

PERCEPTIONS OF THE IMPACT OF WIND ENERGY GENERATION IN COASTAL COMMUNITIES

Impact Perceptions

prepared by the msu land policy institute and the great lakes commission

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Introduction

Wind energy can summon strong responses from community residents, whether or not a wind farm has been proposed. Qualifying the reasons for these reactions involves a look into what wind represents for different people in different places.

For some, wind energy means energy security and independence, cleaner air, cleaner water, slowing the effects of climate change or an economic development opportunity. For others wind power developments represent a dramatic change to a community and an industrial incursion into rural landscapes. This may include a change in property values, environmental risks, impaired aesthetics and even a change to a community's identity.

The challenge to objectively considering wind development is in finding the balance between the concerns and anxieties of a community and the benefits they would receive. The way the current system operates, most of the intended benefits of wind energy are felt at the state or national level—jobs may be created throughout a state, or the country may become less reliant on non-renewable sources of energy. Local benefits, including new jobs, a cleaner environment and steadier energy prices, are tempered by real or perceived negative effects of wind. Finding ways to balance the risks and rewards of wind energy is essential. As with all potentially controversial issues, it may not be possible to reach consensus on wind energy, but exploring the issues in depth with a community can help educate those community members who may not have yet formed an opinion on wind power.



In early 2010, the Michigan State University (MSU) Land Policy Institute (LPI) sent a mail survey to 300 randomly selected households in each of the study areas (900 total surveys mailed). Three-hundred seventy-five surveys were returned for a response rate of 45%. The survey consisted of closed-end questions centered on the following themes: attitudes towards commercial wind farm development, perceived effects of wind farms, distributive and procedural fairness and general values and environmental beliefs. Most of the questions asked respondents to consider how they would feel about a commercial wind farm development in or near their community—defined as the township, village or city in coastal Michigan where they live during all or part of the year. The remainder of this factsheet focuses on the results of the survey regarding impact perception issues.



What We Heard from Our Focus Groups about the Environment

Pros

- Source of renewable energy
- Clean energy and fewer emissions
- Visible source of power and reminds people of energy use

Cons

- Avian mortality
- Habitat destruction in forested areas
- Construction-based impacts of generation and transmission

Introduction (Cont.)

Impact Perceptions

Contrasting views of wind development have created a great deal of discussion in the policy arena, at all levels, as to how these issues should be regulated and the impacts mitigated. Therefore, the survey asked random residents of coastal communities how they feel regarding these issues. This discussion is complicated to some degree by the participant's responses. As wind is a controversial issue in many communities, it brings out strong feelings in portions of the population. Reaction to this segment of the population, whether they are in favor of wind or against it, risks losing sight of what the non-vocal majority of residents feel on the issue. This factsheet summarizes the opinions of the public in coastal communities regarding the potential impacts of commercial wind farm development in a community, as well as the level of knowledge respondents say they have about renewable energy and wind energy.

Opinions of Coastal Residents

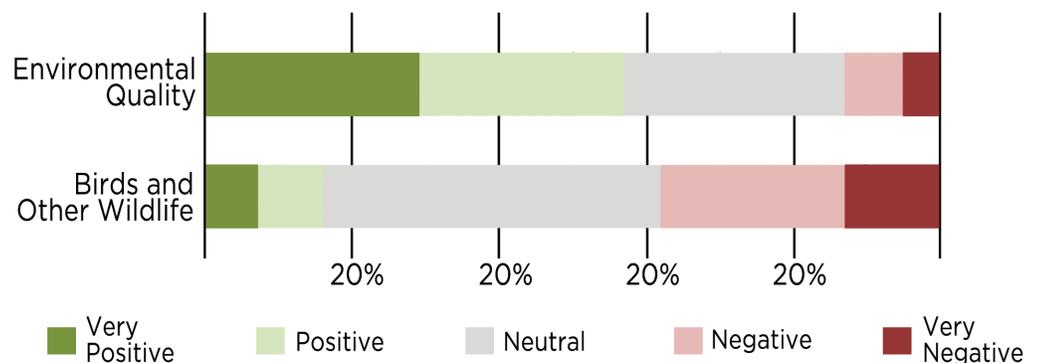
Perceived Impact of Wind Farm Development on the Environment

Respondents were asked a couple of questions related to their opinions about the potential environmental impact that wind farm development could have on their community. See Figure 1 for details.

Environmental Quality

Respondents were asked to what extent the development of a commercial wind farm will have negative or positive effects on environmental quality. More than half, 57%, say it will bring either positive (28%) or strongly positive (29%) effects. Thirty percent say the effects will be neutral. Those indicating such development will result in strongly negative effects make up 5% of the responses, as compared to the 8% feeling it will have negative impacts on environmental quality.

Figure 1: Perceived Impact of Wind Farm Development on the Environment



Opinions of Coastal Residents (Cont.)

Birds and Other Wildlife

The survey then asked respondents to what extent they feel the development of a commercial wind farm will have negative or positive effects on birds and other wildlife. Close to half of the respondents, 46%, say the effects will be neutral. A little over a quarter of the responses, 16%, say such development will have strongly positive (7%) and positive effects (9%). The remaining 13% of respondents feel A quarter of respondents feel such development will have negative effects on birds and wildlife, with 13% feeling it will have strong negative effects.

Perceived Impact of Wind Farm Development on the Economy

Respondents were asked a series of questions related to their opinions about the potential economic impact that wind farm development could have on their community. Responses are depicted in Figure 2.

Economic Development

Respondents were asked to give their opinions as to what extent the development of a commercial wind farm will have negative or positive effects on economic development. An overwhelming majority, 74%, say the effects will be strongly positive (30%) or positive (44%). Those who say the effects will be neutral are 18%. The remaining responses, 8%, indicate that wind farm development will have negative (3%) or strong negative (5%) effects on economic development.

Tax Base

When asked to what extent the development of a commercial wind farm will have negative or positive effects on the tax base, more than half of respondents, 53%, say it will bring either positive (33%) or strongly positive (20%) effects. Those indicating the effects will be neutral are 35%. The remaining 12% of respondent feel such development will have negative (5%) or strongly negative (7%) effects on the tax base.

Tourism and Related Businesses

The survey asked residents to what extent they feel commercial wind farm development will have negative or positive effects on tourism and related businesses. Close to half of the respondents, 47%, say it will have a neutral effect. While the remaining 53% of responses are almost evenly split. Ten percent feel there will be a strongly positive effect, 18% say it will be a positive effect, 17% indicate a negative effect, and the remaining 8% feel it will have a strongly negative effect on tourism and related businesses.

Availability of Jobs

The survey then asked residents to what extent they feel the development of a commercial wind farm will have negative or positive

What We Heard from Our Focus Groups about the Environment (Cont.)

Information Gaps/ Remaining Questions

- Effects of lighting on birds and other wildlife
- Effects on wildlife beyond birds/bats
- What are the environmental impacts of construction, transmission, maintenance, etc.?

What We Heard from Our Focus Groups about the Economy Information Gaps/ Remaining questions

- More information on the effects on property taxes
- Benefit and cost analysis
- Local benefits and costs

Opinions of Coastal Residents (Cont.)

effects on the availability of jobs. Almost three-quarters of the respondents say such development will have positive (40%) or strongly positive (31%) effects. About a fifth, 23%, say the effects will be neutral, while a small portion, 6%, feels such development will have negative or strongly negative effects on the availability of jobs, at 3% each.

Property Values

Respondents were also asked to give their opinions as to what extent they feel the development of a commercial wind farm will effect property values in their area. Almost half, 46%, feel there will be either positive or negative effects on property values. This is followed by 24% of respondents saying there will be positive (14%) or strongly positive effects (10%). This is matched by 30% of respondents who say there will be adverse effects on property values, with 20% feeling it will be negative and 10% saying it will be strongly negative.

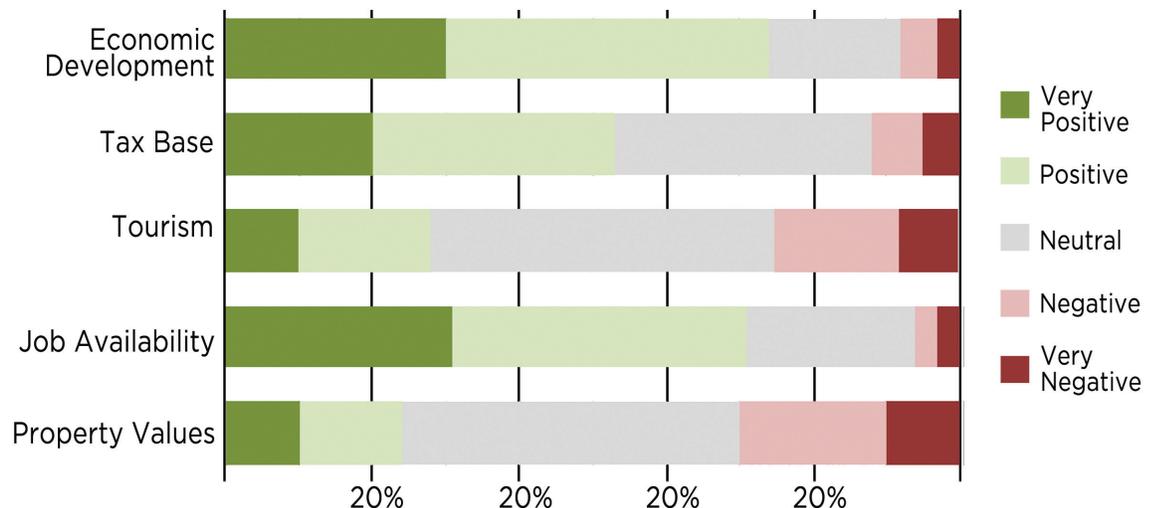
Perceived Impact of Wind Farm Development on Local Energy Output

Respondents were asked two questions related to their opinions about the potential energy-based impact wind farm development could have on their community. See the breakdown of responses in Figure 3.

Reliability of Electricity

When asked to what extent they believe the development of a commercial wind farm will have negative or positive effects on the reliability of electricity, more than half say it will have a positive (33%) or a strongly positive (28%) effect. A quarter of respondents feel

Figure 2: Perceived Impact of Wind Farm Development on the Economy



Opinions of Coastal Residents (Cont.)

such development will have a neutral effect. The portion indicating there will be a negative (9%) or strongly negative (5%) effect on the reliability of electricity make up 14% of respondents

Energy Independence

The majority of respondents, 73%, feel the development of commercial wind farms will have a positive effect on energy independence, with 39% saying it will have a positive effect and 34% saying it will have a strongly positive effect. Those saying the effects will be neutral account for 20% of respondents. Finally, 4% feel wind development will have a negative effect on energy independence, while 3% say it will be strongly negative.

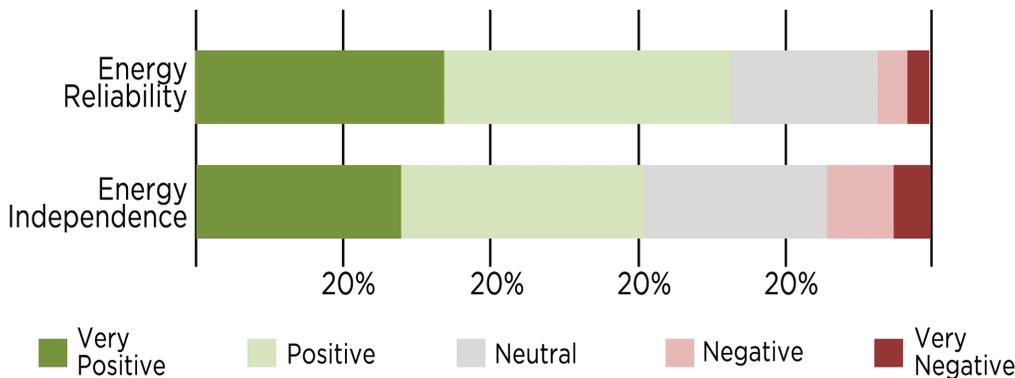
Perceived Impact of Wind Farm Development on Members of the Community

Respondents were asked a series of questions related to their opinions about the potential impact wind farm development could have on themselves and other community members. See Figure 4.

Scenic Views

When asked to what extent they feel development of a commercial wind farm will have negative or positive effects on scenic views, more than a third of those surveyed, 36%, say the effects will be neutral. The next highest segment, 29%, comes from those feeling the effects will be negative. This is followed by the 15% who say such development will have strongly negative effects. The remaining 20% feel the development of a wind farm will have positive (13%) and strongly positive (7%) effects on scenic views.

Figure 3: Perceived Impact of Wind Farm Development on Energy Output



What We Heard from Our Focus Groups about the Economy (Cont.)

Pros

- Energy independence
- Lower energy costs
- “Green” economic development
- Jobs
- More income for land owners
- Tax revenue for municipalities

Cons

- Feasibility in area
- Profits leave the community
- Development costs
- Higher Utility rates

What We Heard from Our Focus Groups about Visual Issues

Pros

- None listed

Cons

- Visually intrusive
- Scale does not fit landscape
- Disturbance of pristine landscapes

Information

Gaps/Remaining Questions

- Visual effects of transmission, roads and construction
- Public attitudes of wind farms after construction

Opinions of Coastal Residents (Cont.)

Noise Levels

The survey then asked to what extent respondents feel the development of a commercial wind farm will have negative or positive effects on noise levels. A surprising 46% of the participants, say the effects will be neutral. On the other hand, close to 40% say the effects will be strongly negative (12%) and negative (26%). Finally, 8% indicate this type of development will have strongly positive effects on noise levels.

Community Unity

Finally, the survey asked participants about the potential impact commercial wind farm development will have on their community's unity. Again, close to half the respondents, 48%, say the effects will be neutral. A little over a third of the respondents, 34%, feel some level of agreement that the impact will be positive, with 23% saying it will be positive and 11% saying it will be strongly positive. The remaining 18% of the respondents feel the potential impact wind farm development will have on their community's unity will be negative, with 12% indicating the impact will be negative and 6% indicating it will be strongly negative.

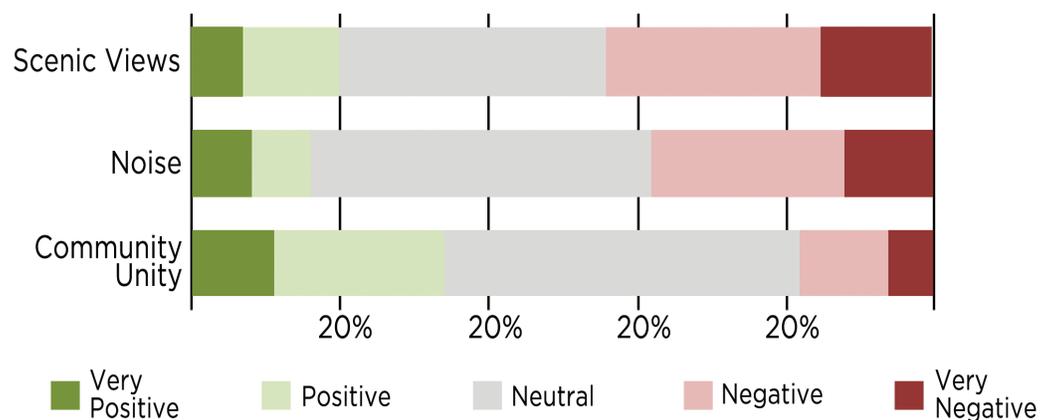
Views on a Wind Farm Being Constructed in My Community

Respondents were asked a series of questions related to their opinions about wind farm development in their community.

Conflicted about Wind Farm Development in My Community

The survey asked participants if they feel conflicted about a wind farm being constructed in their community. The highest percentage of respondents, 30%, say they are not conflicted, followed by 27% who

Figure 4: Perceived Impact of Wind Farm Development on Members of the Community



Opinions of Coastal Residents (Cont.)

are neutral. Twenty percent feel strongly that they are not conflicted. Finally, 17% of respondents indicate they do feel conflicted, with an additional 6% saying they are strongly conflicted about a wind farm being constructed in their community. See Figure 5.

Wind Farm Development in My Community is Very Important to Me Personally

Participants were also asked if they agree that a wind farm being developed in their community will be very important to them as an individual. Most respondents (33%) say it is neither very important nor very unimportant to them, and are neutral. Next, close to half, 49%, feel there is some level of importance, with 30% in agreement and 19% in strong agreement. Furthermore, 10% do not agree, followed by 8% who strongly disagree that wind farm development in their community will be very important to them as an individual. See Figure 6.

A Wind Farm is Likely to Be Built in My Community

When asked if a wind farm is likely to be built near their community in the next five years, most respondents (40%) neither agree nor disagree and are neutrality. The next segment, 38%, feel there will be a wind farm built near their community soon, with 29% in agreement and 9% in strong agreement. The last group of respondents, 22%, feel some level of disagreement that it is likely that a wind farm will be built near their community in the next five years, with 14% disagreeing and 8% strongly disagreeing. See Figure 7.

Figure 5: Conflicted about a Wind Farm Being Constructed in My Community

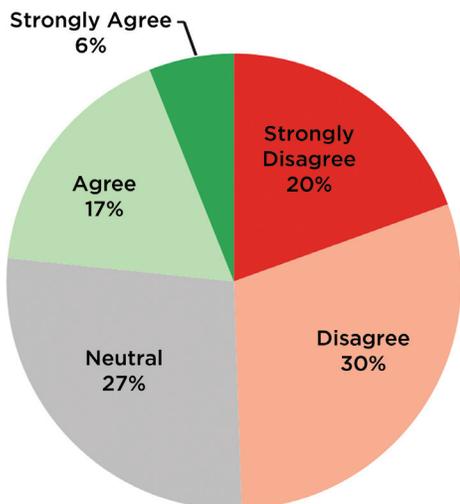
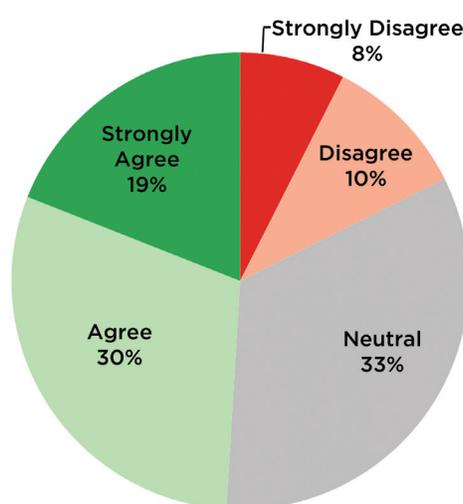


Figure 6: Wind Farm Development in My Community is Very Important to Me Personally



What We Heard from Our Focus Groups About Quality of Life

Pros

- Attention and publicity for community

Cons

- Public health/safety risks
- Noise in natural areas/rural communities
- Construction effects
- Shadow flicker
- Lack of experience siting/constructing turbines in populated areas
- Public opposition and conflict

Information Gaps/Remaining Questions

- More data on the effects of noise in rural areas

Opinions of Coastal Residents (Cont.)

Knowledgeable and Confident about My Views on Wind Farms and Renewable Energy

Respondents were then asked a series of questions relating to their knowledge and confidence of their views about wind farms and renewable energy.

Knowledgeable about Renewable Energy

Participants were also asked whether they agree or disagree that they feel very knowledgeable on the subject of renewable energy. Those who are neutral make up 38% of the respondents. A little over a quarter of the respondents disagree at 25%, followed by 18% in agreement. Of those feeling strongly a one way or the other about their knowledge of renewable energy, there are twice as many, 13%, feel strong disagreement when compared to those feeling strong agreement (6%). See Figure 8.

Know a Great Deal about Wind Farms

Forty-one percent of respondents are neutral as to whether or not they agree they know a great deal about wind farms. Those indicating they disagree (31%) and strongly disagree (16%) make up almost half of the respondents at 47%. The remaining 12% feel a level of agreement, with 10% agreeing and only 2% strongly agreeing that they know a great deal about commercial wind farm development. See Figure 9.

Figure 7: A Wind Farm is Likely to Be Built in My Community

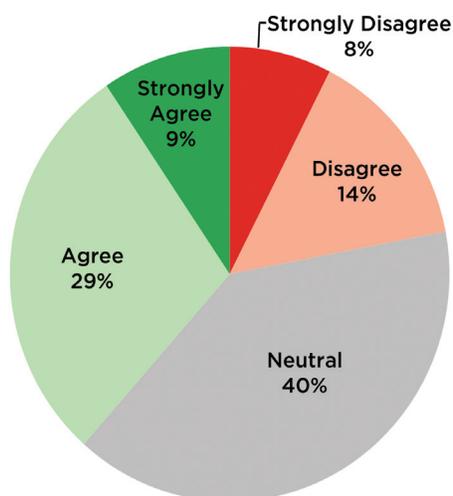
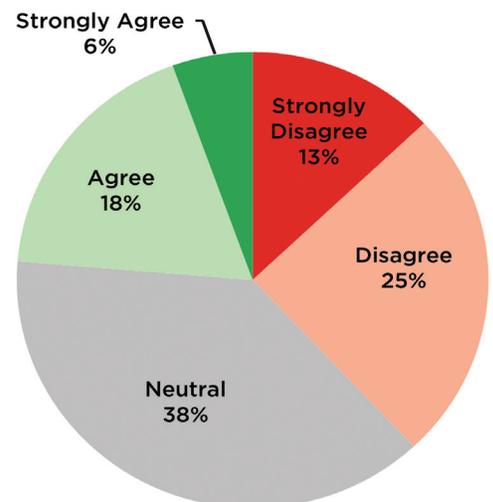


Figure 8: Knowledgeable about Renewable Energy

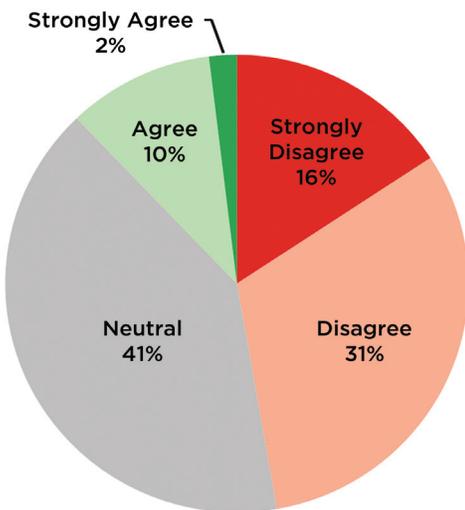


Opinions of Coastal Residents (Cont.)

Confident about My View of Wind Farms

Thirty-nine percent of respondents are confident about their views of wind farms, while 30% are neutral. Those who are very confident about their views make up 17% of the total. Those expressing some lack of confidence about their views of wind farms account for the remaining 14%, with 11% saying they are not confident, and the smallest portion, 3%, who feel very unconfident. See Figure 10.

Figure 9: Know a Great Deal about Wind Farms



Frequently Converse about Issues Related to Wind Farms

When asked if they have frequently discussed issues related to wind farms in the past year with friends and family, 27% of respondents are neutral (undecided) on the subject. This is matched by 27% who agree that they have, followed closely by 24% who disagree, with an additional 15% saying they strongly disagree. Finally, 5% strongly agree wind farms had been a topic of discussion for them in the past year. See Figure 11.

Figure 10: Confident about My View of Wind Farms

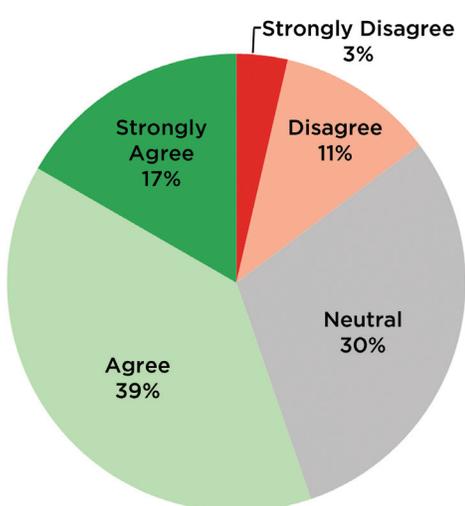
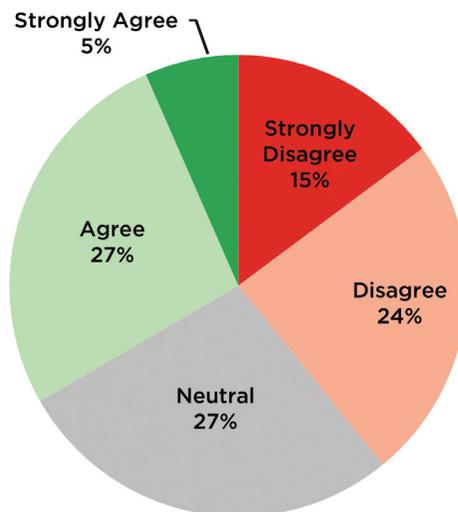


Figure 11: Frequently Converse about Issues Related to Wind Farms



Discussion



Respondents indicated overall that wind energy is a benefit to the environment; however, overall they also felt that it will have negative impacts on scenic views, noise levels, birds and other wildlife. They also felt that there was potential for jobs and economic development, but that

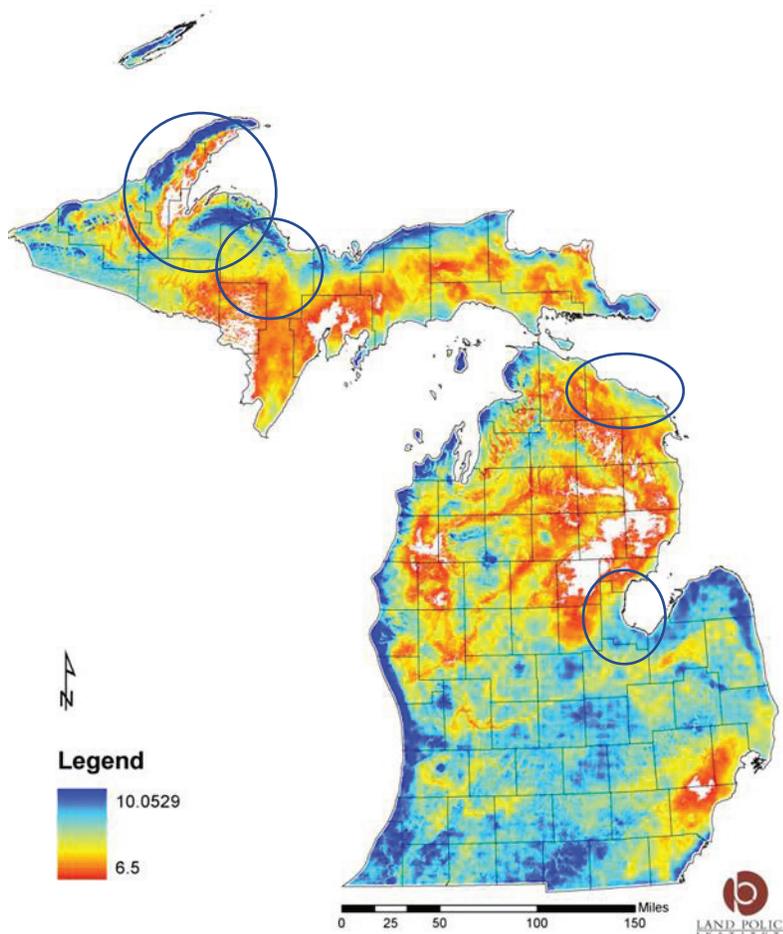
there would be a negative impact on property values. The pattern of responses were indicative of the tension between the benefits of wind farms that are perceived as accruing at large scales (state, national), and the negative impacts that are perceived as accruing very locally. This tension has become the core of the discussion regarding whether the opposition to wind energy development is simply a NIMBY (not in my backyard) reaction, or whether it is due to deeper issues in the process and the scale-of-benefits accrual. Therefore, it seems that clarity on exactly what the positive and negative impacts of a potential wind energy development are would be in the best interest of the public and the developers. Without strong communication and education regarding the impacts, it is difficult for community members to make informed choices, which may lead to what has been characterized as NIMBY resistance, as they seek to mitigate perceived risks.

There was an interesting contrast in the results regarding responses about being knowledgeable about wind farms and being confident in their views on wind farms. A total of 12% of respondents felt they know a great deal about wind farms, while 56% of respondents report that they were confident in their views on wind farms. This indicates that a substantial proportion of the respondents (either in favor or opposed to wind development) are confident in their views, but do not feel that they have a great deal of knowledge about the topic. This type of response is not unique regarding controversial land uses; however, it does indicate that a substantial proportion of the respondents were forming views without a high level of literacy on wind energy development. This indicates a need for education and outreach by the developers and others, as well as a significant effort on the part of local and state government to broadly disseminate information regarding proposed developments and to actively engage the public in the process for planning for wind energy, as these efforts have been shown to raise literacy on other controversial land uses. There is a large shortfall of high-quality outreach and education that are based in sound science related to the development of wind energy that could bridge this knowledge gap and provide a basis for informed decision-making.

Project Description

Michigan is recognized as a state with strong wind energy development potential. Windy, coastal communities will face pressure to develop wind farms for many years to come. This factsheet is part of a Michigan Sea Grant-funded integrated assessment of wind energy in coastal communities. During 2010, the MSU Land Policy Institute hosted focus groups and surveyed residents in Michigan coastal communities to understand their perceptions of wind energy. As represented in Figure 12, the coastal community areas selected as the focus of the study included Bay County, Presque Isle County, and a four-county area of the Upper Peninsula (Baraga, Houghton, Keweenaw and Marquette counties)

Figure 12: Map of Focus Area Communities with Wind Resource at 100 Meters (m/sec)



Map Produced by Land Policy Research at the Land Policy Institute, Michigan State University, 2009.

Wind Farm Development in Coastal Communities Integrated Assessment Factsheet Series

1. Community Views
2. Energy Policy Priorities
3. Regulation Issues
4. Trust and Fairness Issues
5. Impact Perceptions
6. Project Overview

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Project Description (Cont.)

Through the survey and focus groups, LPI identified the costs, benefits, consequences and optimum approaches for locating wind energy-generating facilities in Michigan coastal communities



by assessing multiple factors that affect their siting. As a result, an integrated assessment tool was developed that these communities can use for creating policy and making decisions about such facilities.

The MSU Land Policy Institute partnered with the Great Lakes Commission, the Great Lakes Wind Collaborative and the MSU Environmental Science and Policy Program throughout this project. These groups also provided assistance to LPI for this project. This factsheet #WND-5 is part of the Wind Farm Development in Coastal Communities Integrated Assessment factsheet series. Results of the project will assist Michigan coastal communities with assessing multiple factors that affect the siting of wind generating facilities. Communities may use the tool for developing legally and technically sound policy and making decisions about such facilities.

For more information on this project and to view the other factsheets in this series, please visit www.landpolicy.msu.edu and click on the project link in the green "Check out LPI" box in the left-hand column of the site.

Photos by Miguel Saavedra, front cover; stock photography, pg. 10; and Steve Ford Elliott, back cover.

