

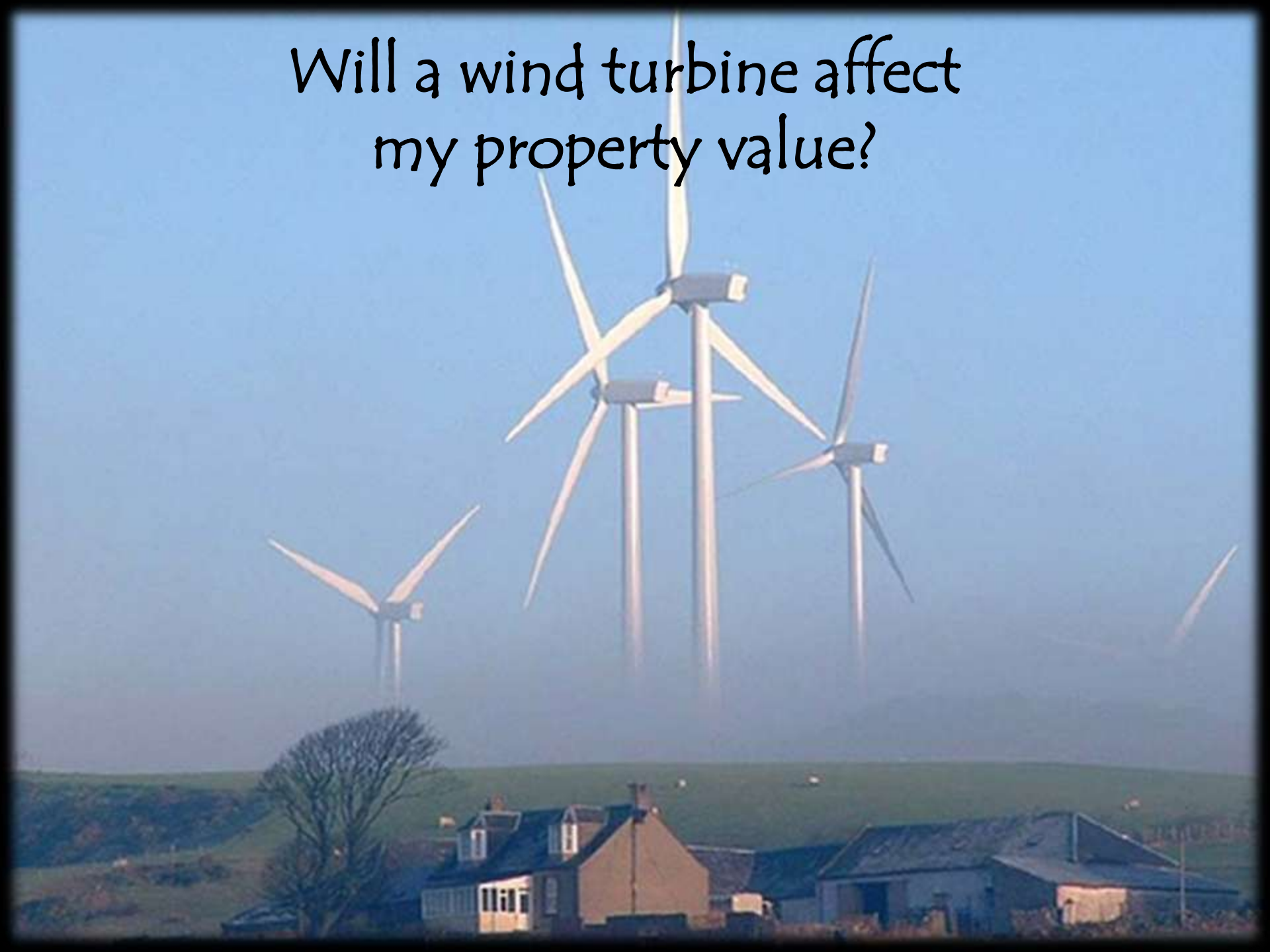
# Impact of Wind Turbines on Market Value of Texas Rural Land

Gardner Appraisal Group Inc.  
Derry T. Gardner  
147 E. Mistletoe Avenue  
San Antonio, TX 78212  
[www.GardnerAppraisalGroup.com](http://www.GardnerAppraisalGroup.com)

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Will a wind turbine affect  
my property value?



WILL A WIND TURBINE ON MY PROPERTY  
EFFECT THE MARKET VALUE  
OF MY NEIGHBOR'S PROPERTY?



WOULD YOU PAY THE SAME PRICE FOR THIS LAND  
AFTER WIND FARM AS BEFORE WIND FARM?

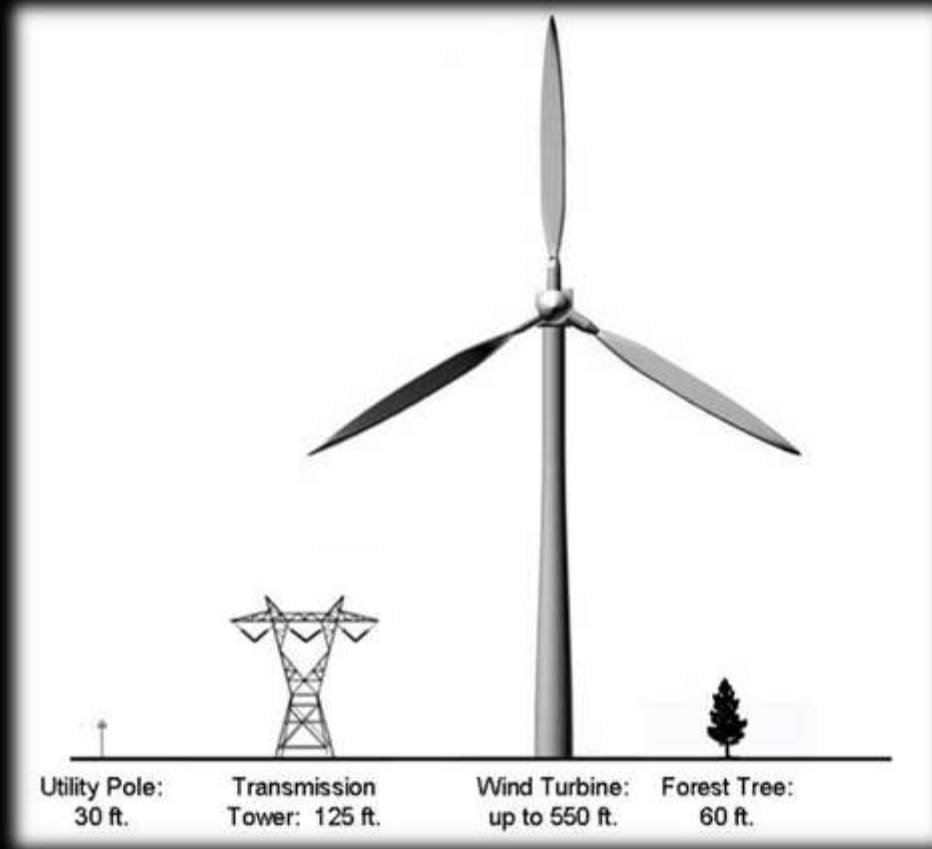


BEFORE

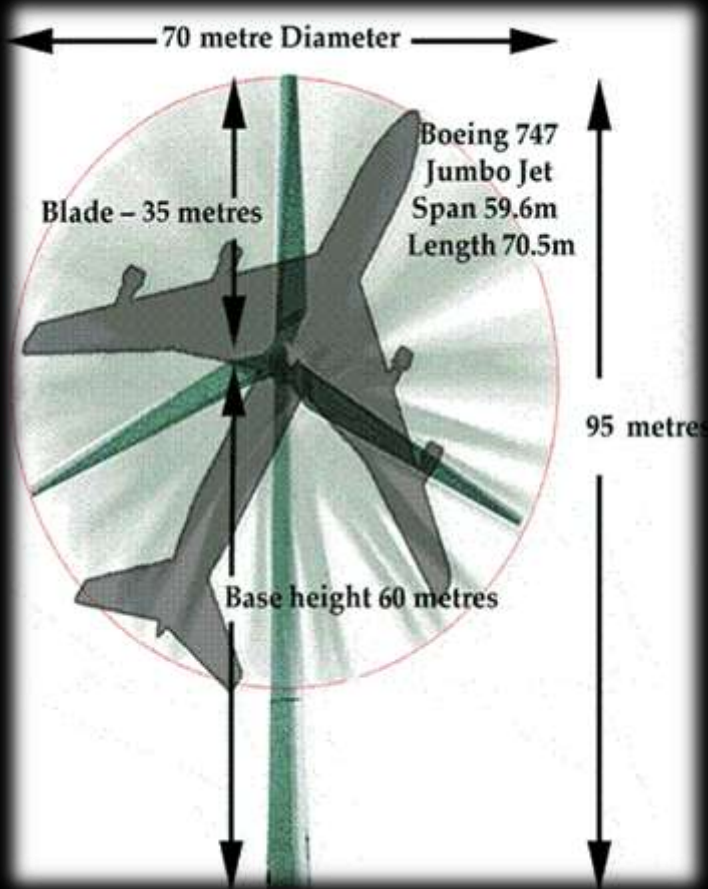
AFTER



Do you know how big  
they really are?



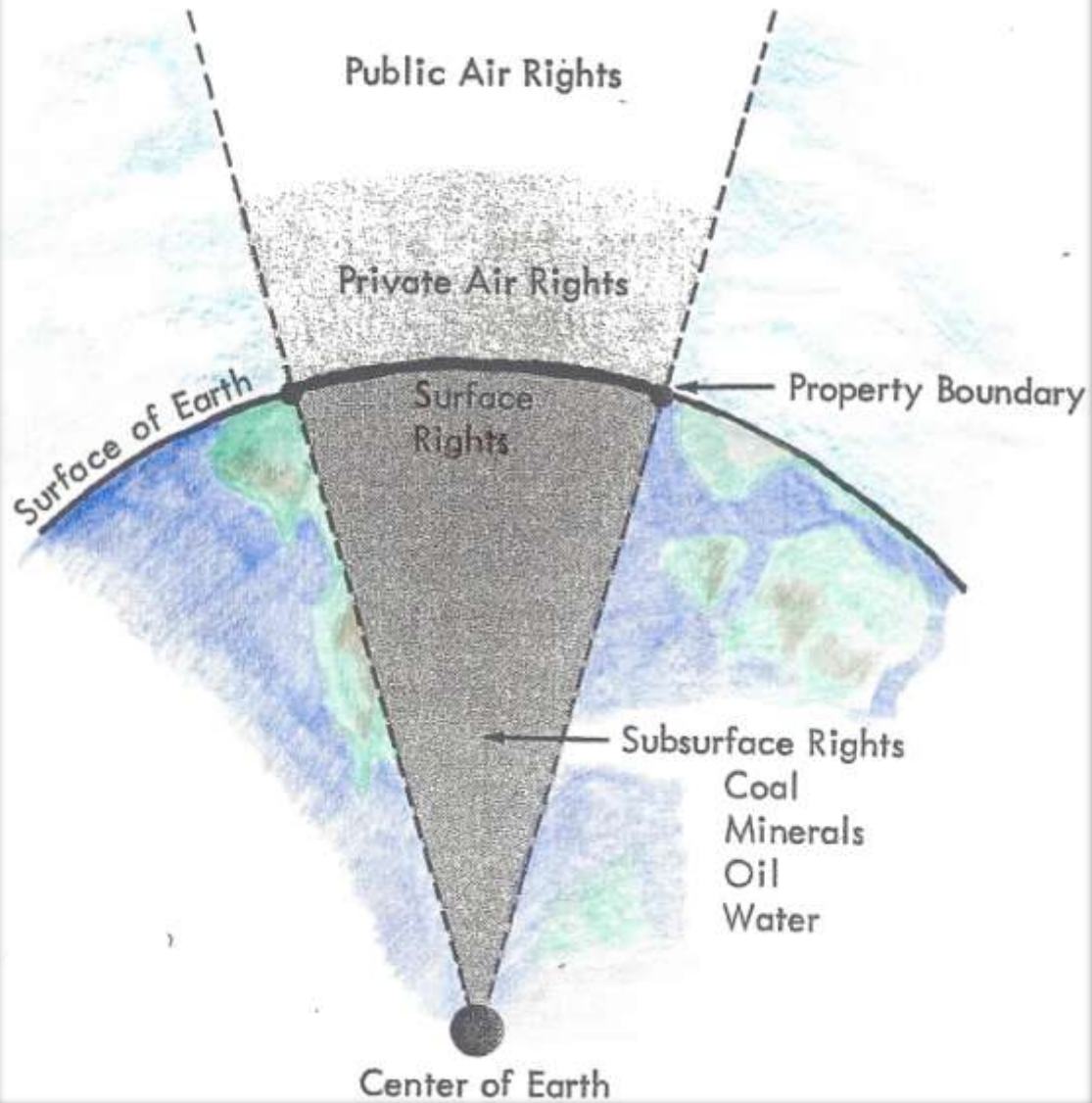
# THIS IS HOW BIG THEY ARE!



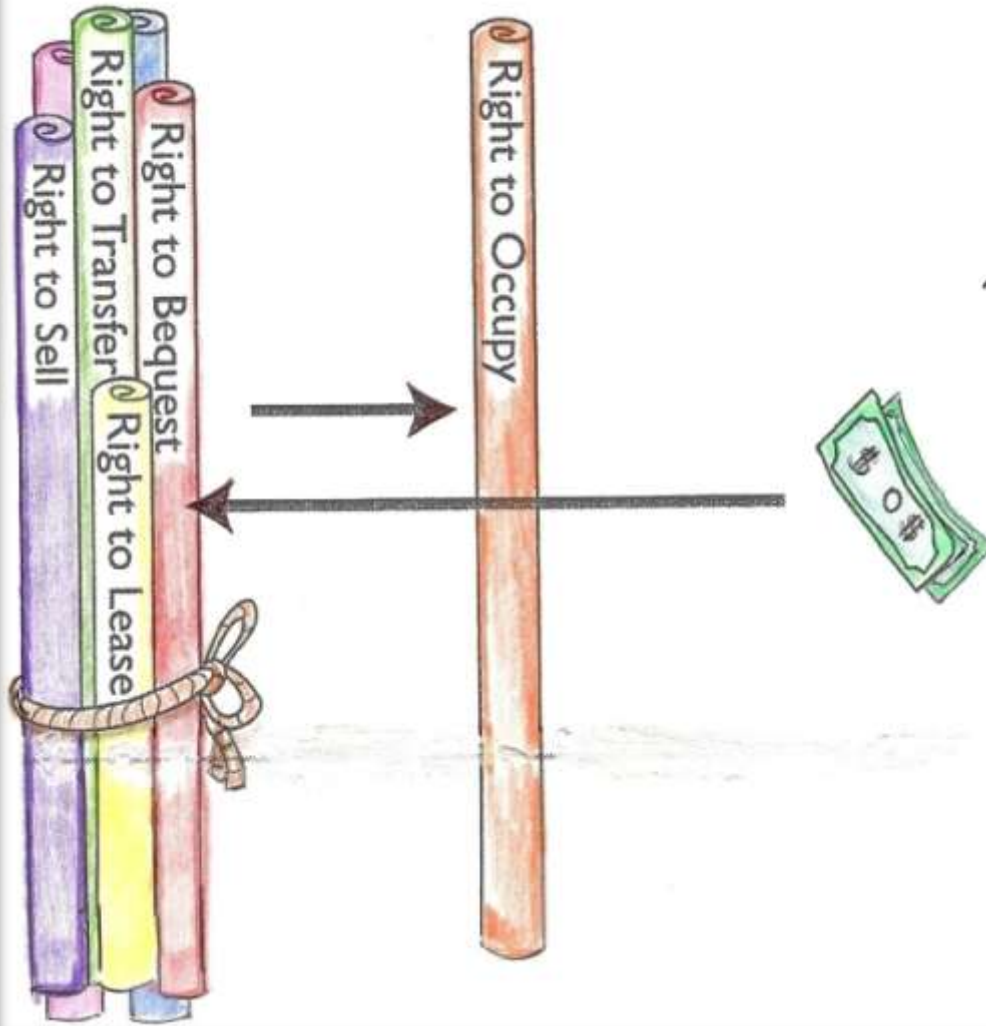
When valuing real property, first determine the property rights to be appraised; the most complete form of ownership is "title in fee" or **FEE SIMPLE INTEREST**

- ❑ Most complete form of ownership
- ❑ Unencumbered by any other interest or estate
- ❑ Only subject to limitations imposed by the government  
(taxation, eminent domain, police power, escheat)

# Property Rights Associated with Fee Ownership



## The Bundle of Rights



- Ownership of a fee simple interest = ownership of the complete bundle of rights;
- Each right represents a partial interest in the whole

# BUNDLE OF RIGHTS

- Real property ownership includes a bundle of rights – each with a value:
- right to sell/lease/mortgage an interest
- right to occupy the property
- right to convey
- right to do nothing at all
- unlike mineral rights, Texas is UNDECIDED as to “wind rights” – can they be conveyed? can they be retained?

Market forces create value; same market forces have a bearing on the

## HIGHEST AND BEST USE OF LAND

HIGHEST AND BEST USE MEANS THE USE OF THE PROPERTY THAT  
RESULTS IN THE HIGHEST VALUE THAT IS ALSO:

LEGAL; REASONABLY PROBABLE; PHYSICALLY POSSIBLE; AND

FINANACIALLY FEASIBLE

HIGHEST AND BEST USE IS THE FOUNDATION UPON  
WHICH MARKET VALUE RESTS

IN THE PAST 25 YEARS THE HIGHEST & BEST USE OF TEXAS  
RANGELAND HAS CHANGED  
FROM *AGRICULTURAL USE TO RECREATIONAL USE*

TAYLOR COUNTY HUNTING  
(RECREATIONAL) LEASES  
BRING \$12.00 TO \$18.00 PER  
ACRE... COMPARED TO  
GRAZING LEASES BRING  
\$2.50 TO \$3.50 PER ACRE...

RECREATIONAL USE  
INCLUDES:

HUNTING, FISHING,  
CAMPING, HIKING, , ETC...  
WILDLIFE RESOURCES &  
CONSERVATION, LIVE  
WATER, WEEKEND PLACE,  
PEACE & QUIET



DIRECT SALES COMPARISON APPROACH;  
MOST WIDELY USED AND ACCEPTED  
APPROACH TO VALUING RURAL PROPERTY

- Defined as an estimate of value of recent sales of similar property in the surrounding or competing areas - as compared to the subject property

# PROPERTY CHARACTERISTICS NECESSARY FOR THE COMPARISON

- Property rights conveyed
- Financing of the purchase
- Conditions of sale
- Market conditions over time
- Mineral interests
- Improvements
- Size/Shape
- Physical Characteristics
- Live Water
- Fencing
- Location/Access
- Views



# NOT COMPARABLE

RESIDENCE



RURAL



## PAIRED SALES ANALYSIS

Within the direct sales comparison approach – several techniques are used to quantify adjustments – most commonly used technique is that of *paired sales*:

When two properties are in all other respects equal, a single difference can be measured to determine the difference in price between the two.

TWO TRUCKS – BOTH FORDS; BOTH F-150; BOTH FOUR WHEEL DRIVE; BOTH 2009 MODELS – ONE DIFFERENCE  
LARIET PCKGE VS KING RANCH PCKGE

**FX4**



**LARIAT**  
**\$36,000.00**

18"      20"      17"



**KING RANCH**  
**\$45,000.00**

18"      20"



COMPARING THESE TWO TRUCKS UNDER PAIRED  
SALES TECHNIQUE:

KING RANCH PCKGE  
CONTRIBUTES \$9,000 IN VALUE  
OVER THE LARIAT PCKGE

# PAIRED SALES TECHNIQUE is used in determining the value of :

- Undivided interests (multiple owners of property)
  - Conservation easements
  - Burned Property (due to wildfires, grassfires)
  - Presence of Power Lines & Transmission lines
  - Presence/ view shed of wind turbines
  - Other property conditions
- 
- A photograph of two pronghorn antelopes standing in a field. The antelope on the left is facing the camera, while the one on the right is facing right. The background shows a grassy field under a clear sky.

# WHAT WE KNOW ABOUT WIND TURBINES

## common sense stuff

- Up to 600' feet tall
- constant noise
- shadow/flicker
- view shed effect –  
turbines tower over horizon ,  
changing the view
- construction ;  
transmission lines ;  
substations
- turbines forever change  
the aesthetics; a more  
industrial feeling
- loss of native wildlife  
habitat



# Renewable Energy Policy Project (REPP)

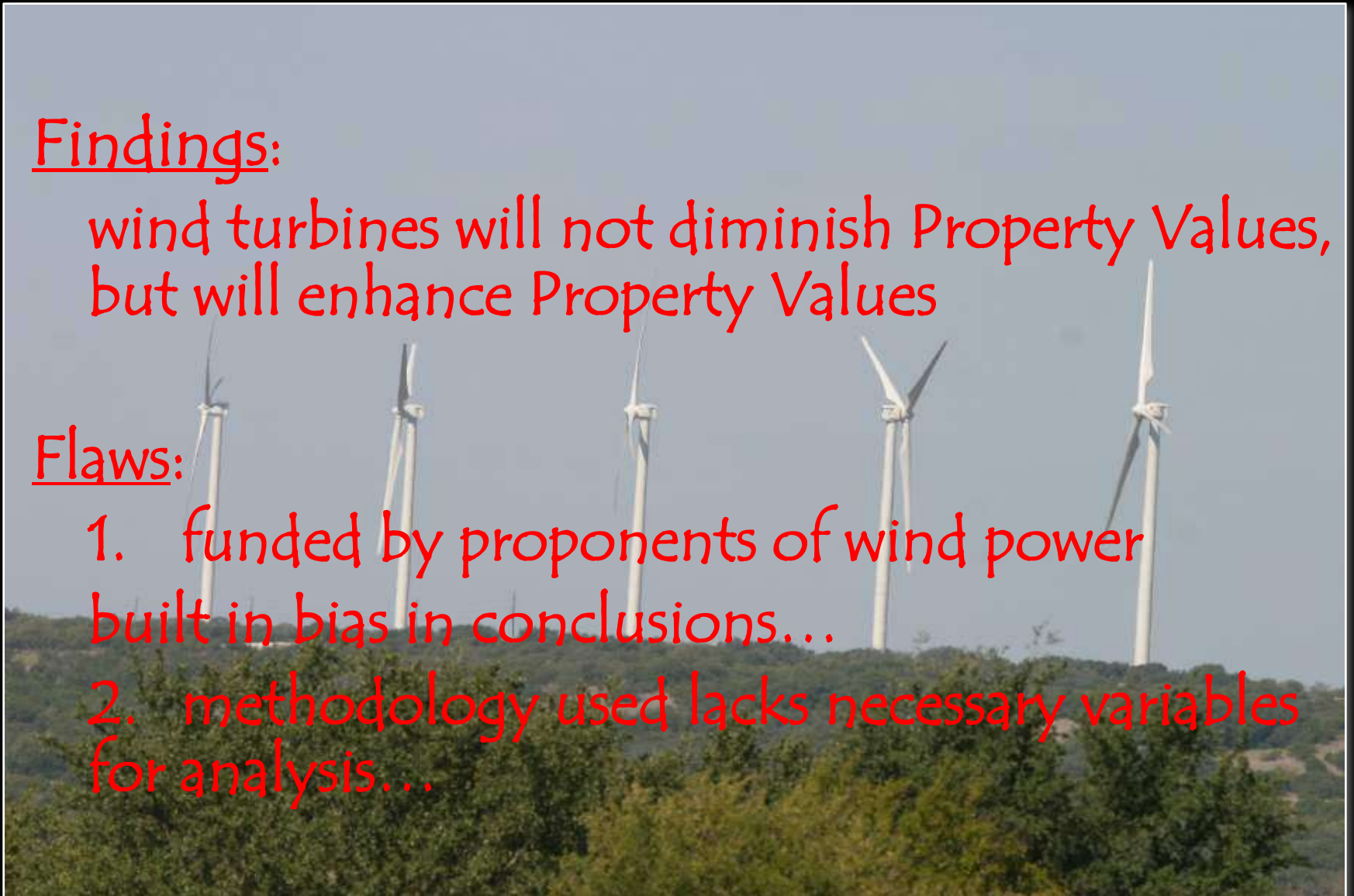
May, 2003

## Findings:

wind turbines will not diminish Property Values,  
but will enhance Property Values

## Flaws:

1. funded by proponents of wind power  
built in bias in conclusions...
2. methodology used lacks necessary variables  
for analysis...



# VARIABLES NOT USED IN REPP

- Rising or falling market
- # of days from listing to sale
- Residential property; not rural property
- Did not take into account effect of noise, flickering, shadow
- Does not factor in distances....
- Possible change in Highest and Best Use because of presence of wind turbine...

# Appraisal Research Shows:

- A **VIEW adds value** to rural property
- Take **view away** – added **value goes away**
- Brokers in rural areas confirm that property values in areas of wind facilities are **10% - 30% less** than property not in areas of wind facilities.
- Wind energy development creates an income stream, increasing property's production value; **increased production value does not necessarily result in increased market value**

# Case Study One - 2007

- 350 acres in Erath County – top end ranch purchased for retirement homestead....
- 27 wind turbines within 1 ½ mile radius
- For sale for \$2,100,000.00
- Prospective buyer agreed to sales price
- Disclosure of wind turbine project to buyer
- Buyer backed out of offer
- Seller agreed to 25% discount to Buyer
- Buyer declined discounted offer
- Currently little interest in property in spite of other characteristics of property

# Case Study Two - 2007

- Using paired sales analysis - Sales of Seven large tracts of rural land with varying proximity to wind turbines in Taylor County, Texas....
- Sales 1, 2, and 3 compared to Sales 4-7
- Sales occurred between 3-06 & 8-07
- No time adjustment
- Contributory value of improvements deducted from each sale
- All other characteristics considered similar

# Wind turbine on the property

Sale Number	Wind Turbine Presence (western Taylor County; 1700+ acres; 3 wind turbines on property; seller reserved "wind rights")	Price/Acre	Diminution Value
One	Turbines on property	\$850.00	
Four	No wind turbines in visual range	\$1,290.00	34%
Five	No wind turbines in visual range	\$1,536.00	45%
Six	No wind turbines in visual range	\$1,200.00	29%
Seven	No wind turbines in visual range	\$1,416.00	40%

# TURBINES ON PROPERTY

Diminution in value

29%-45%

37% average



# Wind turbine within .2 - .4 miles

Sale Number	Wind Turbine Presence (1,110+ acres ; Taylor County; 2 wind turbines in within .2 & .4 miles	Price/Acre	Diminution Value
Two	Turbines within .2 - .4 miles	\$1,000.00	
Four	No wind turbines in visual range	\$1,290.00	22%
Five	No wind turbines in visual range	\$1,536.00	35%
Six	No wind turbines in visual range	\$1,200.00	17%
Seven	No wind turbines in visual range	\$1,416.00	29%



## TURBINES WITHIN .2 - .4 MILES

Diminution in value is 17%- 35%

*26% Average*

# Wind turbine within 1.8 miles

Sale Number	Wind Turbine Presence (550+ acres in Taylor County, 1 turbine 1.8 miles away)	Price/Acre	Diminution Value
Three	Turbines within 1.8 miles	\$1,016.00	
Four	No wind turbines in visual range	\$1,290.00	21%
Five	No wind turbines in visual range	\$1,536.00	34%
Six	No wind turbines in visual range	\$1,200.00	15%
Seven	No wind turbines in visual range	\$1,416.00	28%



**TURBINES WITHIN  
1.8 MILES**

Diminution in value is 15%– 34%

**25% Average**

# Diminution in Value Summary

Turbines on property

Average 37%

Turbines within .2 -.4 miles

Average 26%

Turbines within 1.8 miles

Average 25%



# Possible Additional Diminution in Value

Additional 15% - 25% diminution  
In value of property due to the following:



WIND TURBINE  
INFRASTRUCTURE -



HIGH POWER TRANSMISSION LINES

# SUBSTATIONS



# ADDITIONAL TRAFFIC FOR SERVICE OF WIND TURBINE AND POWER LINES





ADDITIONAL  
ROADS

Market Data and common sense tell us property values are negatively impacted by the presence of wind turbines.





Consider &  
weigh impact on  
your property's  
overall value  
when leasing for  
wind turbines...

# THE BIG QUESTION

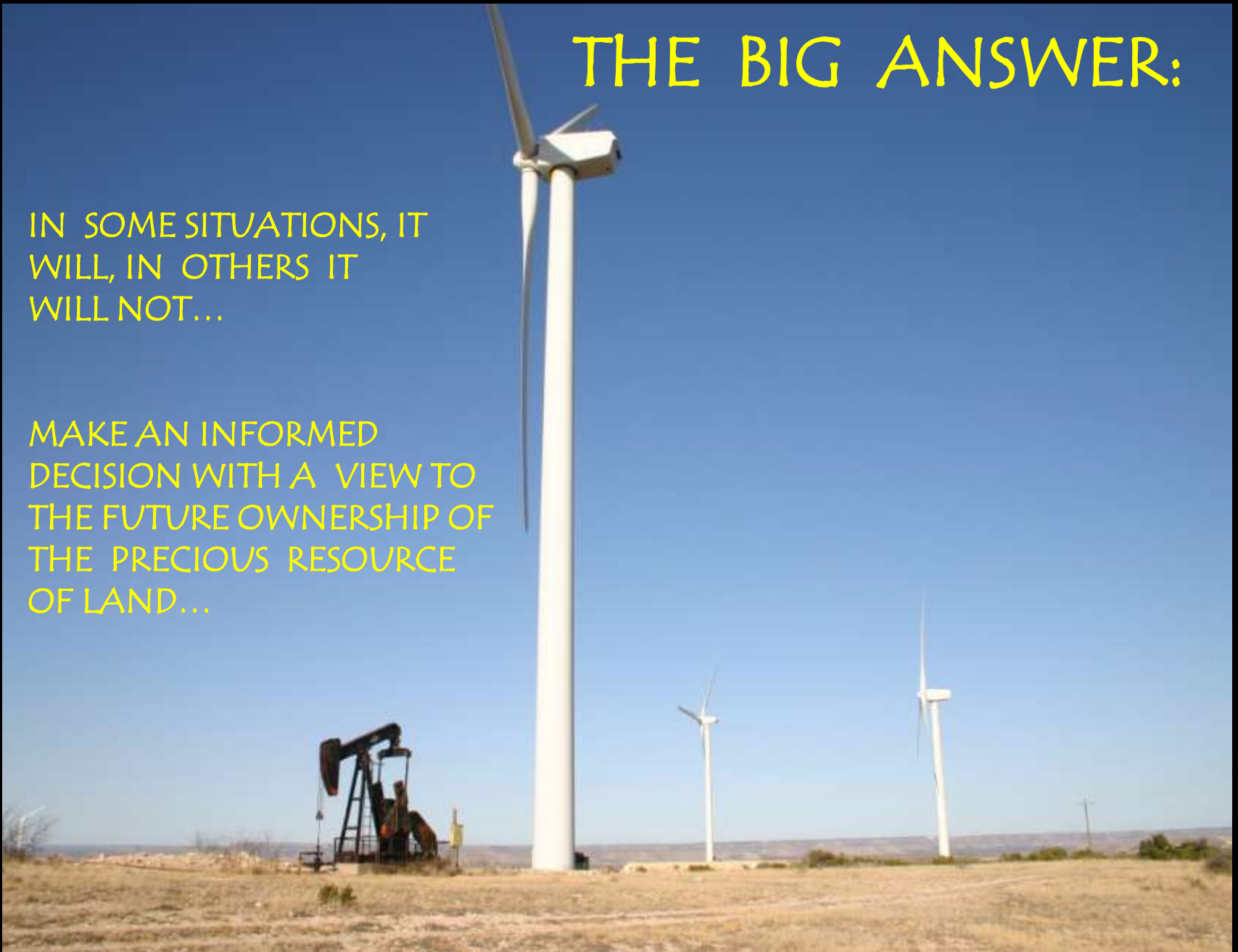
- Does increased income from wind turbine offset the potential decrease in market value?



# THE BIG ANSWER:

IN SOME SITUATIONS, IT  
WILL, IN OTHERS IT  
WILL NOT...

MAKE AN INFORMED  
DECISION WITH A VIEW TO  
THE FUTURE OWNERSHIP OF  
THE PRECIOUS RESOURCE  
OF LAND...



# Studies Developed by:

- Gardner Appraisal Group, Inc.
- Austin Valuation Consultants
- Various real estate appraisers and brokers



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GARDNER APPRAISAL GROUP, INC.

DERRY T. GARDNER

210-737-1321

[www.gardnerappraisalgroup.com](http://www.gardnerappraisalgroup.com)



