Is Wind Energy Right for your Township?

MTA Annual Conference
April 11, 2017

Sarah Mills, PhD
What I’ll cover

• Overview of wind development

• Surveys of landowners
  o Individual impacts
  o Community impacts

• What should you consider?
Utility-scale windfarms in Michigan

- 900+ turbines
  - 1,600 MW (425,000 homes)
- 8 counties
Wind Development 101

• Zoning constraints

• Landowner payments
  o Disturbance
  o Royalty
  o Participation/friendly neighbor

• Property tax payments
  o ~$20M per year statewide
Survey Data

When, who, and where & what did I find?
2016 Community Survey

- Owners of land assessed as agricultural or residential
- 10 townships with windfarms
- 2,013 responses (53% response rate)
- Funded by C.S. Mott Foundation
2014 Farmland Survey

- All owners of land assessed ag
- 14 townships
  - 9 with windfarms
  - 5 without
- 1,210 responses (53% response rate)
- Funded by Dow Fellowship
Things to keep in mind

• Not all respondents live in township
  o Even if they do, some live far from turbines

• Results not weighted; more populous townships more represented

• Margin of error: ±1.5%
Overall drivers of attitudes

• Being within earshot of turbines

• Type of land owned
  o secondary vs. primary residence
  o farmland / rental property only

• Direct compensation
  o Some better than none
  o $1,000 per year as key threshold
Individual-level Impacts

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession
Individual-level Impacts

Turbines create noise pollution

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession

<table>
<thead>
<tr>
<th></th>
<th>All</th>
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<td>12</td>
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<tr>
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<td>29</td>
<td>22</td>
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<tr>
<td>Disagree</td>
<td>40</td>
<td>47</td>
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<tr>
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<td>12</td>
<td>18</td>
<td>10</td>
</tr>
</tbody>
</table>

Individual-level Impacts

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession
Individual-level Impacts

Turbines create visual/aesthetic problems

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
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<td>Visual</td>
<td>14</td>
<td>19</td>
<td>46</td>
<td>22</td>
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<td>Health</td>
<td>27</td>
<td>27</td>
<td>37</td>
<td>10</td>
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All Paid

Unpaid
Individual-level Impacts

Turbines cause human health problems

- Noise
- Visual
- **Health**
- Property value
- Farm income
- Farm succession

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<td>Agree</td>
<td>18</td>
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<tr>
<td>Disagree</td>
<td>49</td>
<td>47</td>
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<tr>
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<td>23</td>
<td>37</td>
<td>19</td>
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</table>
Individual-level Impacts

Turbines decrease nearby property values

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession

All
- Strongly agree: 24
- Agree: 30
- Disagree: 36
- Strongly disagree: 10

Paid
- Strongly agree: 14
- Agree: 21
- Disagree: 46
- Strongly disagree: 19

Unpaid
- Strongly agree: 27
- Agree: 33
- Disagree: 32
- Strongly disagree: 7
Individual-level Impacts

Investments over 5 years: 2009-2013

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession

<table>
<thead>
<tr>
<th>Category</th>
<th>Investment (k)</th>
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<tr>
<td>Non-windfarm</td>
<td>$187k</td>
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<tr>
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<td>$180k</td>
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<tr>
<td>Neighbors in pool</td>
<td>$193k</td>
</tr>
<tr>
<td>Turbines</td>
<td>$449k</td>
</tr>
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</table>

- Home
- Outbuildings
- Drainage/Irrigation
- Equipment
Individual-level Impacts

- Noise
- Visual
- Health
- Property value
- Farm income
- Farm succession

% that have farm succession plan

<p>| | |</p>
<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>Non-windfarm</td>
<td>57</td>
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<tr>
<td>Unpaid neighbors</td>
<td>64</td>
</tr>
<tr>
<td>Neighbors in pool</td>
<td>62</td>
</tr>
<tr>
<td>Turbines</td>
<td>80</td>
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</table>
Individual-level Impacts
Take-aways

• Views on noise, visual impact, property values roughly 50/50
  Financial stake = rosier view
  OR
  no financial stake = more soured view

• Most don’t see health impacts

• Having turbine on property results in additional on-farm investment, succession planning
Community-level Impacts

- Job creation
- Roads
- Township services
- County services
- Schools
- Relationships with neighbors
Community-level Impacts

- **Job creation**
- Roads
- Township services
- County services
- Schools
- Relationships with neighbors

Turbines create jobs

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<tr>
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<tbody>
<tr>
<td>Strongly agree</td>
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<td>Disagree</td>
</tr>
<tr>
<td>Strongly disagree</td>
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</table>

- 21 Strongly agree
- 57 Agree
- 15 Disagree
- 10 Strongly disagree

- 31 Strongly agree
- 54 Agree
- 10 Disagree
- 5 Strongly disagree

- 18 Strongly agree
- 58 Agree
- 17 Disagree
- 7 Strongly disagree
Community-level Impacts

- Job creation
- **Roads**
- Township services
- County services
- Schools
- Relationships with neighbors

### Turbines’ effect on local roads

<table>
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<th></th>
<th>All</th>
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<th>Unpaid</th>
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<tr>
<td>Greatly improved</td>
<td>7</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
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<td>60</td>
<td>32</td>
<td>67</td>
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<tr>
<td>Neither</td>
<td>8</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Somewhat worsened</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Greatly worsened</td>
<td>20</td>
<td>17</td>
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Community-level Impacts

- Job creation
- Roads
- Township services
- County services

$2.630 Million to townships in Huron County in 2015

Turbines’ effect on township services

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<thead>
<tr>
<th>Service Type</th>
<th>Greatly Improved</th>
<th>Somewhat Improved</th>
<th>Neither</th>
<th>Somewhat Worsened</th>
<th>Greatly Worsened</th>
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<td>4</td>
<td>10</td>
<td>2</td>
<td>73</td>
<td>57</td>
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<tr>
<td>Paid</td>
<td>18</td>
<td>29</td>
<td>0</td>
<td>79</td>
<td>3</td>
</tr>
<tr>
<td>Unpaid</td>
<td>3</td>
<td>14</td>
<td>0</td>
<td>79</td>
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Community-level Impacts

- Job creation
- Roads
- Township services
- County services

Turbines’ effect on county services

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<thead>
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</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Somewhat improved</td>
<td>15</td>
<td>26</td>
<td>11</td>
</tr>
<tr>
<td>Neither</td>
<td>77</td>
<td>62</td>
<td>82</td>
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</table>

$2.749 Million to county gov’t in Huron County in 2015
Community-level Impacts

- Job creation
- Roads
- Township services
- County services

Turbines’ effect on local schools

- Greatly improved
- Somewhat improved
- Neither
- Somewhat worsened
- Greatly worsened

$2.083 Million to ISD; $2.074 Million to local schools in Huron County in 2015
Community-level Impacts

Turbines’ effect on relationships with neighbors

<table>
<thead>
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<th>Unpaid</th>
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<tbody>
<tr>
<td>Greatly improved</td>
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<td>63</td>
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<tr>
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<tr>
<td>Neither</td>
<td>11</td>
<td>7</td>
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<tr>
<td>Somewhat worsened</td>
<td>5</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Greatly worsened</td>
<td>11</td>
<td>7</td>
<td>12</td>
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- Job creation
- Roads
- Township services
- County services
- Schools
- Relationships with neighbors
Community-level Impacts

Take-aways

• Most see job creation (with caveat about types of jobs)

• Majority haven’t seen changes to community services, schools, or relationships with neighbors
  o Tax uncertainty
  o Increasing cost of services may limit visible impacts
Would they welcome wind development again?

- Quality of life
- Willingness to accept new turbines
Would they welcome wind development again?

Turbines’ effect on overall quality of life in township

- Quality of life
- Willingness to accept new turbines

<table>
<thead>
<tr>
<th></th>
<th>Greatly improved</th>
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<th>Neither</th>
<th>Somewhat worsened</th>
<th>Greatly worsened</th>
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<td>3</td>
<td>13</td>
<td>55</td>
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<tr>
<td>Paid</td>
<td>7</td>
<td>21</td>
<td>54</td>
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<td>Unpaid</td>
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<td>10</td>
<td>55</td>
<td>22</td>
<td>11</td>
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27
Would they welcome wind development again?

- Quality of life
- Willingness to accept new turbines

### Willingness to host additional turbines in your township

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<th>All</th>
<th>Paid</th>
<th>Unpaid</th>
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<tbody>
<tr>
<td>Strongly support</td>
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<td>26</td>
<td>10</td>
</tr>
<tr>
<td>Somewhat support</td>
<td>23</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Neither</td>
<td>10</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Somewhat oppose</td>
<td>20</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Strongly oppose</td>
<td>18</td>
<td>32</td>
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Quality of Life: 21
Willingness to accept new turbines: 18
What should you consider?

How to reap the benefits without the heartburn
How does this fit with your long-term plan?

- If goal is for substantial residential development or growth of tourism, wind may not be right
- If goal is to sustain agriculture, wind can fit
The ideal zoning ordinance?

Support/oppose additional turbines in township, by zoning setback distance

<table>
<thead>
<tr>
<th></th>
<th>Unzoned township</th>
<th>1.5x height</th>
<th>1,000'/1,320'</th>
<th>1,320'</th>
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<tbody>
<tr>
<td>Strongly support</td>
<td>24</td>
<td>28</td>
<td>27</td>
<td>27</td>
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<tr>
<td>Somewhat support</td>
<td>28</td>
<td>27</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Neither</td>
<td>27</td>
<td>22</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Somewhat oppose</td>
<td>7</td>
<td>8</td>
<td>31</td>
<td>37</td>
</tr>
<tr>
<td>Strongly oppose</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>
Zoning ordinance considerations

- Setback distance
  - Participating vs. non-participating landowners

- Noise limit and enforcement

- Flicker analysis

- Decommission plan/financial assurance
The importance of transparency

Support/oppose additional turbines in township, by agree/disagree wind developer acted transparently

“The wind project developer acted openly and transparently throughout the planning process.”
The importance of transparency

Support/oppose additional turbines in township, by agree/disagree local officials acted in best interest

“Local government officials’ decisions about the wind project were in the best interests of our township.”
Be ready to answer questions

- About who benefits / amount of tax revenue
- About decommissioning
Invite me to your township

• Grant from C.S. Mott Foundation covers my expenses—all you need to do is invite me

• Aim: to provide evidence-based account of experiences across the state

• I can give a presentation, or just answer questions
The CLOSUP Wind Project

Sarah Mills, Project Manager
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Email: sbmills@umich.edu
Web: www.closup.umich.edu/wind