on vacant residential land is in the range of -19% to -40%
- This loss range corresponds with the Realtor survey.

INVENERGY - FORWARD WIND FARM

1 acre to 20 acre residential lot sales -- low sales removed



- ◆ Non-Wind Turbine Residential Lot Value
- Wind Turbine Area Residential Lot Sales
- Power (Non-Wind Turbine Residential Lot Value)
- Power (Wind Turbine Area Residential Lot Sales)

Total residential land sales= 34
 Sales in wind turbine area= 6
 Sales out of turbine area= 28

All low sales were removed
 which included 3 in turbine
 area and 2 outside of area.

Forward Wind Farm results . . .

- Sales within the wind turbine area sold for less than comparative sales outside of the area.
- There were less sales available within the wind turbine area than without – substantially less.
- The impact of the wind turbines on vacant residential land is in the range of -12% to -30%
- This loss range corresponds with the Realtor survey.

Conclusion of Perception of Wind Turbines Impact to Property Value

1. Media has reported on negative health issues and value issues influencing a negative perception.
2. Realtor survey indicated that these perceptions are real in the market.
1. Impact studies suggest the values are substantially negatively impacted in the range of -12% - to- -40%.

