

Community Wind Workshop

June 22, 2021

Session 4 - Property Values



Dorothy Barnett

The Climate + Energy
Project

barnett@climateandenergy.org



As the Executive Director of the Climate + Energy Project, Dorothy Barnett is leading the effort to address the Heartland's energy future. Grounded in an approach based on common ground solutions, Barnett has been successful in convening diverse voices in a conservative region of the country. Barnett has coordinated winning campaigns to protect the Kansas Renewable Portfolio Standard from special interest groups attacks during four legislative sessions, allowing the wind industry to grow to 40% of the state's power generation in just a decade.

Prior to her position as Executive Director, Barnett served for 4 years as CEP's Director of Energy and Transmission. This work put Dorothy on the ground in energy policy work at the local, state and regional level. Under Barnett's leadership, CEP continues to innovate and reach new audiences with projects like WEALTH: Water, Energy, Air, Land, Transportation and HEALTH, Climate + Energy Voters Take Action, the Kansas Environmental Leadership project and the Clean Energy Business Council, a multi sector business group focused on the advanced energy economy.



COMMUNITY WIND WORKSHOP 2021

Community Agreements

- **Platinum Rule** - *treat others the way you want to be treated.*
- **Notice the Room** - *build awareness together.*
- **Be Curious, Open, and Respectful** - *call in, not out. Throw sunshine, not shade.*
- **Be Conscious of Your Intent vs. Impact** - *Your intentions may be good, but the impact on another may be hurtful. You are responsible for the impact of your words.*





Mission

The Climate + Energy Project (CEP) builds resilience in Kansas through equitable clean energy solutions and climate action.

Purpose

The Climate & Energy Project:

- connects people, organizations, and ideas;
- presents science-based facts;
- facilitates critical thinking and community engagement; and
- co-creates equitable and productive solutions.

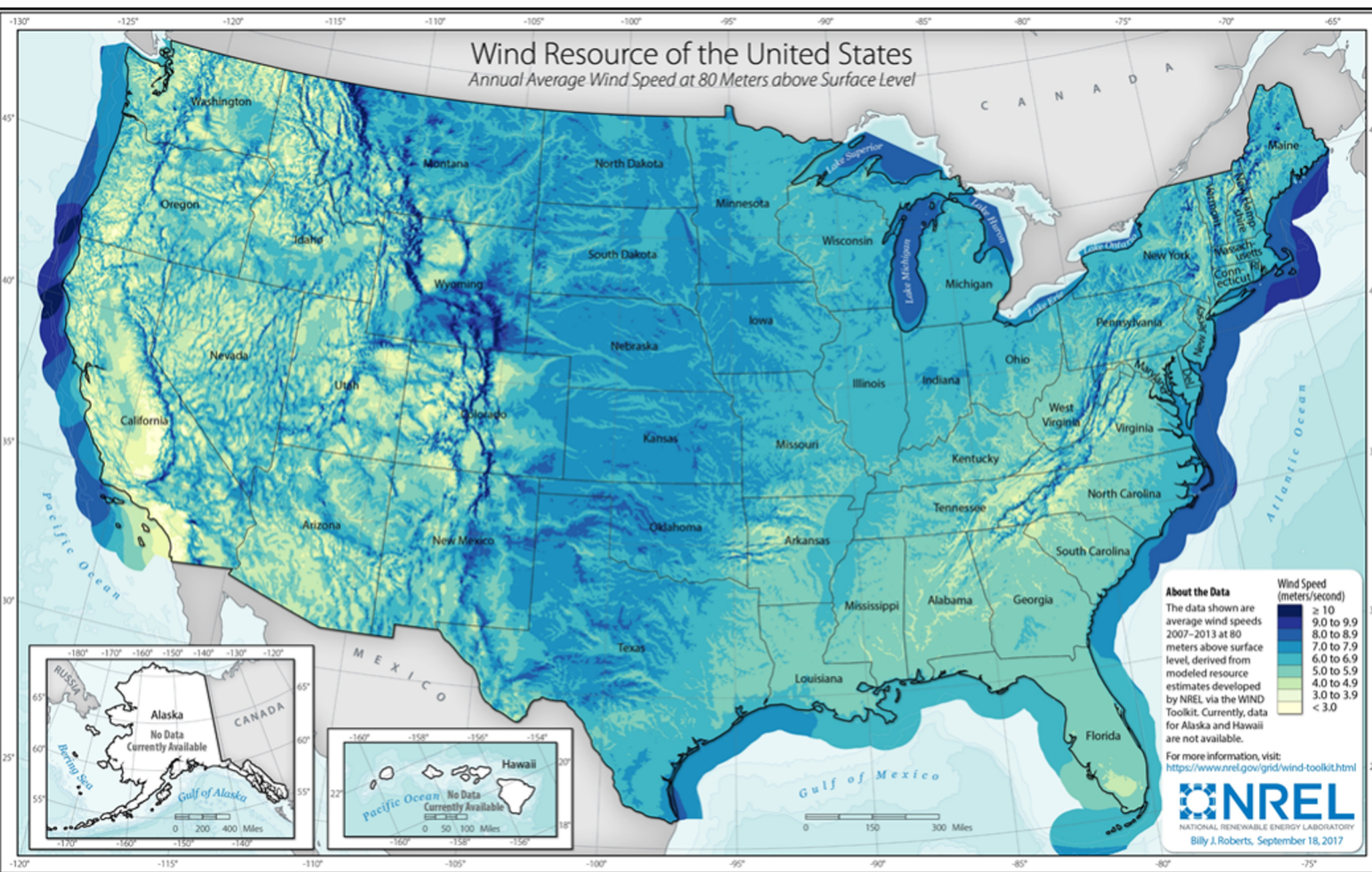


U.S. WIND CORRIDOR

- Central Location
- Strong wind resource

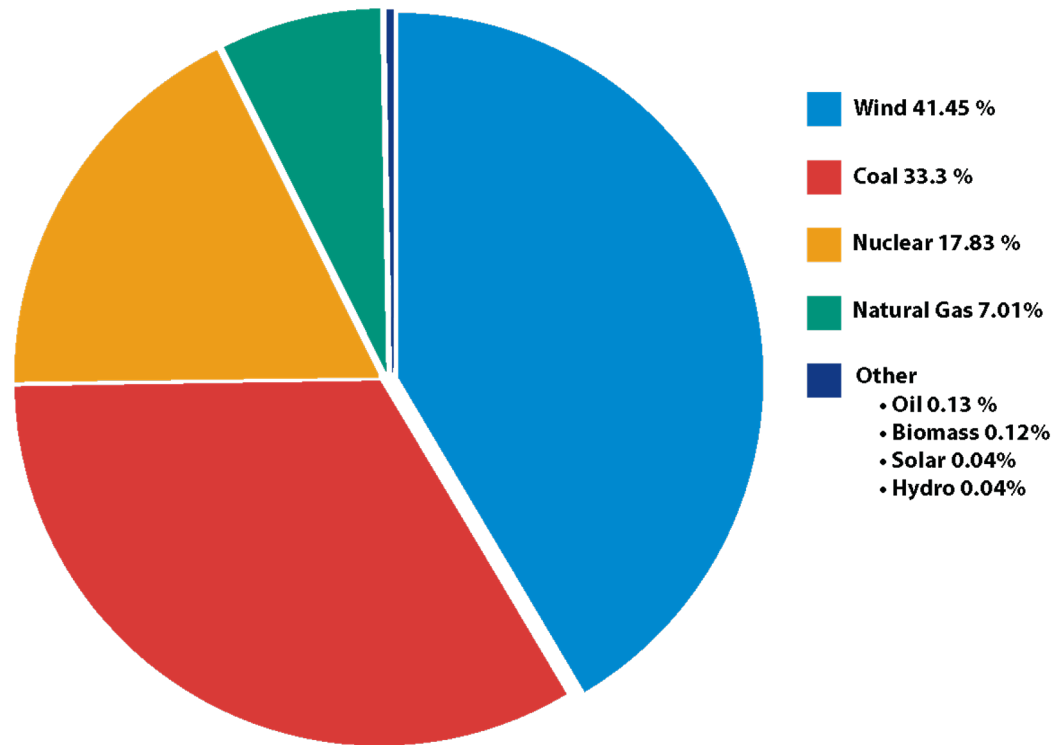
Kansas Rankings (AWEA Market Report)

- #2** – Wind as % of total generation
 - #3** – Corporate wind purchases
 - #4** – Wind power installed capacity
 - #4** – Wind power generation
 - #5** – Wind turbines installed
- \$11.4+ billion** – Total investment
- 1.97 million** – Equivalent homes powered

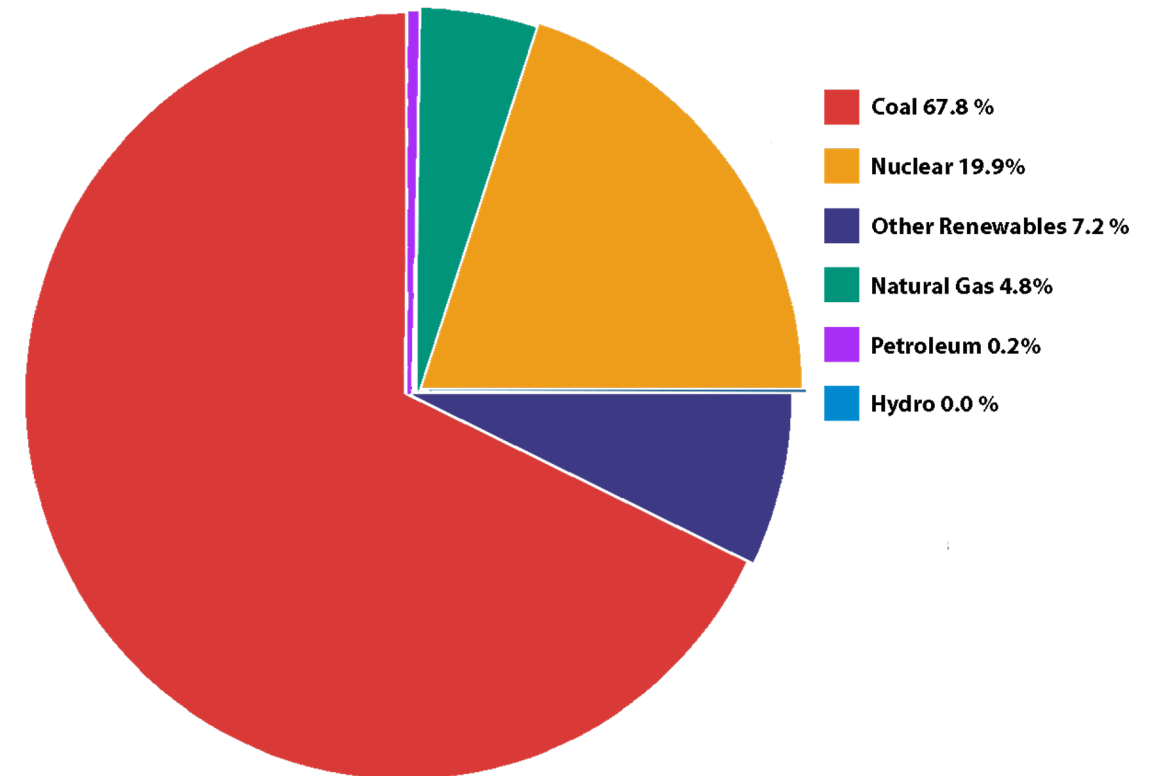


Kansas Electricity Generation

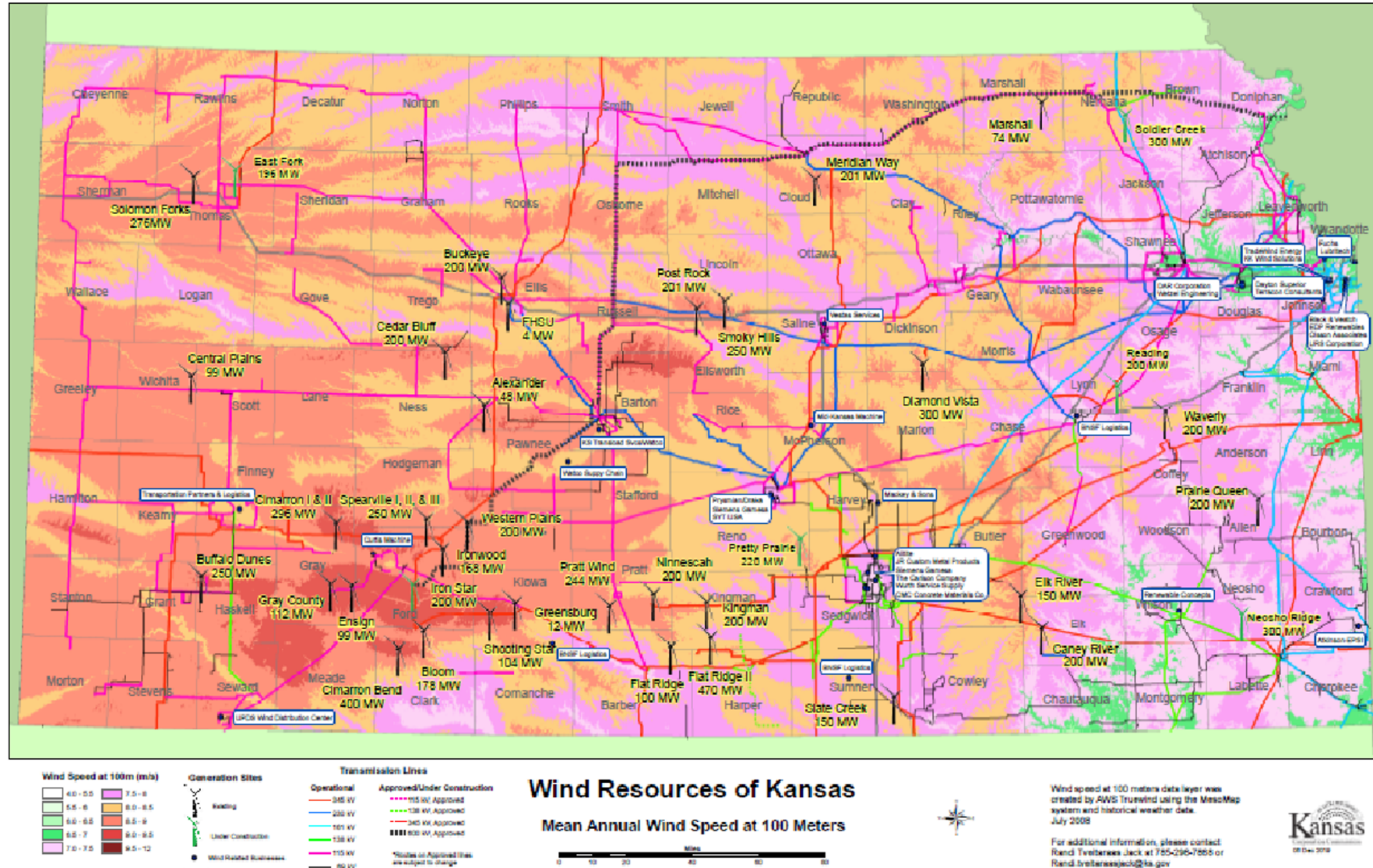
2019



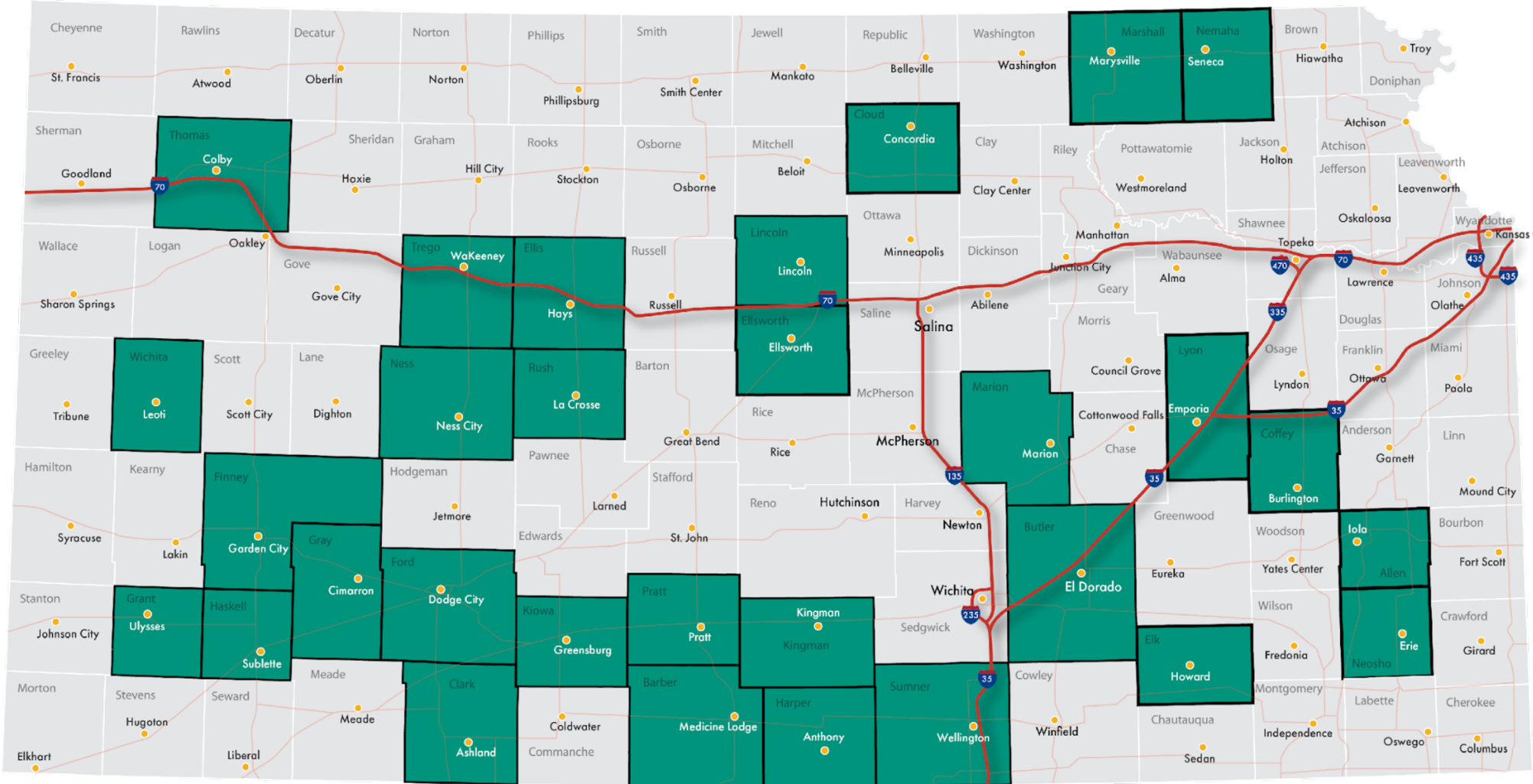
2010



KANSAS WIND MAP WITH OPERATING AND UNDER CONSTRUCTION WIND FARMS AND RELATED BUSINESSES



KANSAS COUNTIES WITH WIND FARMS



Mike Busch

Wichita State

mike.busch@wichita.edu



Mike Busch has worked as a Senior Research Economist for the Center for Economic Development and Business Research at Wichita State University since 2013. He received his Master's degree in Economics from Michigan State University, with an emphasis on labor economics. His responsibilities at CEDBR include econometric analysis and economic forecasting for the local and regional economy. He administers CEDBR's quarterly employment forecasting model for Kansas and its major metropolitan areas. He has worked on projects such as regional population projections, analysis of local retail sales and establishment patterns, and skills analysis of the local labor force. He has also taught economic forecasting courses in the W. Frank Barton School of Business at Wichita State since 2014, in which he emphasizes both econometric analysis and research skills..



Economic Effects of Wind Power

▶ Direct Effects

- ▶ Increased electricity generation capacity
- ▶ Increased construction activity
- ▶ Creates new jobs to maintain turbines

▶ Indirect Effects

- ▶ How do wind power projects affect areas where they are constructed beyond their direct effects?
 - ▶ Possible effects for surrounding landowners

Wind Power & Home Values

- ▶ Having a wind turbine in view from the house could affect the view
 - ▶ Positive or negative effect? Depends on people's willingness to pay for a home near a wind turbine
- ▶ Core question: Do wind turbines affect home values, and if so, how?

Wind Power & Home Values

- ▶ Some realtors and homeowners have claimed wind turbine construction could lead to large drops in home values
 - ▶ Wide variety of claims, from losses in value of 12% to 60%
- ▶ What does the evidence show?
 - ▶ Today we will look at 4 peer-reviewed academic research papers as well as Kansas-specific research

Residential Home Values

- ▶ How are residential home values determined?
 - ▶ By the market, people's willingness to pay
- ▶ Can think of a home for sales as a bundle of amenities
 - ▶ Tangible amenities
 - ▶ Square footage, # of bathrooms & bedrooms, size of garage
 - ▶ Intangible amenities
 - ▶ Neighborhood quality, scenic views, aesthetic qualities of a home
 - ▶ Proximity to noisy roads, landfills, or parks

Residential Home Values

- ▶ How do wind turbines fit into this framework?
 - ▶ One of many intangible amenities for a home
- ▶ Imagine comparing two identical homes, one near a wind turbine, and one not
 - ▶ How would the price vary?
- ▶ Looking at overall market willingness to pay
 - ▶ Some individual buyers may have different preferences
 - ▶ Do enough buyers value a lack of wind turbines enough to move the overall price?

Estimating Wind Power Effects

- ▶ Data - each academic study uses home transaction prices for homes with a turbine nearby and homes without a turbine nearby
- ▶ Homes and wind power projects are not randomly located
 - ▶ Many amenities can vary between wind power areas and non-wind power areas
- ▶ Want to separate the effects of other differences in homes from the possible effects of wind turbines

Estimating Wind Power Effects

- ▶ Multiple regression analysis
 - ▶ Enables for effects of other amenities to be controlled to allow for better identification of the effect of wind turbine views on home values
 - ▶ Each amenity has a separate effect on home prices in this model

Estimating Wind Power Effects

▶ Cross sectional data

- ▶ Can compare houses in two areas at the same point of time
- ▶ Weakness: Two groups of houses vary in ways other than proximity to wind power

▶ Time series data

- ▶ Compare the same group of houses, before and after wind turbines are built
- ▶ Weakness: More changes over time than just wind power construction

Estimating Wind Power Effects

- ▶ Difference-in-differences estimation
 - ▶ Use two groups of homes, at two or more points of time
 - ▶ Controls for both differences in time and differences between houses
 - ▶ Use multiple regression analysis to control for other amenities

“The Effect of Wind Farms on Residential Property Values in Lee County, Illinois”

- ▶ Home sales data from 1,298 transactions from 1998 to 2010 in Lee County, Illinois
- ▶ Three wind power projects in county - 2003, 2007, and 2009
- ▶ Multiple regression, controlling for home characteristics and distance to wind power projects
- ▶ Examined each project individually and overall effect of all three projects

“The Effect of Wind Farms on Residential Property Values in Lee County, Illinois”

- ▶ Two projects had statistically insignificant effects on homes within three miles of wind power projects
- ▶ The third had a statistically significant positive effect on home prices
- ▶ When tested jointly, the three wind power projects had no significant effect on home values

“The Impact of Wind Power Projects on Residential Property Values in the United States”

- ▶ 2009 paper used data from 7,400 residential home transactions within 10 miles of 24 different wind turbine projects
- ▶ Multiple regression analysis, controlled for home characteristics
- ▶ Included variables both for distance from wind turbine and four levels of the view of a turbine

MINOR VIEW



3 turbines visible from front orientation, nearest 1.4 miles (TXHC)



5 turbines visible from front orientation, nearest 0.9 miles (NYMC)

MODERATE VIEW



18 turbines visible from back orientation, nearest 1.6 miles (ILLC)



6 turbines visible from back orientation, nearest 0.8 miles (PASC)

SUBSTANTIAL VIEW



90 turbines visible from all orientations, nearest 0.6 miles (IABV)



27 turbines visible from multiple orientations, nearest 0.6 miles (TXHC)

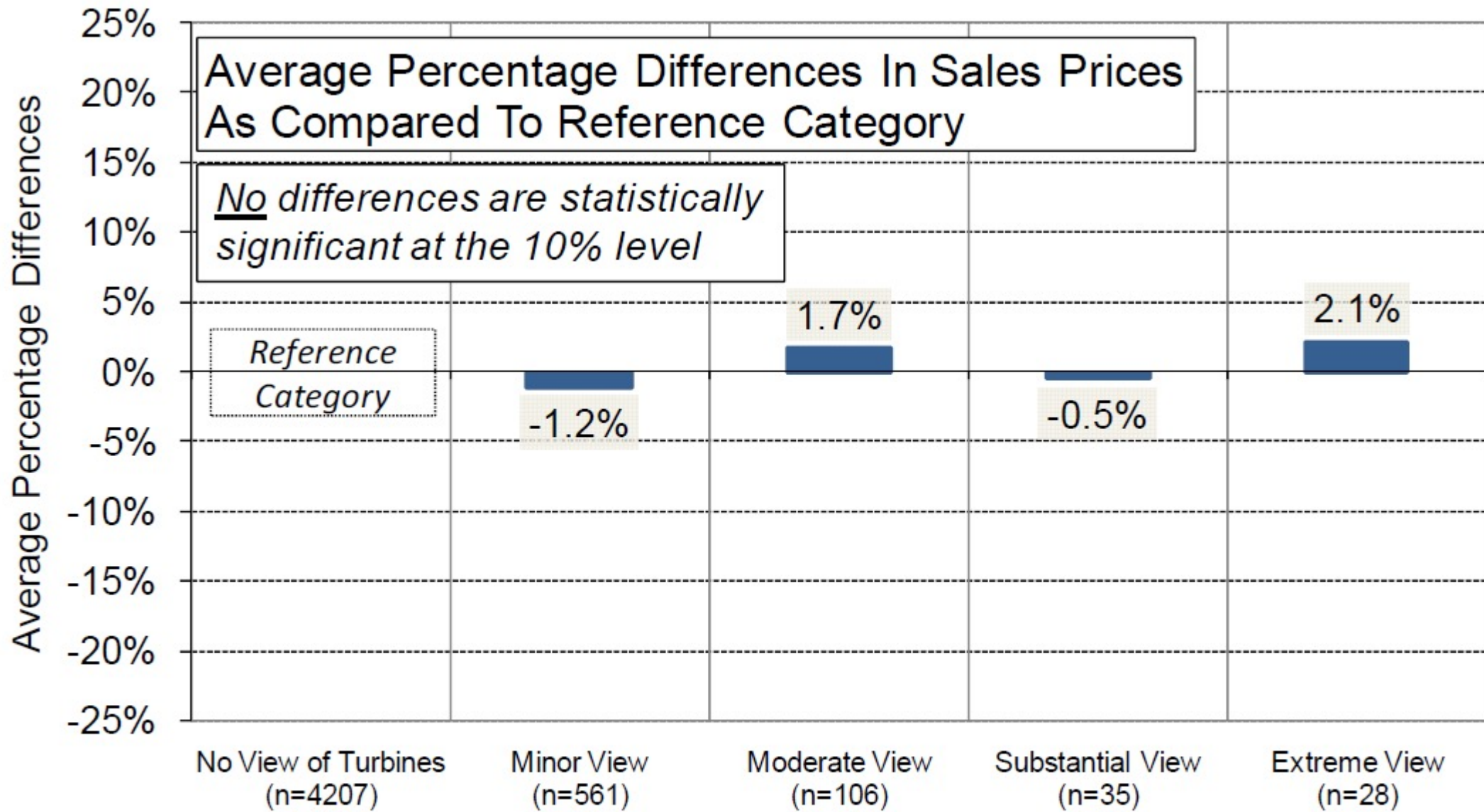
EXTREME VIEW



6 turbines visible from multiple orientations, nearest 0.2 miles (WIKCDC)



212 turbines visible from all orientations, nearest 0.4 miles (IABV)

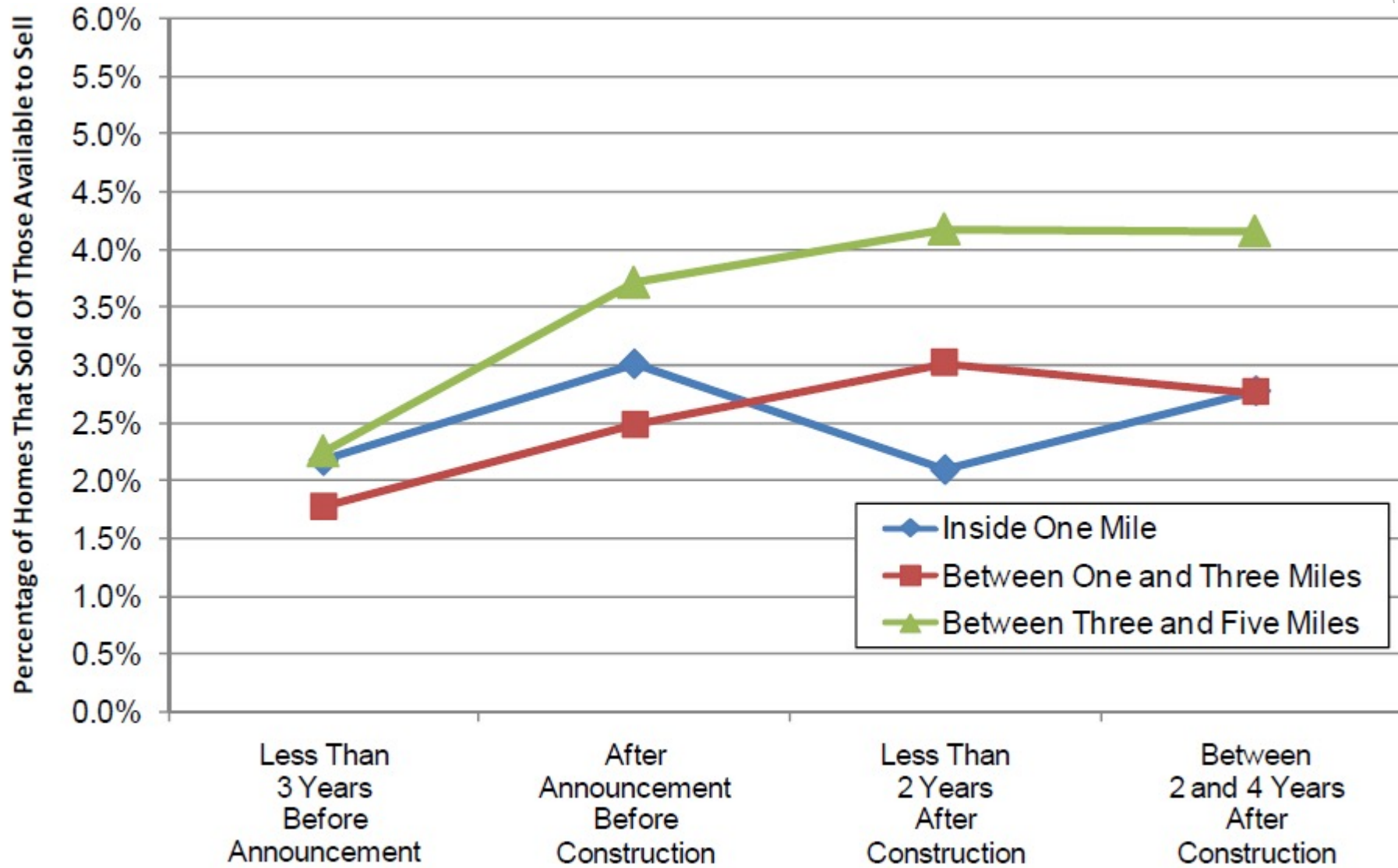


The reference category consists of transactions for homes without a view of the turbines, and that occurred after construction began on the wind facility

“The Impact of Wind Power Projects on Residential Property Values in the United States”

- ▶ After controlling for other characteristics, find no significant effect of views of wind turbines on home values
- ▶ Also find no significant effect of proximity to wind turbines on home values
- ▶ No significant reduction in home sales in the area surrounding the wind turbines

Home Sales by Proximity to Wind Project



“The Windy City: Property Value Impacts of Wind Turbines in an Urban Setting”

- ▶ 48,000 home sales from urban locations within five miles of a wind turbine in Rhode Island from ten wind projects
- ▶ Two multiple regression models used, both controlling for home characteristics
 - ▶ One using distance to wind turbines as key variable
 - ▶ Second also included the prominence of the view of a wind turbine for each home

“The Windy City: Property Value Impacts of Wind Turbines in an Urban Setting”

- ▶ Wind turbines tended to be located in lower home value areas
- ▶ Construction of turbines did not have a statistically significant effect on homes located within three miles of the projects
- ▶ Can statistically reject effects larger than 5% for homes near wind power projects
- ▶ Even for homes with prominent views of wind turbines, home prices were not statistically significantly affected

“A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States”

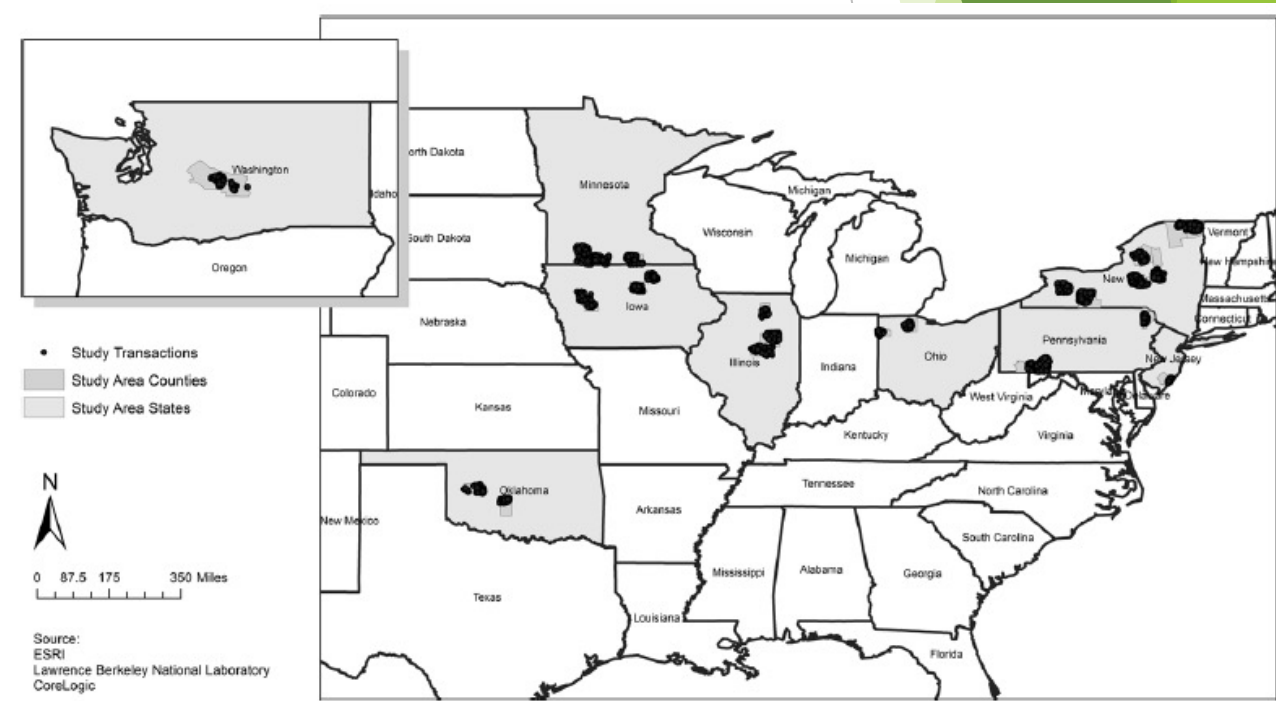
- ▶ Data used included more than 50,000 home sales within 10 miles of wind turbines from 27 counties across nine states

- ▶ Multiple regression & difference in difference approach

- ▶ Controlling for other home characteristics

- ▶ Key variable of interest

- ▶ Distance to Wind Turbine



“A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States”

- ▶ No statistically significant effects of wind turbines on home prices at any proximity to the wind turbine
- ▶ No significant effects found either post-project announcement or post-project construction

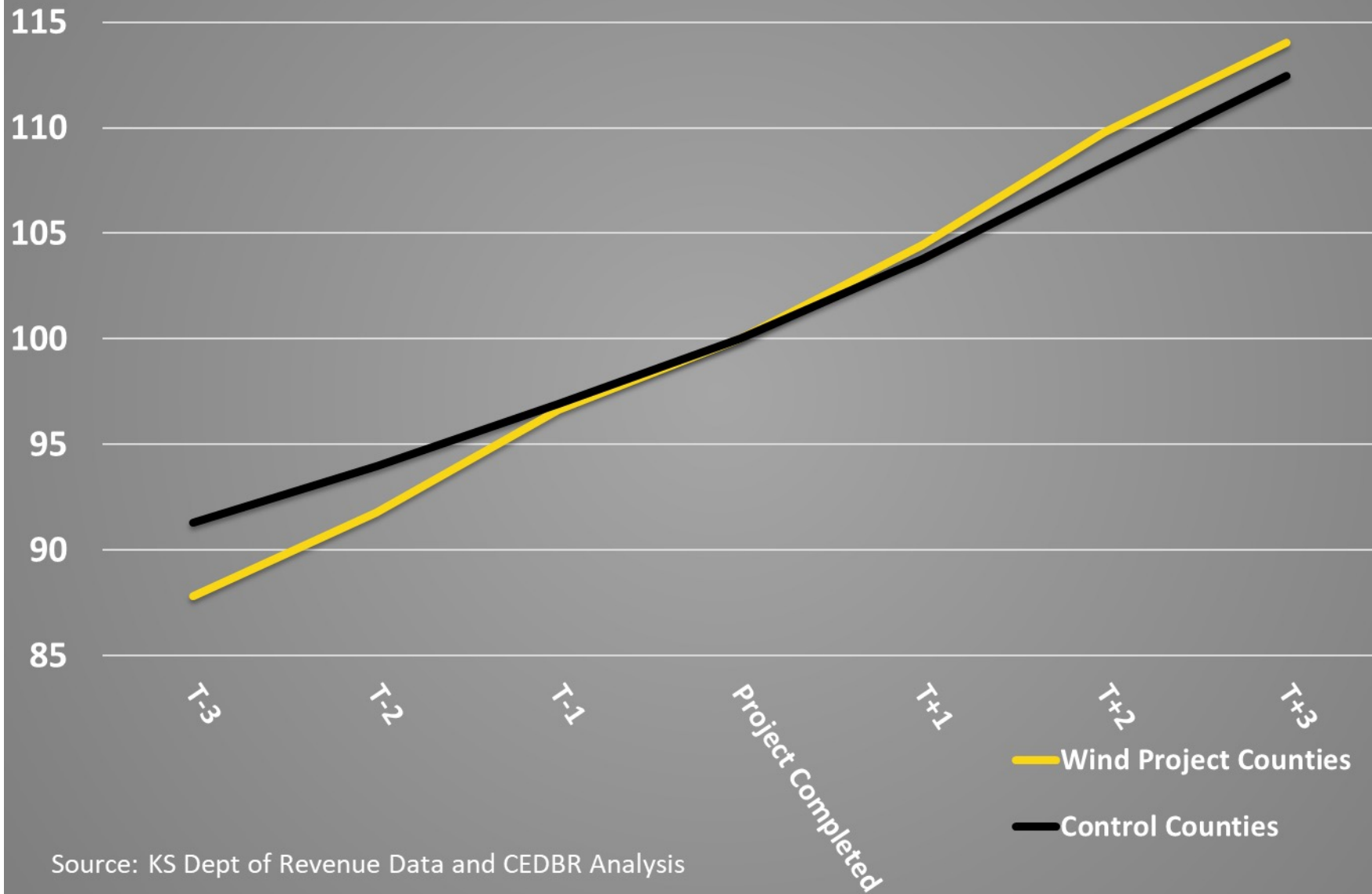
Kansas Wind Power Projects

Cheyenne	Rawlins	Decatur	Norton	Phillips	Smith	Jewell	Republic	Washington	Marshall	Nemaha	Brown	Doniphan	
Sherman	Thomas	Sheridan	Graham	Rooks	Osborne	Mitchell	Cloud 2008	Clay	Riley	Pottawatomie	Jackson	Atchison	
Wallace	Logan	Gove	Trego 2015	Ellis 2015	Russell	Lincoln 2008, 2012	Ottawa	Dickinson	Geary	Wabaunsee	Shawnee	Leavenworth	
Greeley	Wichita 2009	Scott	Lane	Ness 2015	Rush 2015	Ellsworth 2008, 2012	Saline	Morris	Osage	Douglas	Johnson		
Hamilton	Kearny	Finney 2013	Hodgeman	Pawnee	Barton	Rice	McPherson	Marion	Lyon	Coffey 2015	Anderson	Linn	
Stanton	Grant 2013	Haskell 2013	Gray 2012, 2013	Ford 2005, 2011, 2012	Edwards	Stafford	Reno	Harvey	Butler 2005	Greenwood	Woodson	Allen	Bourbon
Morton	Stevens	Seward	Meade	Clark	Kiowa 2010, 2012	Pratt	Kingman 2012	Sedgwick	Elk 2012	Wilson	Neosho	Crawford	
					Comanche	Barber 2009, 2012	Harper 2012	Sumner 2012, 2015	Cowley	Montgomery	Labette	Cherokee	

Kansas Wind Power Projects

- ▶ Data: 28 large wind power projects completed from 2005 to 2015 in 21 counties across Kansas, appraised rural home values from 105 counties
- ▶ Used regression discontinuity and a difference-in-difference approach to analyze how wind power projects affected the growth rate of rural home values in counties with wind power projects, relative to growth in each set of counties

Rural Residential Property Values (Year Project Completed=100)



Source: KS Dept of Revenue Data and CEDBR Analysis

Kansas Wind Power Projects

- ▶ Estimated the effect of wind power projects for three years following their construction on home values using the following equation:

$$Y_{it} = \sum_{t=2005}^{2015} (\alpha_t + \gamma_t Wind_i + \delta_t * After_{it}) + \beta_1 * Wind_i * After_{it} + \varepsilon_{it}$$

- ▶ Uses the counties without wind power projects as the control group for comparison over time

Key Findings

- ▶ Estimated the growth rate in rural residential property values increased by an average of 0.3 percentage points in three years following the completion of project, relative to previous growth rate, as compared to the growth rate of the previous three years for each set of counties
- ▶ This result was not statistically significantly different from zero

Conclusions

- ▶ Econometric analysis by economists has not found significant evidence that wind power projects increase or decrease nearby home values, after controlling for other home characteristics
- ▶ If views or proximity to wind turbines do affect home values, it is likely to be a relatively small effect

Mary Fund

Landowner
ksrc@rainbowtel.net



Mary Fund currently serves as a board member of CEP. She retired from the Kansas Rural Center, a non-profit research, education and advocacy organization for a sustainable agriculture and food system in March 2020, where she worked on natural resource issues for most of KRC's 42 years. She served as Executive Director from January 2015-March 2020 and directed KRC's early water policy work, writing extensively on Kansas water issues, and managed KRC's Clean Water Farms Project from 1995-2012, working with a network of over 300 farmers and ranchers on whole farm planning and farming practices that protect water quality.

Mary and her husband, Ed Reznicek, own and operate a 400-acre certified organic crop and livestock farm. Mary was an outspoken supporter of a local wind farm development in her county.





CEP Community Wind Workshop

June 22, 2021

Amerugi Farm

Mary Fund & Ed Reznicek
Goff, Ks.

ksrc@rainbowtel.net

- Our Farm
- Soldier Creek Wind Farm
- Our landowner process in leasing and our experience with construction
- Overview of Community Concern
- What do we wish we'd known? Or what would we do differently?

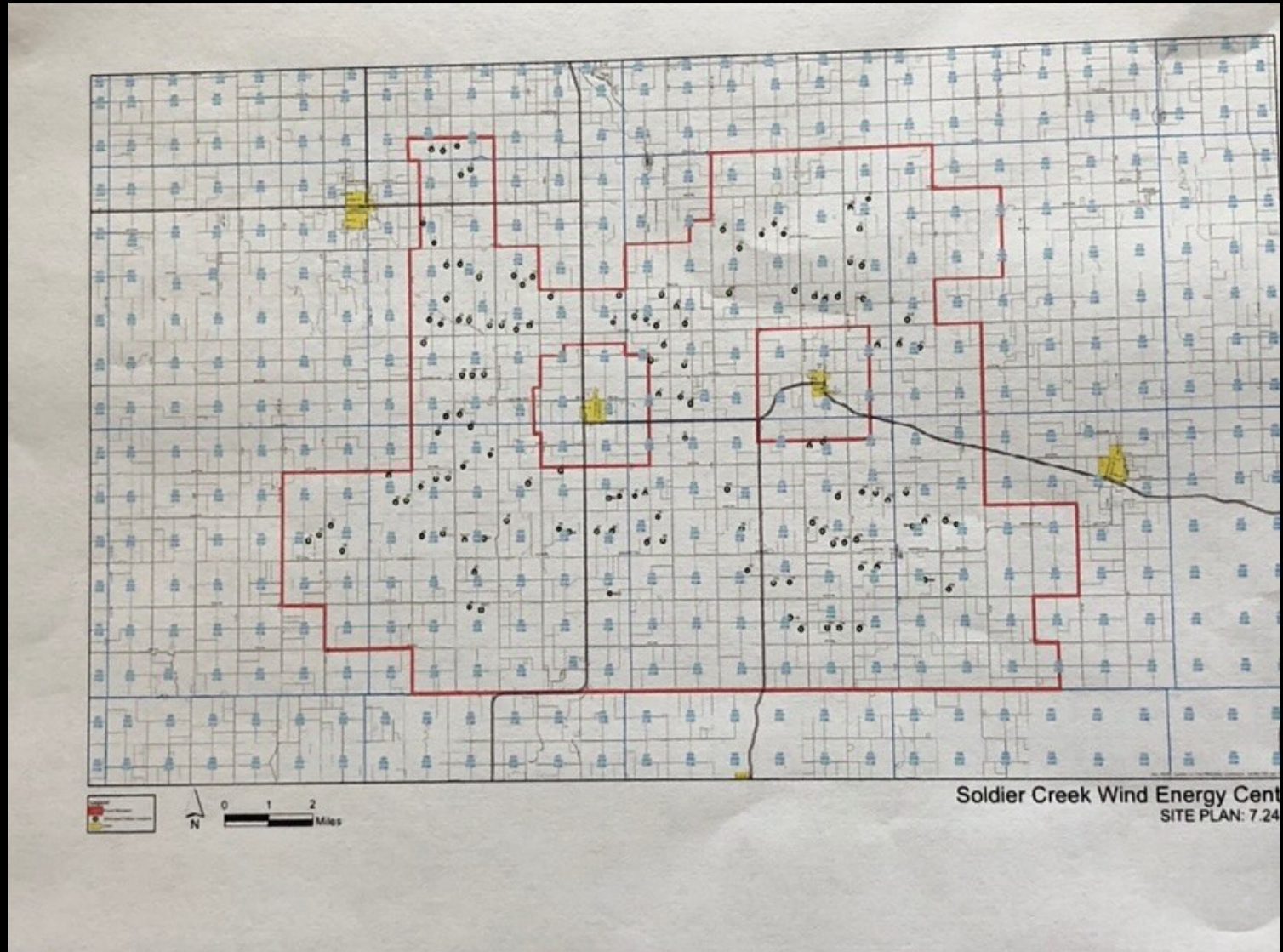
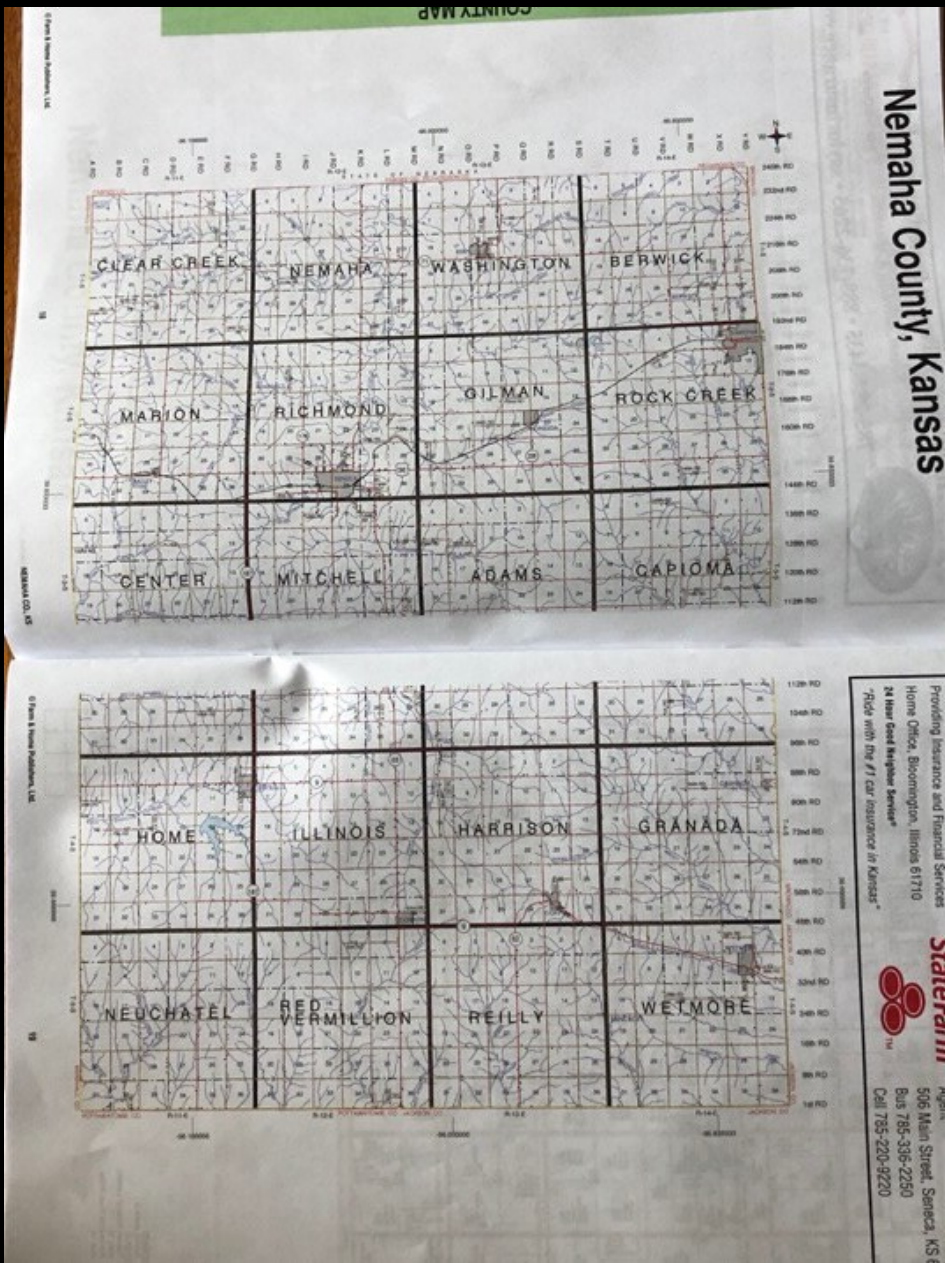
Farm







Soldier Creek Wind Farm



- 120 3 MG turbines producing 300 MG energy
- 450 feet tall from ground to tip of blade straight up
- Nemaha County has 30 year term agreement with energy co.
- County will receive about \$34 million over 30 years
- \$50 million in payments to participating landowners over 30 years
- Term agreement lays out conditions for decommissioning, road and bridge maintenance or repair and obligations, responsibilities etc.
- Nemaha county website for wind farm documents:
- <http://ks-nemaha.manatron.com/>
- <http://ks-nemaha.manatron.com/Portals/ks-nemaha/documents/Commissioners/Soldier%20Creek%20Term%20Sheet%20-%20Revised%207.30.19.pdf.pdf>

Leasing Process & Construction



August 2019
at the site

Construction-- Spring 2020-Nov. 2020















Contact Info

Mary Fund

785-799-7380

ksrc@rainbowtel.net

Next Workshop Dates



Final Workshop

July 13th - Wildlife with Zac Eddy and Pete Ferrell

To register visit

<https://bit.ly/2021KSWindWorkshops>

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