

## **Exhibit DFLD-TK-3**

**The Impact of Wind Facilities on Residential Property Values:  
What Do We Know, and What Don't We Know**

**Ben Hoen and Ryan Wiser  
Lawrence Berkeley National Laboratory**

**Updated with Data from 3,638 Transactions  
at AWEA Wind Energy Fall Symposium  
November 1, 2007**

# The Impact of Wind Facilities on Residential Property Values

What Do We Know, and What Don't We Know?

**Ryan Wisner & Ben Hoen**  
Lawrence Berkeley National Laboratory  
rhwiser@lbl.gov, benhoen2@earthlink.net

AWEA Wind Energy Fall Symposium  
November 1 - 2, 2007  
Carlsbad, California



Electricity Markets and Policy Group • Energy Analysis Department

# Why Is This Important?

## Increasing Siting Success Rate is Crucial!

As wind development accelerates, easing siting and permitting barriers will be crucial

- An average of 140 new sites per year will be needed to reach 20% by 2030<sup>1</sup>

Siting and permitting challenges are a key reason for project delay or failure

- 30 to 50% of contract failures are attributed to siting and permitting (CEC, 2006; BWEA, 2003 cited by Loring, 2006)

<sup>1</sup> Using 330,000 MW at 100 MW per site



Electricity Markets and Policy Group • Energy Analysis Department

## Aesthetics & Property Values Rank At The Top Of Concerns

"Aesthetic perceptions, both positive and negative, are the strongest single influence on individuals' attitudes towards wind power projects."

(Warren, 2005, p. 853)

US developers rank aesthetics & property values as the #1 and # 3 concerns of those in opposition to wind development (Paul, 2006)

100% and 85% of those opposed to offshore wind development believe aesthetics and property values, respectively, will be adversely impacted (Firestone et. al., 2007 )




Having structures on the Vermont hilltops was considered a "big disadvantage" by the majority of those surveyed before the Searsburg, VT wind facility was erected (Palmer, 1997)

## Aesthetics & Property Values Are Strongly Linked



**This linkage is well studied**

## Property Value Concerns For Wind Projects Fall Into Three Possible Categories

1. **Area Stigma:** Concerns over “industrialization” of area  

2. **Scenic Vista Stigma:** Concerns over decrease in quality of scenic vistas from homes  

3. **Nuisance & Health Effects:** Potential health/well-being concerns of nearby residents  


**Each of these effects could impact property values**

## Relatively Few Wind & Property Studies: A List Of The Most Publicized

<u>Author (Year)</u>	<u>Location</u>	<u>Method</u>	<u>Test</u>	<u>Result</u>
Jordal-Jorgensen (1996)	Denmark	Hedonic	Area Stigma	↓ \$
Sterzinger et. al. (2003)	10 US sites	Simple	Area Stigma	↑ \$
Poletti (2005)	WI / IL	Simple	Area Stigma	nc
Delacy (2005)	Washington	Paired Sales	Area Stigma	nc
Sims & Dent (2006)	UK	Hedonic	Area Stigma	↓ \$
Hoen (2006)	New York	Hedonic	Area Stigma/ Scenic Vista	nc
Poletti (2007)	WI / IL	Simple	Area Stigma	nc

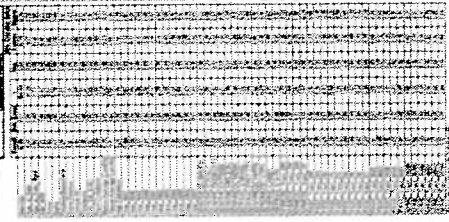
### Overview

- Most tested for just area stigma
- None of the studies, except Hoen, visited homes
- None have been academically peer reviewed & published
- Sample size is problematic in many of the studies
- Statistical analysis is sometimes not rigorous

## Berkeley Lab Study Methods Build And Improve On Past Work

- Multiple U.S. wind project locations: 6 sites, 9 facilities (ultimately expanded to ~10 sites and ~ 15 facilities)
- Valid residential home transaction sales values used (not assessed values)
- Field visits to each home to assess scenic vista and view of wind turbines
- Test for all three potential effects: area stigma, scenic vista stigma, and nuisance effects
- Sample size of over 350 for each site
- Hedonic pricing model used to isolate effects
- Rigorously analyze & peer review results

## Hedonic Regression Model



### Controlling Variables:

Number of Bedrooms, Number of Bathrooms, Square Feet, Acres, Finished Basement, Age of the Home, Condition of the Home, School District, Census Tract, Scenic Vista, etc.

### Variables of Interest:

View of Turbines, Distance From Turbines, Number of Turbines Visible

## Testing For The Three Possible Effects: Area Stigma, Scenic Vista Stigma & Nuisance

1. **Area Stigma:** Compare property values before and after the date of announcement or construction
2. **Scenic Vista Stigma:**
  - Qualitatively: Using an on-site rating, compare sales of homes with views with those without
  - Quantitatively: Using distance, number of turbines visible, and view scope, compare sales of homes with views with those without
3. **Nuisance & Health:** Compare sales very near turbines with and without a view to all others



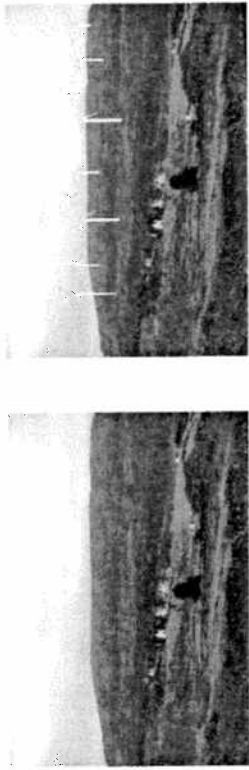
## Data From 6 Sites Surrounding 9 Wind Facilities Have Been Collected So Far

Madison & Onondaga Counties, NY: Madison Wind Farm 7 Turbines – 11.5 MW 464 sales within 7 miles	Madison Wind Farm rolling farmland operational in 2000
Madison County, NY: 20 Turbines - 30 MW 695 sales within 5 miles	Fenner Wind Farm rolling farmland operational in 2001
Wayne County, PA: 43 Turbines – 65 MW 554 sales within 7 miles	Waymart Wind Facility ridgeline operational in 2003
Lee County, IL: 63 Turbines – 50.5 MW 398 sales within 9 miles	Mendota Hills Facility slow rolling hills operational in 2003
Buena Vista County, IA: 379 Turbines – 368 MW 1046 sales within 5 miles	Storm Lake & Intrepid Facilities slow rolling hills operational in 1999 & 2004 respectively
Somerset County, PA: Green Mountain, Somerset & Meyersdale Facilities 34 Turbines – 49 MW 481 sales within 4 miles	rolling farmland & ridgeline operational 2000, 2001 & 2003 respectively



**To Test For Scenic Vista Stigma, Scenic Vista Itself Needs To Be Controlled For**

**They might pull in two directions**



↑ \$ Without separating out scenic vista, measurements of the effects of the view of wind turbines might be artificially inflated ↓ \$ ?



**Five Qualitative Rankings For Scenic Vista**

**Each home was given a scenic vista rating**

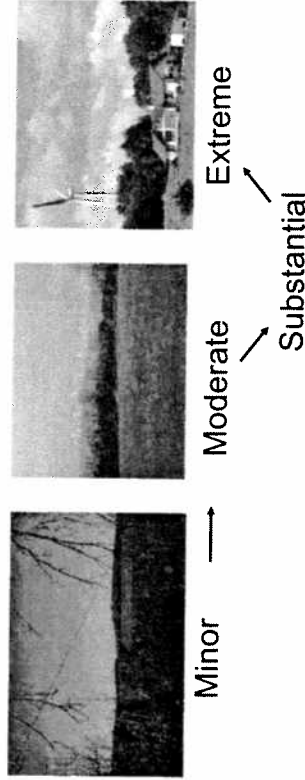


Poor → Below Average → Average → Above Average → Premium



### Four Qualitative Ratings For Dominance Of View Of Wind Turbines

Each home was given a view of turbines dominance rating



13



### Quantitative Measures for Dominance of View of Wind Turbines Were Also Collected

From each home the following characteristics were collected:

- **Distance:** Number of miles to the nearest turbine
- **Counts:** Number of turbines visible, as well as number of tips, hubs, and towers
- **Scope:** Viewing angle over which turbines can be seen: narrow (< 30°), medium (30° - 60°), & wide (> 90°)

14



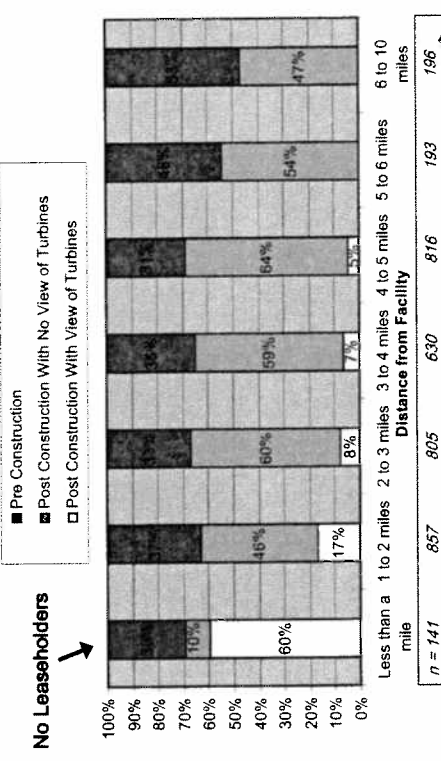
### Preliminary Results Based On Initial Data Collection and Analysis

**NOTE OF CAUTION:**

The following graphs and findings are preliminary, so conclusions based on these results should be considered preliminary as well

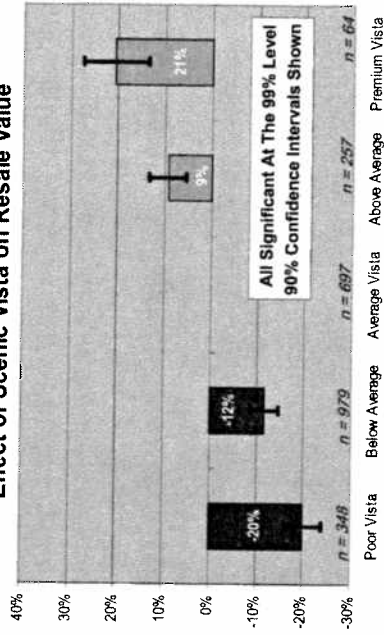


### Spatial Distribution Of Data: 3,638 Home Sale Transactions Within Ten Miles



## Buyers & Sellers Care About Scenic Vista

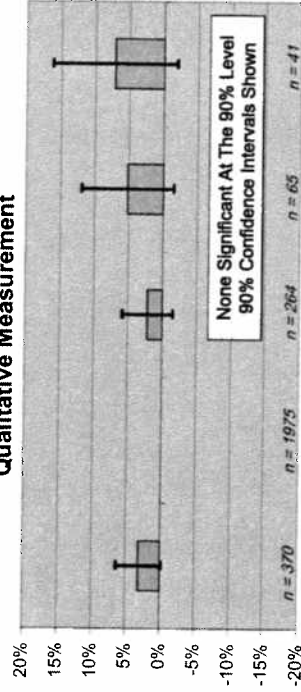
Effect of Scenic Vista on Resale Value



Model Statistics:  $n = 2345$ , Adjusted  $R^2: 0.74$ ,  $f$  Stat.: 94, Overall Sig.: 0.000

## There Is No Statistically Significant Evidence That They Care About Views of Wind Turbines

Effect of View of Turbines on Resale Value: Qualitative Measurement



Scenic Vista Model Statistics:  $n = 2345$ , Adjusted  $R^2: 0.74$ ,  $f$  Stat.: 94.97, Overall Sig.: 0.000  
 \*This figure contains results from 2 separate models, in each case the parameter was compared to post construction sales with no view of the turbines

## No Statistically Significant Evidence Using Quantitative Measurements Either

The following were found to not affect home values in a statistically measurable way

- Number of miles from the home to nearest turbine
- Number of turbines visible from the home
- Viewing angle over which turbines can be seen from the home (narrow, medium, or wide)

Scenic Vista Model Statistics:  $n = 2345$ , Adjusted  $R^2: 0.74$ ,  $f$  Stat.: 94, Overall Sig.: 0.000

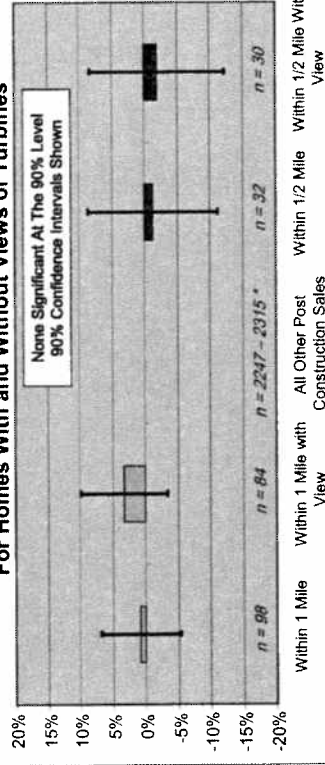


Electricity Markets and Policy Group • Energy Analysis Department

19

## Even Homes Located Very Near The Wind Facility Are Seemingly Unaffected

Effect of Distance from Facility on Resale Value For Homes With and Without Views of Turbines



Nuisance Model Statistics:  $n = 2345$ , Adjusted  $R^2: 0.74-76$ ,  $f$  Stat.: 97-98\*, Overall Sig.: 0.000

\* This figure contains results from 4 separate models, in each case the parameter was compared to all other post construction sales



Electricity Markets and Policy Group • Energy Analysis Department

20

## What Conclusions Can Be Drawn From These Results?

### Given our sample...

- **Area Stigma:** Investigation of effect requires more data and will be part of our final report, but distance from turbines does not appear to impact property values
- **Scenic Vista Stigma:** There is no statistical evidence that homes with a view of wind turbines have different values than homes without such views
- **Nuisance:** There is no statistical evidence that homes within 1/2 - 1 mile of turbines, with or without a view of them, sell for different values than those further away

21

Electricity Markets and Policy Group • Energy Analysis Department



## Why Might Negative Preliminary Opinions Of Aesthetics Not Change Home Values?

### Other Research Conclusions Say...

- "Any reduction in the growth or even a fall in property prices should be temporary." (*Sinclair Knight Merz, 2001*)
- "Public attitudes become significantly more positive following personal experience of operational wind farms" (*Warren, 2005, p. 866*)
- "It is extremely rare for people to spontaneously mention their local wind farm ...when thinking of, and describing, the area" (*Braunholtz, 2003, p. 5*)

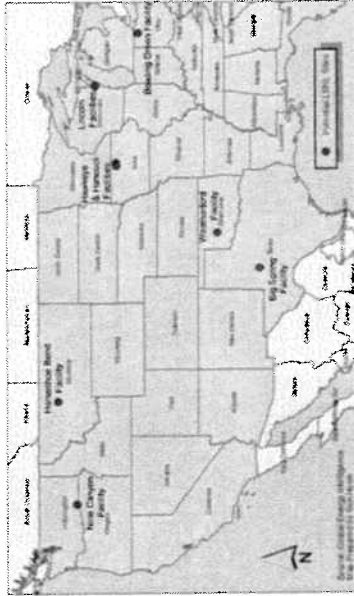
22

Electricity Markets and Policy Group • Energy Analysis Department



## Look For More In Spring 2008

**With more data to be collected over the coming months, we'll have much more to report**

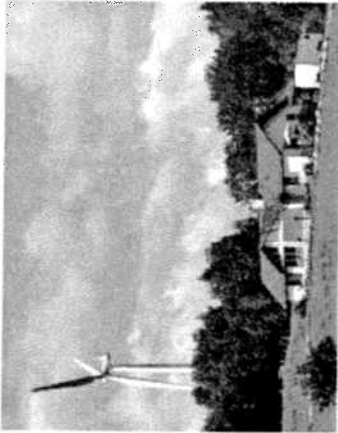


## More Detailed and Refined Results Expected

**With a larger sample we will be able offer stronger conclusions over a broader geographic range; in addition, we may be able to investigate the following types of homes for unique effects**

- Homes with above average or premium scenic vistas
- Homes in the top 25% of market value
- Secondary (vacation) residences
- Homes which sold the year the facility was announced
- Homes which sold the year construction commenced

Thank You



Ryan Wiser & Ben Hoen  
Lawrence Berkeley National Laboratory  
[rhwiser@lbl.gov](mailto:rhwiser@lbl.gov), [benhoen2@earthlink.net](mailto:benhoen2@earthlink.net)



Electricity Markets and Policy Group • Energy Analysis Department

# **Exhibit DFLD-TK-3**

**Do Wind Facilities Affect Local Property Values:  
Preliminary Results from a Multi-Site Analysis**

**Ben Hoen and Ryan Wiser  
Lawrence Berkeley National Laboratory**

**Updated with Data from 2,195 Transactions**

# Do Wind Facilities Affect Local Property Values?

Preliminary Results From A Multi-Site Analysis



Ryan Wisner and Ben Hoen  
Lawrence Berkeley National Laboratory  
[rhwisner@lbl.gov](mailto:rhwisner@lbl.gov); [benhoen2@earthlink.net](mailto:benhoen2@earthlink.net)

# Why Is This Important?

---

## Increasing Siting Success Rate is Crucial!

As wind development accelerates easing siting and permitting barriers will be crucial

- An average of 140 new sites per year will be needed to reach 20% by 2030 <sup>1</sup>

Siting and permitting challenges are a key reason for project delay or failure

- 30 to 50% of contract failures are attributed to siting and permitting (CEC, 2006; BWEA, 2003 cited by Loring, 2006)

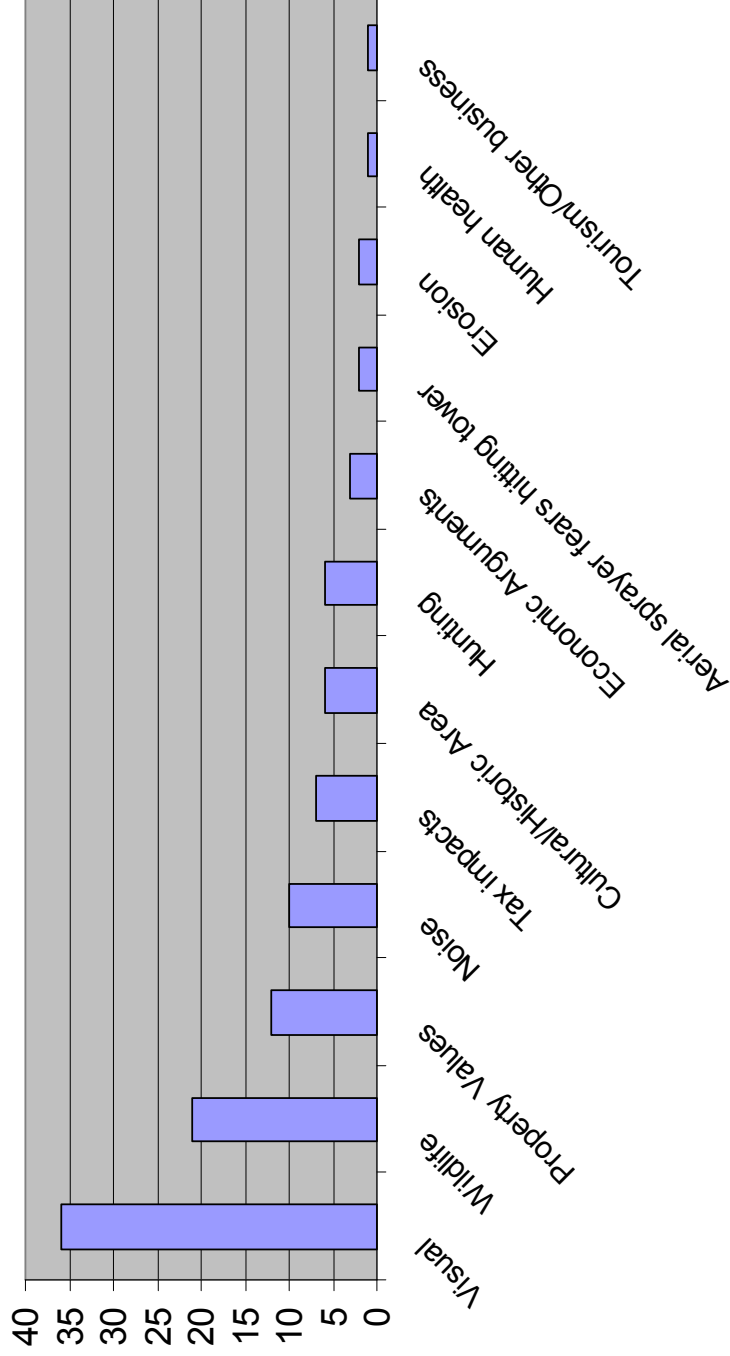
Strength of the network of those opposed to development is more influential on project success than that of supporters (Loring, 2006)

---

<sup>1</sup> Using 330,000 MW at 100 MW per site

# Aesthetics & Property Values Rank At The Top Of Concerns

## OPPOSITION ISSUES

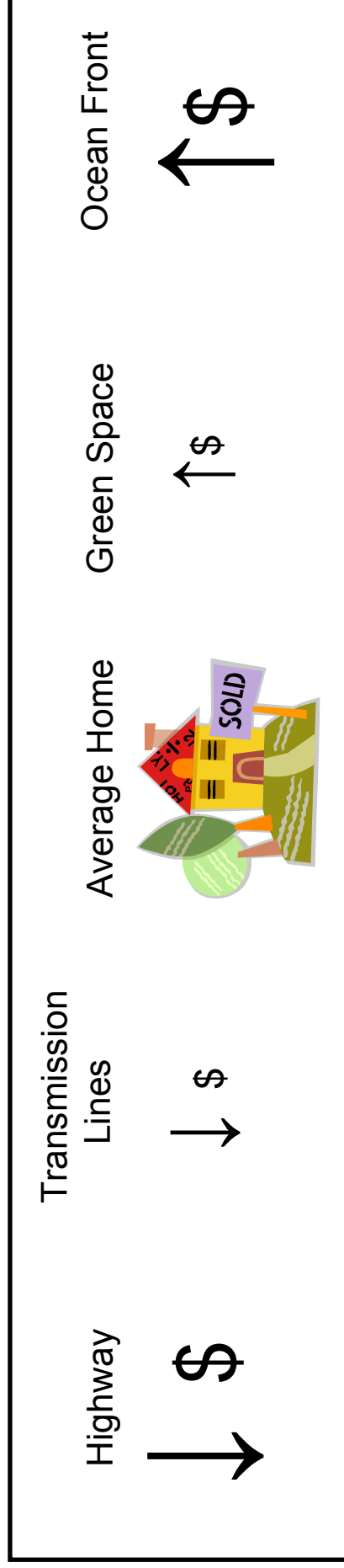


US developers rank aesthetics & property values as the #1 and #3 concerns of those in opposition to wind development (Paul, 2006)



# Aesthetics & Property Values Are Strongly Linked

---



This linkage is well studied

# Property Value Concerns For Wind Energy

## Fall Into 3 Categories

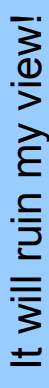
---

1. **Area Stigma:** Concerns over “industrialization” of area leading to decreases in tourism and second home desirability



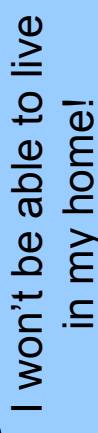
No one will move here!

2. **Scenic Vista Stigma:** Concerns for decreases in quality of scenic vistas from homes



It will ruin my view!

3. **Nuisance & Health Effects:** Potential health/well being concerns of nearby residents



I won't be able to live in my home!

Each of these effects could impact property values

# Very Few Wind & Property Studies: A List Of The Most Publicized

<u>Author (Year)</u>	<u>Location</u>	<u>Method</u>	<u>Test</u>	<u>Result</u>
Jordal-Jorgensen (1996)	Denmark	Hedonic	Area Stigma	↓ \$
Sterzinger et. al. (2003)	10 US sites	Simple	Area Stigma	↑ \$
Poletti (2005)	Wisconsin	Simple	Area Stigma	nc
Delacy (2005)	Washington	Paired Sales	Area Stigma	nc
Sims & Dent (2006)	UK	Hedonic	Area Stigma	↓ \$
Hoen (2006)	New York	Hedonic	Area Stigma/ Scenic Vista Stigma	nc nc

## Overview

- Most tested for just area stigma
- None of the studies, except Hoen (2006), visited homes
- None have been peer reviewed & published
- Sample size is problematic in many of the studies
- Statistical analysis is sometimes not rigorous



# LBNL Study Methods

---

- US focused
- Multiple sites – 4 now, eventually ~ 10 sites
- Transaction values (not assessed values)
- Field visits to each home
- Test for all 3 effects: area stigma, scenic vista stigma, and nuisance effects
- Sample sizes over 350 for each site
- Hedonic Pricing Model – Used to isolate effects

# Hedonic Regression Model

## Controlling Variables:

Number of Bedrooms, Number of Bathrooms, Square Feet, Acres, Finished Basement, Age of the Home, Condition of the Home, School District, Census Tract, Scenic Vista, etc.

## Variables of Interest:

View of Turbines, Distance From Turbines, Number of Turbines Visible

COMBINED MODEL		Std. Error		t		Sig.		95% Confidence Interval	
	Coeff.	Std. Error	t	Lower	Upper	Lower	Upper		
Intercept	10.85	0.07	160.89	0.00	10.74	10.96			
Age at Sale	-0.01	0.00	-10.24	0.00	-0.01	0.00			
Age at Sale_Sqrd	0.00	0.00	7.73	0.00	0.00	0.00			
Sqft_1000	0.21	0.01	14.47	0.00	0.19	0.23			
Acres	0.02	0.00	8.87	0.00	0.02	0.02			
Baths	0.07	0.01	5.79	0.00	0.05	0.09			
Finished Basement	0.07	0.02	3.87	0.00	0.04	0.10			
Stone Exterior	0.18	0.03	6.41	0.00	0.13	0.23			
Central AC	0.10	0.03	2.99	0.00	0.05	0.16			
Fireplaces	0.10	0.01	7.37	0.00	0.08	0.12			
CUL_DE_SAC	0.12	0.02	5.80	0.00	0.09	0.16			
Floor Condition	-0.80	0.05	-16.03	0.00	-0.93	-0.41			
Below Average Condition	-0.25	0.02	-11.37	0.00	-0.29	-0.21			
Above Average Condition	0.11	0.02	5.68	0.00	0.08	0.14			
High Condition	0.24	0.06	4.14	0.00	0.14	0.34			
Year_1987	-0.03	0.06	-0.47	0.64	-0.13	0.07			
Year_1988	-0.08	0.06	-1.45	0.15	-0.17	0.01			
Year_1989	-0.01	0.06	-0.26	0.80	-0.11	0.08			
Year_2000	-0.01	0.06	-0.14	0.89	-0.10	0.08			
Year_2001	-0.02	0.06	-0.37	0.71	-0.11	0.07			
Year_2002	-0.02	0.06	-0.27	0.79	-0.11	0.08			
Year_2003	0.00	0.06	-0.01	0.99	-0.09	0.09			
Year_2004	0.01	0.06	0.24	0.81	-0.08	0.10			
Year_2005	0.03	0.05	0.69	0.55	-0.06	0.12			
Year_2006	0.05	0.06	0.83	0.41	-0.05	0.14			
Year_2007	-0.18	0.13	-1.43	0.15	-0.40	0.03			
SD_NYMCCO_CBRKFD	0.00	0.14	-0.03	0.98	-0.24	0.23			
SD_NYMCCO_STK_VLY	-0.10	0.10	-1.05	0.29	-0.26	0.06			
SD_NYMCCO_ONDA_CITY	0.07	0.09	-0.82	0.41	-0.22	0.07			
SD_NYMCCO_CHTMGO	0.02	0.08	0.21	0.84	-0.12	0.12			
SD_NYMCCO_MRLTNN	-0.12	0.05	-2.48	0.01	-0.20	-0.04			
SD_NYMCCO_MDSM	-0.19	0.05	-4.00	0.00	-0.26	-0.11			
SD_PAVC_VVM_HBL	0.14	0.10	1.36	0.17	-0.03	0.31			
SD_PAVC_FRST_CTY	-0.11	0.06	-1.64	0.10	-0.21	0.00			
SD_NYMCCO_HMTN	0.11	0.04	2.88	0.00	0.05	0.18			
SD_NYMCCO_VTFR	-0.03	0.10	-0.29	0.77	-0.19	0.14			
SD_NYMCCO_CAMST	-0.01	0.05	-0.13	0.89	-0.08	0.07			
SD_PAVC_VVM	0.05	0.04	1.43	0.15	-0.01	0.12			
NYMCCO_Tract_266	-0.23	0.03	-2.51	0.01	-0.38	-0.08			
NYMCCO_Tract_267	-0.14	0.10	-1.40	0.16	-0.30	0.02			
NYMCCO_Tract_309	0.16	0.13	1.28	0.20	-0.05	0.38			
NYMCCO_Tract_311	-0.46	0.13	-3.47	0.00	-0.67	-0.24			
PASC_Tract_208	-0.11	0.10	-1.16	0.25	-0.27	0.05			
PASC_Tract_209	-0.25	0.05	-5.28	0.00	-0.33	-0.18			
PASC_Tract_210	-0.29	0.07	-4.43	0.00	-0.40	-0.18			
PASC_Tract_211	-0.28	0.05	-5.90	0.00	-0.36	-0.20			
PASC_Tract_213	-0.27	0.14	-1.91	0.06	-0.61	-0.04			
PASC_Tract_214	-0.68	0.05	-11.45	0.00	-0.74	-0.01			
PASC_Tract_215	-0.65	0.05	-7.67	0.00	-0.78	-0.52			
PASC_Tract_216	-0.41	0.04	-9.24	0.00	-0.48	-0.33			
PASC_Tract_219	-0.23	0.05	-5.56	0.00	-0.38	-0.08			
PAVC_Tract_3602	0.12	0.07	1.68	0.09	0.00	0.24			
PAVC_Tract_3603	-0.05	0.04	-1.10	0.27	-0.12	0.02			
PAVC_Tract_3604	-0.12	0.11	-1.11	0.27	-0.30	0.08			
PAVC_Tract_3606	-0.03	0.12	-0.23	0.82	-0.22	0.16			
PAVC_Tract_3610	0.00	0.06	0.05	0.96	-0.10	0.10			
NYMCCO_Tract_30200	0.17	0.03	1.88	0.06	0.02	0.31			
NYMCCO_Tract_30300	0.06	0.04	1.59	0.16	-0.01	0.13			
NYMCCO_Tract_30402	-0.03	0.09	-0.35	0.73	-0.18	0.12			
NYMCCO_Tract_30501	0.30	0.05	6.46	0.00	0.22	0.38			
NYMCCO_Tract_30502	0.22	0.05	4.66	0.00	0.14	0.30			
NYMCCO_Tract_30700	0.12	0.05	2.44	0.01	0.04	0.20			
Dependent Variable: LN_SalePrice\$6									



# 4 Preliminary Sites – All in Northeast

## Madison & Oneida Counties, NY: Madison Wind Farm

- 7 Turbines – 11.5 MW, rolling farmland
- Construction began June 2000
- 464 sales within 7 miles

## Madison County, NY: Fenner Wind Farm

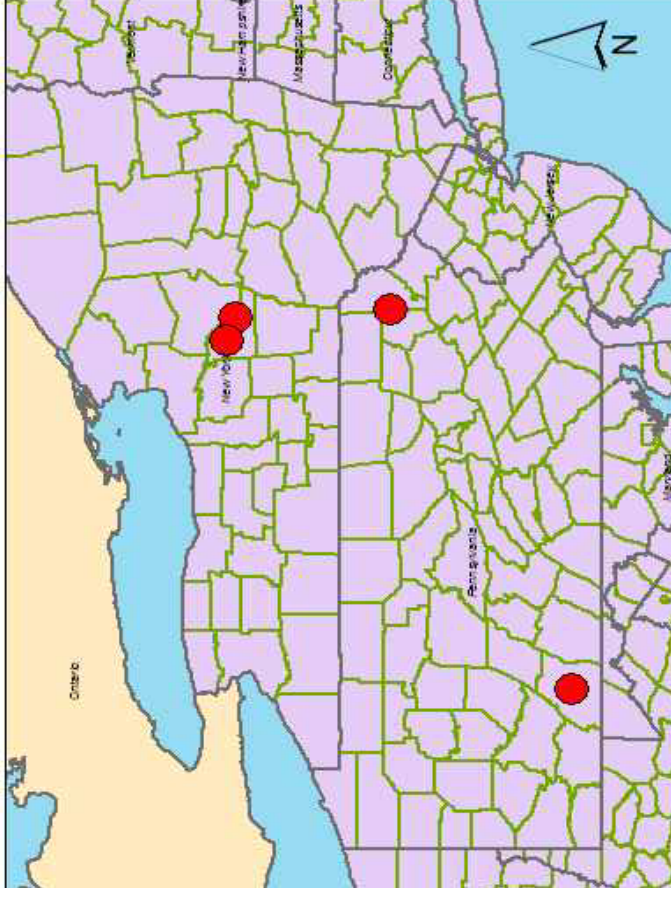
- 20 Turbines - 30 MW, rolling farmland
- Construction began Spring 2001
- 694 sales within 5 miles

## Wayne County, PA: Waymart Wind Facility

- 43 Turbines – 64.5 MW, ridgeline
- Construction began June 2003
- 553 sales within 7 miles

## Somerset County, PA: Multiple Sites

- 34 Turbines – 49.4 MW, rolling farmland & ridgeline
- Construction began December 1999 – August 2003
- 489 sales within 4 miles



# Tests For 3 Effects: Area Stigma, Scenic Vista Stigma & Nuisance

---

1. Area Stigma: Test if distance from the facility has any effect alone after the facility was constructed
2. Scenic Vista Stigma:  
Qualitatively: Using an on-site rating, compare sales of homes with views with those without  
Quantitatively: Using distance and number of turbines visible, compare sales of homes with views with those without
3. Nuisance & Health: Compare sales inside of 2500 ft with and without a view to all others

# To Test for Scenic Vista Stigma Scenic Vista Itself Needs to be Controlled For

---

They might pull in two directions



↑  
\$

Without separating out scenic vista,  
measurements of the effects  
of the turbines might be artificially inflated

↓  
\$ ?



# 5 Rankings for Scenic Vista

---

Each home was given a scenic vista rating



Poor

Below  
Average



Average

Above  
Average



Premium

# 4 Qualitative Ratings for View of Turbines dominance

---

Each home was given a view of turbines dominance rating



Minor →



Moderate →



Extreme



Substantial

And quantitative measurements such as numbers of turbines and distance were also collected



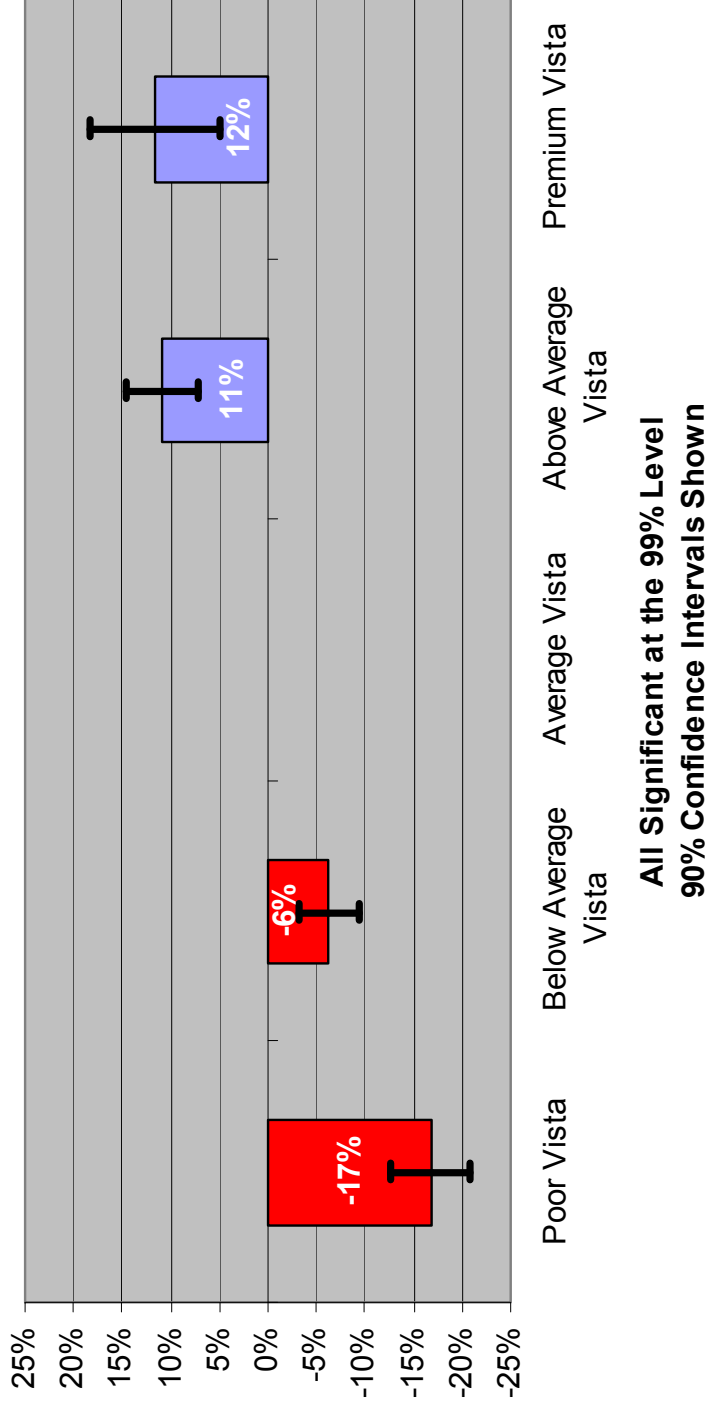
# Note of Caution

---

The following graphs, tables, and findings are **PRELIMINARY**, so conclusions based on these results should be considered preliminary as well

# Buyers & Sellers Care about Scenic Vista

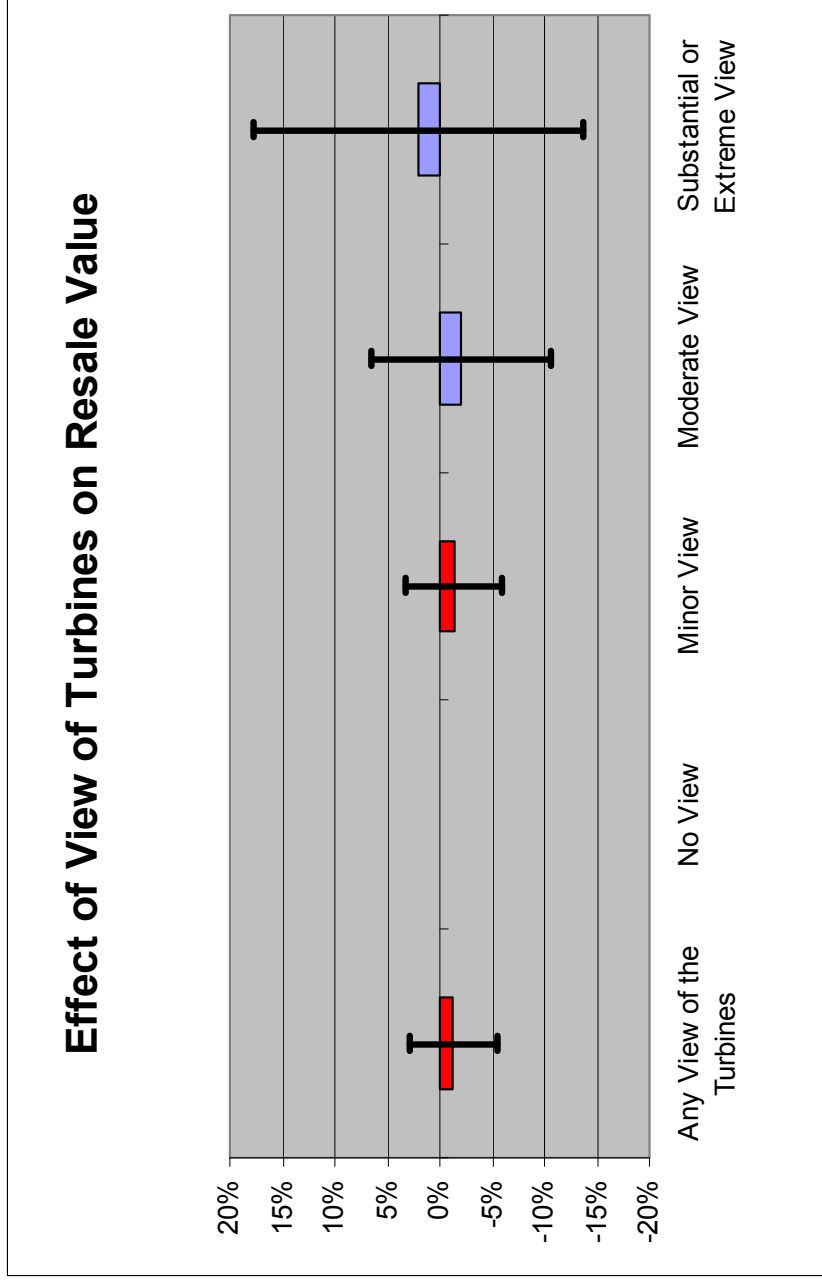
## Effect of Scenic Vista on Resale Value



Model Statistics:  $n = 2195$ , Adjusted  $R^2: 0.72$ ,  $f$  Stat.: 84, Overall Sig.: 0.000



# There Is No Statistically Significant Evidence They Care About Views of Turbines



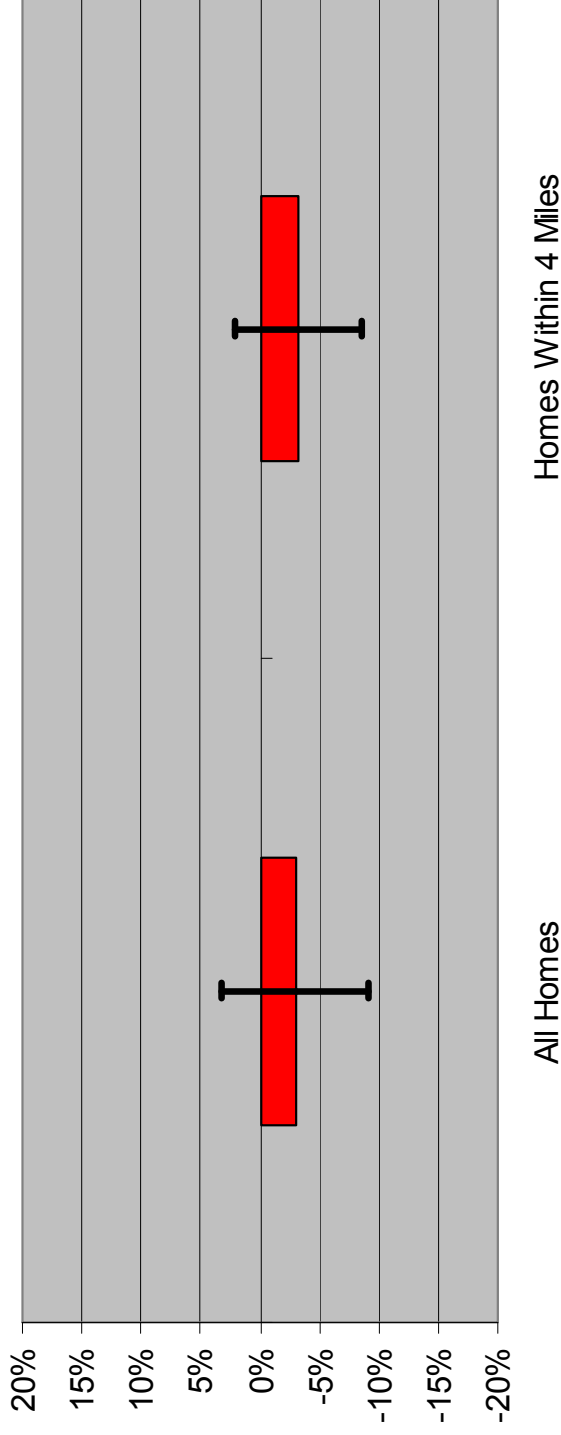
Model Statistics:  $n = 2195$ , Adjusted  $R^2: 0.72$ ,  $f$  Stat.: 84, Overall Sig.: 0.000

This result holds using quantitative or qualitative measurements



# There Is No Statistically Significant Evidence That An Area Stigma Exists

**Effect of Distance from Facility on Resale Value  
For All Homes and Just Homes within 4 Miles**



Area Stigma Model Statistics:  $n = 1339$ , Adjusted  $R^2 = 0.74$ ,  $f$  Stat.: 60, Overall Sig.: 0.000



# Result – No Effects Found

## But More Data Needed to Increase Confidence

**Effect**      **Full Sample**      **2 Years Post Contr**      **Luxury Homes**      **2 Mile Homes**

Area Stigma:      None      None      None      None  
Found      Found      Found      Found

Scenic Vista Stigma:

Qualitatively:      None      None      None      None  
Found      Found      Found      Found

Quantitatively::

None      None      None      None  
Found      Found      Found      Found

Model Statistics:      *n*      2195      463      548      509  
*R*<sup>2</sup>      0.72      0.73      0.57      0.66  
Sig.      0.00      0.00      0.00      0.00



# What Conclusions Can Be Drawn From These Preliminary Results?

---

Given our sample of 2195 transactions...

- Area Stigma: There is no statistical evidence that homes within 4-7 miles of a facility are affected adversely based simply on proximity
- Scenic Vista Stigma: There is no statistical evidence that homes with a view of turbines have different values than homes without
- Nuisance: More data is needed to reliably test this claim but with the 6 more wind farm sites to be added this might change.

# Results Are Provisional

---

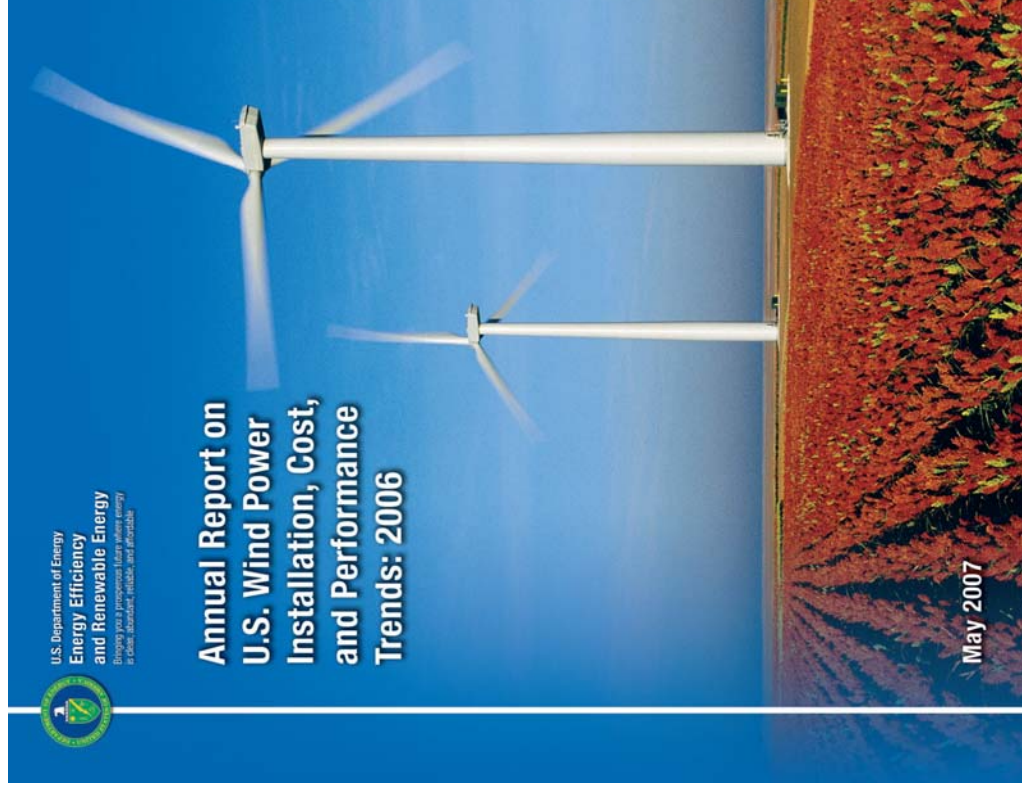
With more data to be collected over the coming months at a wider variety of sites, we'll have more to report



Thank You

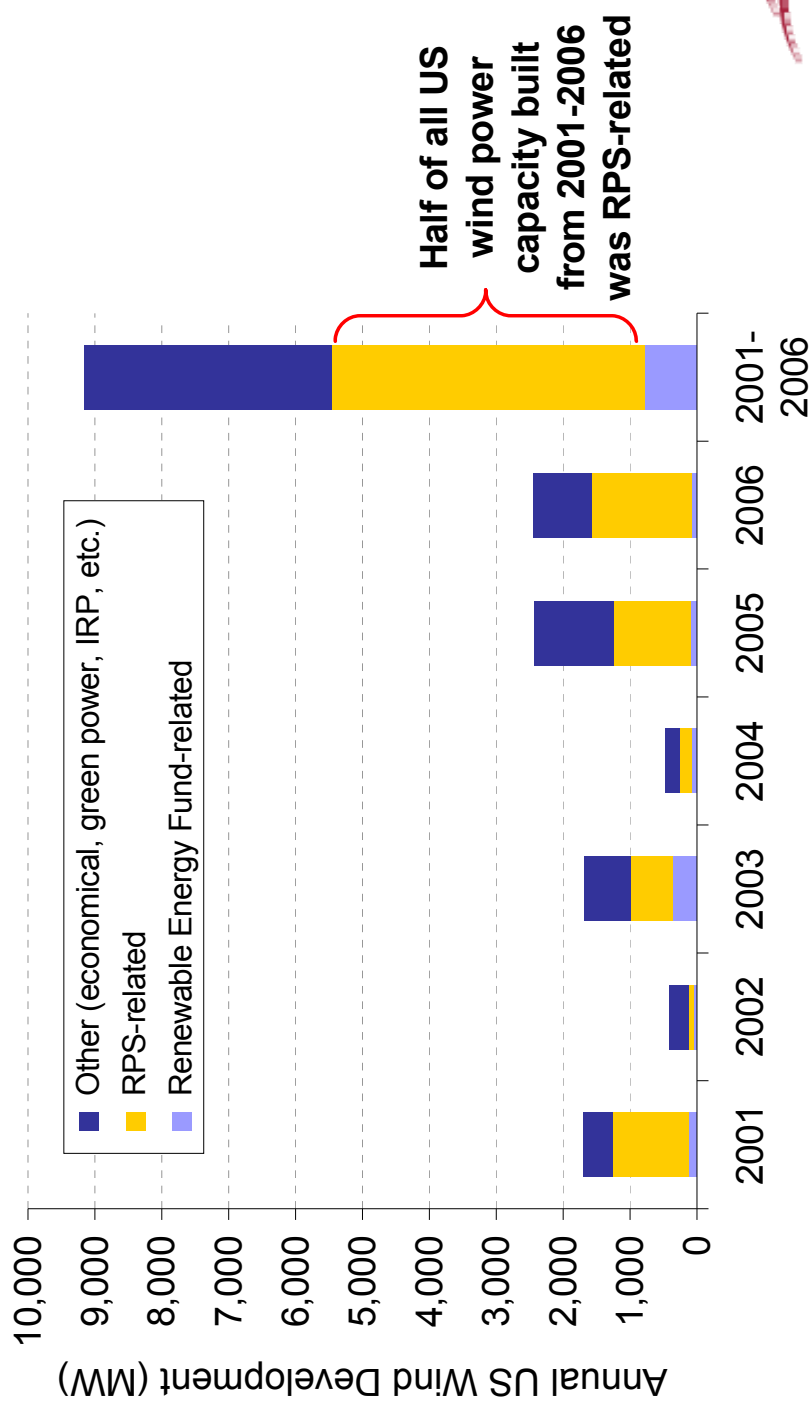
# Annual Report on U.S. Wind Power Installation, Cost, and Performance trends: Inaugural Issue

- Wind installation trends
- Wind industry trends
- Evolution of wind pricing
- Installed wind project costs
- Wind turbine transaction prices
- Wind project performance
- O&M cost trends
- Integration/transmission/policy
- Coming up in 2007

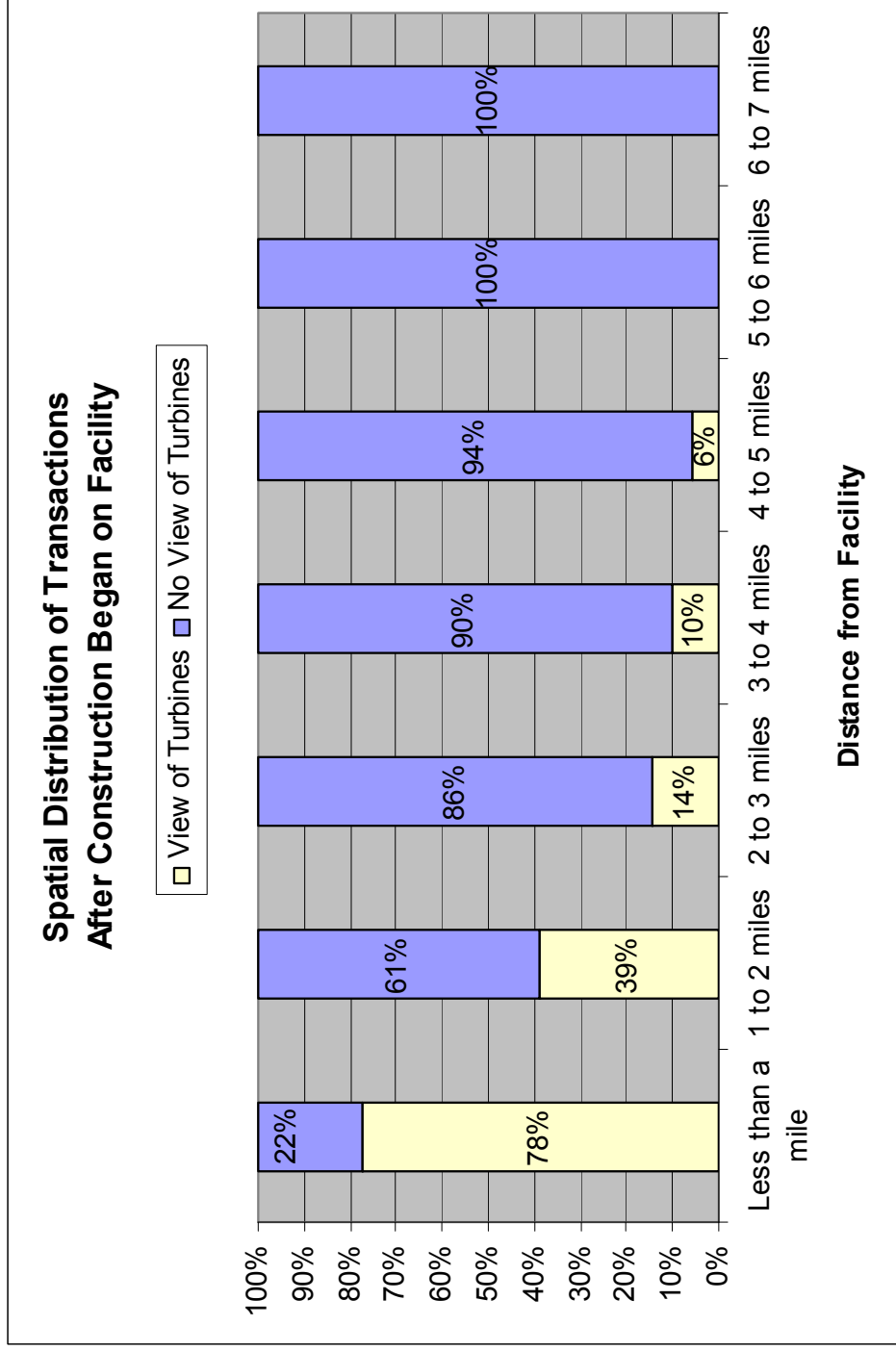


# State RPS Activity Continues to Grow; Consideration At Federal Level Increases

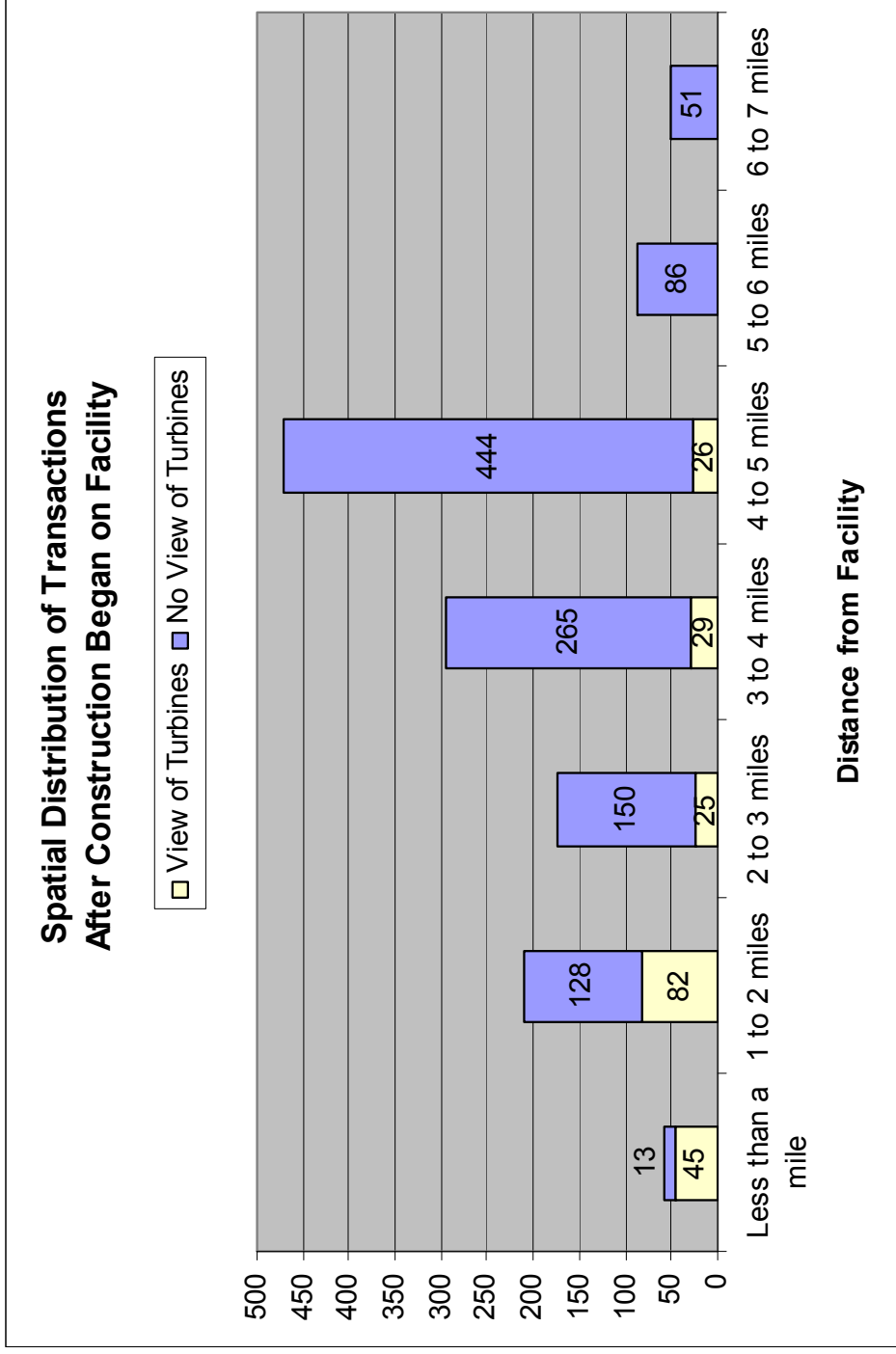
- 23 states and D.C.
- New since beginning of 2006: WA, NH, OR
- Revisions to existing policies: NJ, WI, HI, CA, AZ, CT, MN, NM, CO, MD, TX



# Spatial Distribution



# Spatial Distribution 2195 Transactions



# Combined Model

We selected all Northeast sites and combined data while controlling for differences



Land Type: Ridgeline & Rolling Hills

Number of Transactions 2195

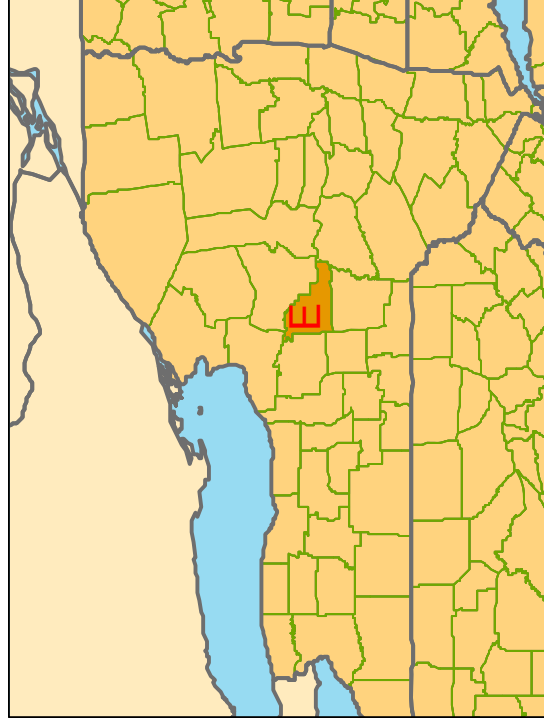
Minimum: \$12,000

Maximum: \$575,000

Sample Median: \$103,403

# Fenner Wind Farm

## Madison County, NY



Area Stigma Effects: None Found\*

Scenic Vista Effects:

Qualitatively: None Found

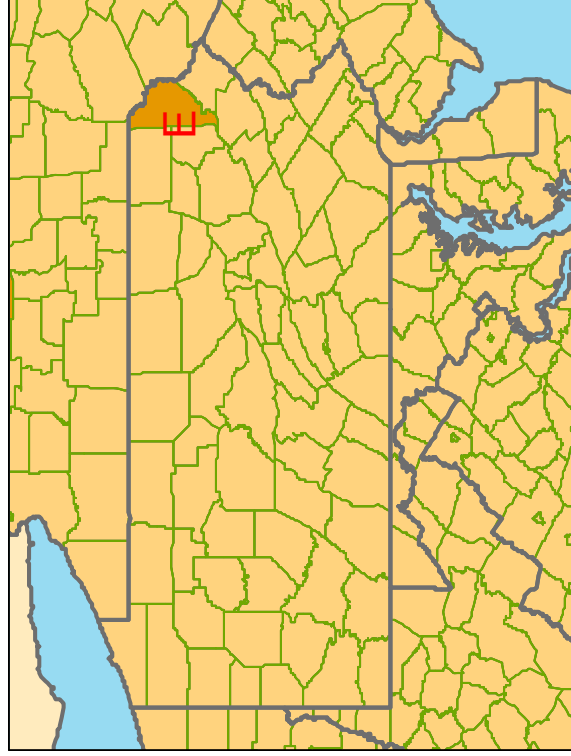
Quantitatively: None Found\*

Land Type:	Rolling Farmland
Number of Transactions	695
Minimum:	\$26,000
Maximum:	\$575,000
Median Value:	\$124,697

		* Only Post
	<u>All Site</u>	<u>Construction</u>
Model Statistics: <i>n</i>	695	475
$R^2$	0.76	0.76
Sig.	0.00	0.00



# Waymart Wind Facility Wayne County, PA



Area Stigma Effects: None Found\*

Scenic Vista Effects:

Qualitatively: None Found

Quantitatively: None Found\*

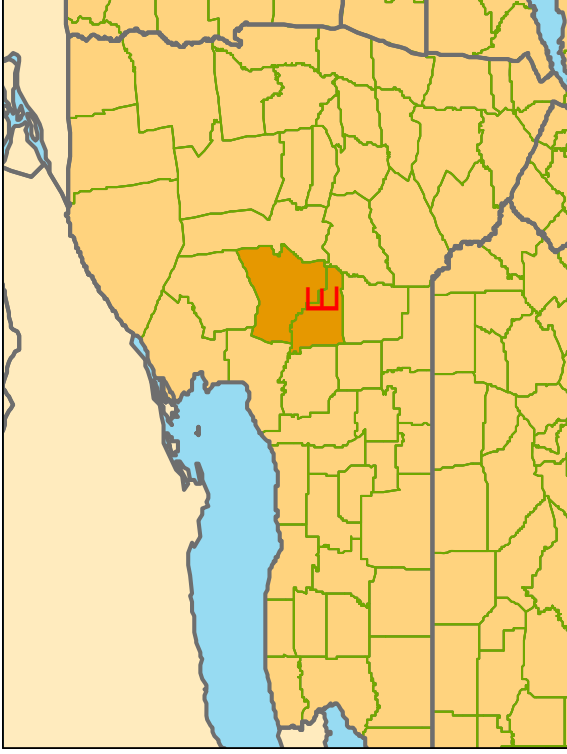
Land Type:	Ridgeline
Number of Transactions	554
Minimum:	\$20,000
Maximum:	\$444,500
Median Value:	\$111,681

Model Statistics: *n* 554 230  
All Site Construction  
 $R^2$  0.64 0.67  
 Sig. 0.00 0.00

\*Only Post



# Madison Wind Farm Madison & Oneida Counties, NY



Area Stigma Effects: None Found\*

Scenic Vista Effects:

Qualitatively: None Found

Quantitatively: None Found\*

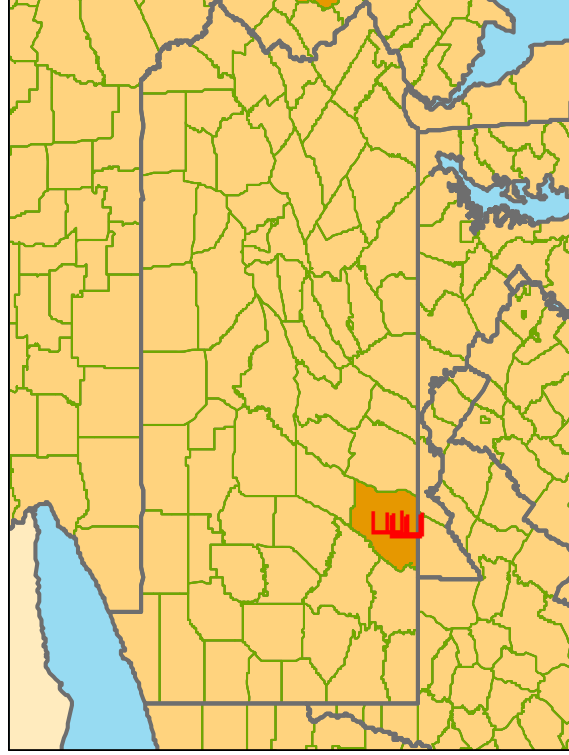
Land Type:	Rolling Farmland
Number of Transactions	465
Minimum:	\$13,500
Maximum:	\$380,000
Median Value:	\$99,430

		* Only Post
Model Statistics: <i>n</i>	All Site	Construction
	465	348
R <sup>2</sup>	0.69	0.71
Sig.	0.00	0.00



# Somerset, Green Mountain & Meyersdale Wind Facilities

## Somerset County, PA



Area Stigma Effects: None Found\*

Scenic Vista Effects:

Qualitatively: None Found

Quantitatively: None Found\*

Land Type:	Rolling Farmland & Ridgeline	
Number of Transactions		481
Minimum:	\$12,000	
Maximum:	\$360,000	
Median Value:	\$69,249	

\* Only Post Construction

Model Statistics: <i>n</i>	481	283
<i>R</i> <sup>2</sup>	0.57	0.57
Sig.	0.00	0.00

