

## Rural Wind Windfalls

By K.K. DuVivier

Kansas Journal of Law and Public Policy Symposium—February 21, 2014

“Who could have guessed that the air above our land might be worth money someday?”<sup>1</sup>

### INTRODUCTION

“Windfall” means an unexpected gain, and as the quote from Larry Widdel above shows, wind energy provides farmers or ranchers with many pleasant surprises beyond that of wind-blown fruit.<sup>2</sup>

#### I. ECONOMIC BENEFITS

Wind power infuses cash into rural communities in a number of ways.

##### A. Direct Benefits

Jobs on wind farms  
Landowner lease payments  
Increased local tax base

##### B. Indirect Benefits

Indirect jobs such as support services  
Comparison to fossil fuel plant jobs

##### C. Induced Benefits

Peripheral business to local restaurants, retailers, daycare, etc.

##### D. Community Wind, A Local Investment Opportunity

#### II. ENVIRONMENTAL BENEFITS

- A. Low water use for development
- B. No emissions or health detriments
- C. No potential for toxic spills or permanent contamination
- D. Crop enhancement

#### III. CONCERNS

- A. Wildlife disruption

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<sup>1</sup> Larry Widdel, Minot, North Dakota (quoted in “Wind Energy for Rural Economic Development”, DOE EERE (August 2004)(EERE 2004).

<sup>2</sup> Definition 1: “something (as a tree or fruit) blown down by the wind” and 2: “an unexpected, unearned, or sudden gain or advantage.” <http://www.merriam-webster.com/dictionary/windfall>

B. Conflicts with other development of oil, gas, or other wind

IV. LEGAL CONSIDERATIONS

- A. Property Acquisition—Leasing, Easements, Severance
- B. Siting and Permitting
- C. Financing and Tax Issues
- D. Guidelines and model ordinances

**CONCLUSION**

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### INTRODUCTION

“Windfall” means an unexpected gain, and as the quote from Larry Widdel above shows, wind energy provides farmers or ranchers with many pleasant surprises beyond that of wind-blown fruit.<sup>2</sup>

Add Statistics re U.S. wind energy development and Kansas development specifically:

In 2012, Kansas more than doubled its installed wind capacity by adding 1,441 MW to the 1,272 installed before that date.<sup>3</sup> Now, at a total of 2,713, Kansas ranked 9<sup>th</sup> in the total U.S. for installed wind capacity.<sup>4</sup> But Kansas has much more potential. According to the NREL, Kansas is in second place (only against Texas?) for best wind resource and could be a net exporter of electricity because it has the potential to generate 90 times the state’s current electricity needs.<sup>5</sup>

#### I. ECONOMIC BENEFITS

Wind power infuses cash into rural communities in a number of ways.

##### A. Direct Benefits

Direct benefits from wind power development include jobs, lease payments, and increased tax revenues.<sup>6</sup> According to the USDA, over 90% of modern farm income comes from off-farm sources.<sup>7</sup> Wind energy provides an “alternative income stream” for these farmers.<sup>8</sup> Wind energy results in 60 to 80 new construction jobs per 100 MW of

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<sup>3</sup> AWEA KS stats at <http://www.awea.org/Resources/state.aspx?ItemNumber=5223> (AWEA KS)

<sup>4</sup> AWEA KS

<sup>5</sup> AWEA KS (but find original NREL data?).

<sup>6</sup> Wind Powering America Kansas Fact sheet (2007?) “Economic Benefits, Carbon Dioxide (CO<sub>2</sub>) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Kansas” (WPAK)

<sup>7</sup> EERE2004 referencing USDA (stating that 94% of farm income came from off-farm sources in 2003).

<sup>8</sup> EERE2004 (quoting Dan McGuire, Lincoln, Nebraska). In addition to jobs, wind turbines provide steady streams of revenue for farmers--\$4 to \$5 per acre to lease and \$10,000 per turbine per year according to Chris Tallman, president of the Colo. Association of Wheat Farmers (referenced in Cathy Proctor, *An Agricultural Windfall*, Denver Business Journal (Dec. 24-30, 2010)).

wind.<sup>9</sup> In addition, six to nine long-term operations and maintenance jobs result for every 100 MW of wind development.<sup>10</sup>

Land lease payments for wind energy average three to six percent of gross revenue and can be higher in some regions of the country.<sup>11</sup> Lease payment revenues alone can result in over \$2,500 per MW per year<sup>12</sup> or \$14,000 per year for a 250 acre farm based on 2004 turbine spacings.<sup>13</sup> In comparison, that same 250 acres might yield only \$90 worth of corn, \$40 worth of wheat, or \$5 worth of beef.<sup>14</sup> As an added benefit, none of those other activities—corn, wheat, or beef production—need to be abandoned with the introduction of the additional wind revenue.

In addition to added revenue for individual farmers, wind power development benefits entire communities in which the wind farm is located by increasing the local tax base. According to one source, property taxes on wind farms average \$2,900 per MW per year.<sup>15</sup> Given another example, if the property tax is 1% of the assessed value, then adding a wind project would increase the tax revenue by approximately \$10,000 per megawatt.<sup>16</sup>

Furthermore, from a property tax perspective, it is advantageous to construct a wind power plant in one's community instead of a conventional power plant. Because wind projects are more capital intensive, the property taxes attributed to them are two to three times higher per unit of energy than conventional plants.<sup>17</sup>

#### B. Indirect Benefits

Indirect benefits include those one step away from those directly related to the wind farm itself. Examples include increased activity for banks financing wind projects, suppliers of component parts for truck repair and so forth, or manufacturers of equipment used to install and maintain the wind facility.<sup>18</sup> Thus, wind energy generation stimulates local industries (concrete, roads, legal, etc.) and manufacturing.<sup>19</sup> The DOE has estimated that wind power development nationally could create 80,000 new jobs and result in \$1.2 billion in new income to farmers and rural landowners.<sup>20</sup>

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<sup>9</sup> Larry Flowers slideshow AWEA 2013 (Flowers)

<sup>10</sup> Flowers

<sup>11</sup> Flowers.

<sup>12</sup> WPAK Landowner Lease Payments= \$2,667/MW/year

<sup>13</sup> EERE2004

<sup>14</sup> EERE2004

<sup>15</sup> WPAK

<sup>16</sup> EERE2004

<sup>17</sup> EERE2004

<sup>18</sup> WPAK

<sup>19</sup> Flowers

<sup>20</sup> EERE2004

How do wind jobs relate to jobs created from conventional fossil fuel projects? According to one study, wind energy produces 27 percent more jobs per kilowatt-hour than coal plants and 66 percent more jobs than natural gas plants.<sup>21</sup>

#### C. Induced Benefits

Induced benefits are those more peripheral than either the direct or indirect benefits. These include increased business to local restaurants and retail establishments and support services for those who work at constructing and operating the wind farm such as health or child care.<sup>22</sup>

The National Renewable Energy Laboratory has developed tools for communities to calculate jobs and economic impacts of wind energy development including the ripple effects.<sup>23</sup> In addition, the DOE has calculated specifically dollar amounts for the benefits to Kansas from wind development.<sup>24</sup> While there has been some debate about the economic impacts associated with wind energy, specifically with respect to arguments about the “gross” as opposed to the “net” effects, a comprehensive “ex post” analysis of existing wind farms concluded that county-level employment increased “.5 jobs per megawatt” and that wind power resulted in “an average aggregate increase in annual personal income of approximately \$11,000 per megawatt of wind power capacity installed....”<sup>25</sup>

#### D. Community Wind, A Local Investment Opportunity

Some communities are reaping additional benefits by owning the wind farms built within their borders. Using limited liability companies as a vehicle for pursuing the development of wind farms directly owned by local farmers, communities can enhance local revenue streams.<sup>26</sup> When the farmers receive income not only from royalties but also from investment ownership, these LLCs can provide a source of income to farmers and benefit

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<sup>21</sup> EERE2004 citing study by New York State Energy Research and Development Authority.

<sup>22</sup> WPAK

<sup>23</sup> The JEDI Model estimates jobs and other economic impacts from new wind development [www.nrel.gov/analysis/jedi](http://www.nrel.gov/analysis/jedi)

<sup>24</sup> [http://www.windpoweringamerica.gov/pdfs/economic\\_development/2008/ks\\_wind\\_benefits\\_factsheet.pdf](http://www.windpoweringamerica.gov/pdfs/economic_development/2008/ks_wind_benefits_factsheet.pdf)

<sup>25</sup> Jason P. Brown, John Pender, Ryan Wiser, Eric Lantz, Ben Hoen, “Ex post analysis of economic impacts from wind power development in U.S. counties,” *Energy Economics* 34 (2012) 1743-1754 (Elsevier) Link? (these figures translate to a median increase in total county personal income and employment of .22% and .4%, respectively for the counties.) Brown et al p. 1753

<sup>26</sup> E. Lantz & S. Tegen, Nat’l Renewable Energy Lab., *Economic Development Impacts of Community Wind Projects: A Review and Empirical Evaluation* (2009). See also? Karlynn Cory et al., Nat’l Renewable Energy Lab., *Feed-in Tariff Policy: Design, Implementation, and RPS Policy Interactions* (2009).

the local community.<sup>27</sup> Furthermore, community buy-in can reduce opposition from NIMBY contingencies.<sup>28</sup>

However, community wind is a rarity in the United States. In comparison to 45 percent of wind projects in Germany and 83 percent in Denmark, only four percent of U.S. projects are community owned.<sup>29</sup> Some authors have suggested that instituting a feed-in tariff for these resources would stimulate community ownership because it would assist in overcoming the greatest hurdle to community wind—finding a long-term purchaser for the power produced.<sup>30</sup>

## II. ENVIRONMENTAL BENEFITS

Wind energy development has several advantages over conventional fuel development in terms of environmental benefits.

### A. Low water use for development

Wind is one of the only sources of power, aside from solar photovoltaics, that does not involve heating water or some other fluid to the boiling point and then forcing that steam into a turbine to create electricity. Most all other sources—coal, nuclear, natural gas—employ thermal energy through the Rankin Steam Cycle. The steam cycle is a very consumptive use of water, not only as the fluid that runs the turbines, but also for cooling the steam before the resulting water can be recirculated or released back into the environment. Coal and nuclear-generated electricity consume billions of gallons of water every year.<sup>31</sup> Water consumption can also be an issue in oil or gas fracking as the average well (in Colorado? Kansas?) consumes X gallons.<sup>32</sup>

Instead of using thermal energy, the kinetic energy of the turning blades directly generates electricity in a wind turbine. As a result, wind power is advantageous in parts of the country without extra water supplies. According to at least one study, wind energy saves 1,816 million gallons per 1,000 MW of power produced in comparison to conventional power plants.<sup>33</sup> Consequently, wind power means that farmers do not need to make the choice of

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<sup>27</sup> DOE EERE citing [www.windustry.com](http://www.windustry.com)

<sup>28</sup> Jacob Glickel, *Siting Wind Turbines: Collaborative Processes and Joint Fact Finding to Resolve NIMBY Disputes* (2003) <http://web.mit.edu/dusp/epp/music/pdf/glickel.pdf>

<sup>29</sup> Jansen fn 3 & 4 at 329-30 (fn 3 is John Farreell, on a website FIND BETTER SOURCE) (fn4 is Windstry.com)

<sup>30</sup> Brian Jansen, *Community Wind Power: Making More Americans Energy Producers through Feed-In Tariffs*, 20-SPR KAN. J. L. & PUB. POL'Y 329 (2011).

<sup>31</sup> Ronald H. Rosenberg, *Diversifying America's Energy Future: The Future of Renewable Wind Power*, 26 VA. ENVTL. L. J. 505 (2008).

<sup>32</sup> GET FRACKING WATER CONSUMPTION STATISTICS.

<sup>33</sup> WPAK

giving up irrigation of crops, but instead can continue with prior farming practices. In addition, wind power will result in more fresh water supplies.

B. No air emissions or health detriments

Wind energy does not produce any significant Greenhouse Gas (GHG) emissions during its principal life cycle.<sup>34</sup> According to at least one source, the CO<sub>2</sub> savings in using wind generated power in contrast to conventional power plants is 3.2 million tons of CO<sub>2</sub> for every 1,000 MW of power.<sup>35</sup>

In addition to GHG emissions, conventional power plants emit “thousands of tons” of other toxic emissions including “sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, hydrocarbons, mercury, and other pollutants, while wind power produces zero emissions.”<sup>36</sup>

Wind power development also has advantages over the fracking of oil and gas. Recent data shows that these processes emit X.<sup>37</sup>

C. No potential for toxic spills or permanent contamination

During the recent floods in Colorado oil and gas wells produced X of toxic spills. Even though wind turbines were also along the flood route, they continued to produce power (check this) without any contamination of the local environment.<sup>38</sup>

Furthermore, a recent study from University of Missouri in Columbia found that areas around fracking operations had higher incidences of endocrine blockers.<sup>39</sup>

D. Crop enhancement

Recent scientific findings seem to suggest yet another windfall to farmers in having a wind farm on their property (or just nearby): crop enhancement. Wind turbines create turbulence wakes forcing warmer air downward.<sup>40</sup> Although more research is required, one group of scientists has found evidence that turbines might be helping improve crop yields.<sup>41</sup>

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<sup>34</sup> Rosenberg. Life cycle analyses can be complex because it might be possible to argue that the manufacturing plant for the wind turbine or blades was run on coal-fired power or that the vehicles used for construction employed fossil-fuels. See generally, NREL LIFE CYCLE ANALYSES [GET URL](#)

<sup>35</sup> WPAK

<sup>36</sup> Rosenberg.

<sup>37</sup> Get latest EPA data.

<sup>38</sup> Need cites

<sup>39</sup> Cite Mizzou study

<sup>40</sup> Julie Lundquist, et al.

<sup>41</sup> Cathy Proctor, *An Agricultural Windfall*, Denver Business Journal at A3 (Dec. 24-30, 2010).

The wakes cool the plants on hot days and warm them to prevent freezing during colder nights.<sup>42</sup> In addition, the fanning breeze evaporates dew or other moisture, thus inhibiting the growth of damaging fungi and molds.<sup>43</sup>

### III. CONCERNS

Many initial concerns about wind power development have proved to be manageable.

- A. Wildlife disruption
- B. Conflicts with other development of oil, gas, or other wind

### IV. LEGAL CONSIDERATIONS

- A. Property Acquisition—Leasing, Easements, Severance
- B. Siting and Permitting
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- D. Guidelines and model ordinances

## CONCLUSION

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<sup>42</sup> Lundquist

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