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# EXPLORING SITING GUIDANCE: AGRICULTURE SITING MATRICES INFORM RENEWABLE ENERGY SITING

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## I. INTRODUCTION

Renewable energy continues to be a growing industry in the U.S., especially in states like Iowa and Nebraska where wind energy accounted for 57% and 24%, respectively, of the total electricity generation in 2020.<sup>1</sup> The share of renewable energy in the U.S. electricity generation mix is projected to double from 21% in 2020 to 42% by 2050, primarily due to increases in wind and solar energy.<sup>2</sup> As more companies, municipalities, states, and utilities set clean energy goals, the demand for renewable energy will continue to increase, especially as more utility-scale projects are developed.

Renewable energy development is still relatively new, and many counties and states are being approached with development requests for the first time. Utility-scale energy projects and many community-scale projects must get a permit—usually a conditional use or special use permit—before construction can begin. The process

of obtaining permits varies from state to state and county to county, but usually the decision is made by locally elected county officials. Due to the complexity of energy projects, the process of drafting ordinances and approving permits can be confusing and challenging for local officials. Because many states lack renewable energy siting guidance, local officials must seek accurate information and siting resources on their own while balancing community input. A renewable energy-siting matrix can help decision makers in this process.

While a renewable energy siting matrix is a relatively new tool, the concept has been applied and used in other industries for years. The agricultural sector has used it to create livestock siting matrices, which provide guidance for responsible siting of livestock animal feeding operations. Review and assessment of Iowa's and Nebraska's livestock siting matrices can inform how similarly structured guidance might serve as a useful tool for local decision makers reviewing renewable energy project permits.

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1 “U.S. States: State Profiles and Energy Estimates.” U.S. Energy Information Administration, 2019, [eia.gov/state](https://www.eia.gov/state). Accessed May 2022.

2 Dubin, Kenneth. “EIA projects renewables share of U.S. electricity generation mix will double by 2050.” U.S. Energy Information Administration, Feb. 8, 2021, [eia.gov/todayinenergy/detail.php?id=46676](https://www.eia.gov/todayinenergy/detail.php?id=46676). Accessed May 2022.

## II. HISTORY OF SITING GUIDANCE

Agriculture is the driving force of the midwestern United States' economy, representing one of the most intense areas of agricultural production

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in the world.<sup>3</sup> However, the industry comes with many factors and challenges that must be considered to balance economic growth with environmental and safety concerns and community impact. All of these factors are key considerations when it comes to the responsible siting of livestock animal feeding operations. Due to the number and complexity of factors to be considered in siting decisions, the state of Iowa developed a tool to help with this task and adopted the Livestock Master Matrix in 2002.<sup>4</sup> Nebraska created a similar matrix in 2015.<sup>5</sup>

The burgeoning renewable energy industry in the Midwest presents similar siting challenges. The complexities, challenges, solutions, and lessons learned from the agriculture industry’s creation of siting tools can inform siting guidance for the renewable energy industry. The following sections will provide an overview of the matrices developed in Iowa and Nebraska and analyze the pros and cons of a siting matrix model.

## A. MATRIX SITING MODEL IN IOWA

In Iowa, the Master Matrix was created in response to community and natural resource concerns, particularly related to air, soil, and water quality issues with the intention of bringing county government into the siting process of large livestock animal feeding operations.<sup>6</sup>

Therefore, the Master Matrix requires that anyone seeking to build or expand a confined animal feeding operation (CAFO) must obtain a

construction permit from the Department of Natural Resources (DNR) if the CAFO houses a number of animals above a specified limit.<sup>7</sup> The owner of a CAFO must submit a completed Master Matrix with a required application. The matrix consists of a series of questions related to the project, and points are awarded based on how well the practices reduce impact on the air, water, and the community.<sup>8</sup> Applicants must score a minimum of 440 out of a possible 880 points to qualify for a permit.

After the application has been submitted, county supervisors can recommend the DNR approve or deny the permit, but the DNR makes the final decision. County officials may join the DNR on site visits to inform their recommendation. If county supervisors disagree with the DNR’s decision, they can appeal to the state Environmental Protection Commission.<sup>9</sup> A county’s recommendation does not have to follow the results of the Master Matrix application, but the DNR’s final decision must be solely based on compliance with the state’s CAFO regulations and the Master Matrix score. If a CAFO application meets both requirements, the DNR must issue the permit regardless of county or public opposition.<sup>10</sup>

A county’s supervisors may decide whether or not to use the Master Matrix and must pass a resolution every year stating their intention. Today, 89 of Iowa’s 99 counties have adopted the

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3 “Agriculture in the Midwest.” Climate Hubs, U.S. Department of Agriculture, [climatehubs.usda.gov/hubs/midwest/topic/agriculture-midwest](https://climatehubs.usda.gov/hubs/midwest/topic/agriculture-midwest). Accessed May 2022.

4 “2002 Summary of Legislation: Agriculture.” Iowa General Assembly, Legislative Service Bureau, June 18, 2002, [legis.iowa.gov/docs/ga/79ga/session.2/summary/agri.htm](https://legis.iowa.gov/docs/ga/79ga/session.2/summary/agri.htm). Accessed May 2022.

5 “Development of a Livestock Siting Assessment Matrix.” Livestock and Poultry Environmental Learning Community, April 18, 2019, [lpec.org/development-of-a-livestock-siting-assessment-matrix](https://lpec.org/development-of-a-livestock-siting-assessment-matrix). Accessed May 2022.

6 Merchant, James, and David Osterberg. “DNR scoring system fails to protect Iowans’ air, water, health.” *The Des Moines Register*, Sept. 7, 2017, [iowapolicyproject.org/2017OpEds/170911-oped-matrix-dmr.pdf](https://iowapolicyproject.org/2017OpEds/170911-oped-matrix-dmr.pdf). Accessed May 2022.

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7 “AFO Construction Permits.” Iowa Department of Natural Resources, [iowadnr.gov/Environmental-Protection/Animal-Feeding-Operations/AFO-Construction-Permits#16368354-permitted](https://iowadnr.gov/Environmental-Protection/Animal-Feeding-Operations/AFO-Construction-Permits#16368354-permitted). Accessed May 2022.

8 “Livestock master matrix adopted in 89 counties.” Iowa Department of Natural Resources, Feb. 6, 2020, [iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/2841/Livestock-master-matrix-adopted-in-89-counties](https://iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/2841/Livestock-master-matrix-adopted-in-89-counties). Accessed May 2022.

9 Ibid.

10 “It’s time to dump ‘The Matrix.’” Sierra Club, Iowa Chapter, [sierraclub.org/sites/www.sierraclub.org/files/sce/iowa-chapter/Ag-CAFOs/Matrix.pdf](https://sierraclub.org/sites/www.sierraclub.org/files/sce/iowa-chapter/Ag-CAFOs/Matrix.pdf). Accessed May 2022.

matrix, making its use mandatory.<sup>11</sup> Therefore, siting practices may end up favoring the permit applicant over public interest.

## B. MATRIX SITING MODEL IN NEBRASKA

In Nebraska, the Livestock Siting Assessment Matrix was created in response to frustration with a patchwork of siting and zoning policies that varied from county to county. The policy differences created challenges for agricultural operations, and a common tool was developed for county supervisors to aid consistency and objectivity for the evaluation of CAFO proposals. The Livestock Siting Assessment Matrix was created by the Nebraska Department of Agriculture and a committee of experts including county officials, livestock industry representatives, and University of Nebraska extension specialists, and it was passed by the Nebraska Legislature in 2015.<sup>12</sup>

Nebraska’s matrix is an “independent scoring tool used to evaluate the environmental planning of a proposed facility.”<sup>13</sup> Unlike Iowa, the matrix is a voluntary tool in Nebraska. County officials may choose to use the matrix as developed or as a template to construct their own local siting policies.<sup>14</sup> In Nebraska, applicants must score 75 out of a possible 172 points to receive a passing score. Setback distances are a key requirement in the matrix and account for 30 of the necessary points. Another 30 points can be obtained by satisfying all of the regulatory requirements of the Nebraska Department of Environmental Quality.

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11 “Livestock master matrix adopted in 89 counties.” Iowa Department of Natural Resources, Feb. 6, 2020, [iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/2841/Livestock-master-matrix-adopted-in-89-counties](http://iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/2841/Livestock-master-matrix-adopted-in-89-counties). Accessed May 2022.

12 “Development of a Livestock Siting Assessment Matrix.” Livestock and Poultry Environmental Learning Community, April 18, 2019, [lpec.org/development-of-a-livestock-siting-assessment-matrix](http://lpec.org/development-of-a-livestock-siting-assessment-matrix). Accessed May 2022.

13 Stowell, Rick. “The Nebraska Livestock Siting Assessment Matrix.” University of Nebraska-Lincoln Institute of Agriculture and Natural Resources, May 20, 2019, [water.unl.edu/article/animal-manure-management/nebraska-livestock-siting-assessment-matrix](http://water.unl.edu/article/animal-manure-management/nebraska-livestock-siting-assessment-matrix). Accessed May 2022.

14 Ibid.

Development of the matrix was guided by a focus on transparency, simplicity, questions of merit, and local control.<sup>15</sup> The goal was to make the matrix easy to understand and complete, to ensure clarity around the requirements and scoring, to only include practices where the benefits are well understood, and to limit regulation and maintain local control.<sup>16</sup> Due to the voluntary nature of the Livestock Siting Assessment Matrix, it does not achieve the original goal of creating consistency and uniformity among Nebraska counties’ siting and zoning policies. However, “the Nebraska Department of Agriculture promotes adoption of the Nebraska Livestock Siting Assessment Matrix, especially in counties seeking official designation as ‘Livestock Friendly.’”<sup>17</sup>

## III. PROS AND CONS OF A MATRIX SITING MODEL

Assessment of the livestock siting matrices in Iowa and Nebraska help demonstrate their value. Lessons learned can help navigate and inform siting processes or matrices for other industries, such as industrial wind and solar energy. The pros and cons of the two approaches to livestock siting matrices are examined below.

### A. PROS

Most notably, the examined siting matrices help officials make decisions. The matrices provide a comprehensive list of factors to be considered in confined animal feeding operation siting decisions, thereby removing the burden on local decision makers to become experts on the topic and to find and compile this information themselves.

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15 “Development of a Livestock Siting Assessment Matrix.” Livestock and Poultry Environmental Learning Community, April 18, 2019, [lpec.org/development-of-a-livestock-siting-assessment-matrix](http://lpec.org/development-of-a-livestock-siting-assessment-matrix). Accessed May 2022.

16 Ibid.

17 Stowell, Rick. “The Nebraska Livestock Siting Assessment Matrix.” University of Nebraska-Lincoln, Institute of Agriculture and Natural Resources, May 20, 2019, [water.unl.edu/article/animal-manure-management/nebraska-livestock-siting-assessment-matrix](http://water.unl.edu/article/animal-manure-management/nebraska-livestock-siting-assessment-matrix). Accessed May 2022.

A siting matrix is also an opportunity to steward financial resources, as developing new ordinances on a new topic can be expensive. Many hours of a public official's time go into searching for resources, reviewing existing ordinances from other counties, meeting with developers and stakeholders, and hosting public hearings for community feedback. A siting matrix can reduce the time spent on the permitting, planning, and zoning aspects of the siting process, thereby reducing the amount of taxpayers dollars allocated to the process.

The matrices also provide clear guidelines for livestock animal feeding operations. Farmers, developers, and neighboring landowners will know the exact requirements a project must meet to obtain a permit. This especially provides clarity to developers, allowing them to ensure project design plans meet the requirements before applying for a construction permit. This can save developers time, money, and possible frustration.

A voluntary siting matrix, such as Nebraska's Livestock Siting Assessment Matrix, maintains local control and decision-making authority. Local officials know the community, the land geography, and opinions and concerns of the residents, and therefore are best equipped to make decisions regarding local land use. Voluntary use of the matrix allows county officials to make decisions or accommodations based on the specific characteristics of the area. Even if a county declines to fully adopt the matrix, it can still be used as a template to guide the siting process.

## B. CONS

If the siting matrix is mandatory, like it is in Iowa for counties that have adopted it, local decision-making power is reduced. Decisions that affect local residents should be made close to where the residents live because local decision makers understand the circumstances of the community. In Iowa, local officials have no power in the siting process if the livestock animal feeding operation meets enough of the criteria outlined in the matrix to receive a passing score. Therefore, local officials cannot make decisions based on community input, specific geographic considerations, or any other factors unique to that project.

**TABLE 1: MATRIX SITING MODEL PROS AND CONS**

Pros
<ul style="list-style-type: none"> <li>• Assists with decision-making</li> <li>• Saves time and money</li> <li>• Provides clear regulations</li> <li>• Maintains local control, if voluntary</li> </ul>
Cons
<ul style="list-style-type: none"> <li>• Removes local decision-making power, if involuntary</li> <li>• Inconsistent siting policies, if voluntary</li> </ul>

If the siting matrix is voluntary, the matrix does not fully solve the issue of inconsistency and a lack of uniformity of siting policies across counties within a state. However, even if a fraction of counties in a state adopt the matrix, progress is made toward consistency. There are benefits to consistent siting policies, especially for developers, who are able to more easily plan larger projects that may span more than one county. Developers can spend a lot of time working with county officials trying to navigate the siting process and are subject to project delays or cancellations at the decision of local officials.

Overall, neither siting matrices nor county-by-county ordinances are likely to satisfy everyone. There are many perspectives on what a properly sited facility looks like. Some think the policies are not strict enough on environmental protections while others view them as an infringement on private property rights. This is why providing early and frequent opportunities for input is essential during the drafting of a siting matrix.



## IV. A SITING MATRIX FOR RENEWABLE ENERGY

### A. WHAT IS IT?

Modeled after the voluntary livestock siting matrix, a renewable energy siting matrix is a practical tool for county officials to use to help determine whether to approve a permit. The siting matrix considers a variety of factors, including, but not limited to, safety, public health, cost-effectiveness, practicality, community interests, objectivity, and science. The matrix also seeks to simplify the renewable energy siting and zoning process and provide transparency among project developers, county officials, landowners, and the general public. The matrix would consist of considerations and best recommendations for responsible siting that balance renewable growth and community concerns. Land-use decisions are best made at the local level, but decision makers need tools to help make those decisions. Therefore, the renewable energy siting matrix should be a voluntary tool used at the discretion of local officials.

### B. HOW WOULD IT BE CREATED?

Similar to the livestock siting matrices, the renewable energy siting matrix could be developed through state legislative action. The establishment of a policy could define the process and specifics of the matrix's development. The policy should require the formation of a diverse committee of varying expertise and perspective that will be charged with the development task. This committee could be led by the state's utility authority or other state agency in collaboration with a group of stakeholders, including, but not limited to, county board officials, county zoning administrators, wind and solar energy developers, agrisolar farmers, and other experts as may be determined by the policy. An extensive review of existing in-state and out-of-state county renewable energy ordinances should be conducted to determine recommended best practices and setback distances. Based on this data, the committee would develop a tool that outlines all of the recommended components of a renewable energy project application. These components could be further detailed with recommended specifications relating to distances, timelines, noise levels, etc. Some of these values could be ranges and left up to the discretion of local decision-making.

During this process, the Center for Rural Affairs recommends the committee evaluate all components of the siting matrix and consider how well the proposed criteria are:

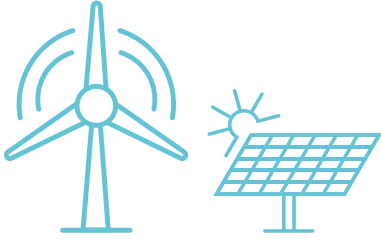
- Protective of public health or safety;
- Practical and workable;
- Cost-effective;
- Objective;
- Based on available scientific information that has been subjected to peer review;
- Designed to promote the growth and viability of wind and solar energy in the state;
- Designed to balance the economic viability of wind and solar developments with protecting natural resources and other community interests; and
- Usable by county officials.

The Center for Rural Affairs recommends allowing the public to review and comment on the siting matrix before its final approval. Community involvement and transparency will help drive a positive reception and adoption of the siting matrix. The Center also recommends the committee review the siting matrix at regular intervals decided upon by the committee to make any updates or changes to the matrix based upon improvements in technology and stakeholder and community feedback. However, changes to the siting matrix should not interfere with projects already approved for construction according to the existing language in the siting matrix. Overall, the siting matrix should be a voluntary tool used by local decision makers. The Center recommends that its use remain optional, with the ability to use the matrix as-is or as a template to serve local decision-making needs.

### C. WHAT IS INCLUDED IN THE MATRIX?

Numerous factors must be considered when siting renewable energy projects—from setback distances to environmental compliance to decommissioning plans. These factors vary in complexity and perspective and should be established by a panel of diverse stakeholders, industry experts, and decision makers. The following is a list of possible criteria that could be included in the renewable energy siting matrix. These criteria are not exhaustive and may not apply to all projects.

**TABLE 2: POSSIBLE CRITERIA TO BE INCLUDED IN RENEWABLE ENERGY SITING MATRIX**

Environmental/property protection	Site studies	Setback distances
<ul style="list-style-type: none"> <li>Habitat conservation plan</li> <li>Bird and bat fatality monitoring in compliance with state and federal law</li> <li>Pollinator species ground cover</li> <li>Soil erosion and sediment control</li> <li>Fencing that facilitates movement of wildlife</li> <li>Stormwater management</li> </ul>	<ul style="list-style-type: none"> <li>Operation and maintenance plan</li> <li>Environmental site assessment</li> <li>Wetlands and habitat survey</li> <li>Hydrology survey</li> <li>Vegetative site plan</li> <li>Setback analysis</li> <li>Viewshed analysis</li> <li>Economic impact analysis</li> <li>Glint and glare study</li> </ul>	<ul style="list-style-type: none"> <li>Distance from non-participating landowner property lines</li> <li>Distance from residences</li> <li>Distance from roads or existing rights of way</li> <li>Distance or lack of setbacks required if the property line is shared by two participating landowners</li> <li>Waivers for setback distances</li> </ul>
Economic impact factors	Infrastructure	Design and aesthetic appearance
<ul style="list-style-type: none"> <li>Jobs created</li> <li>Energy generation tax value</li> </ul>	<ul style="list-style-type: none"> <li>Cost-share agreement with the county to pay for road and bridge maintenance</li> <li>Main entrance to project located on a minimum-maintenance road</li> </ul>	<ul style="list-style-type: none"> <li>Glare</li> <li>Screening</li> <li>Visual barriers (chain link or deer fencing, trees) will be put in place</li> </ul>
Basic project information	Decommissioning standards	Community communication
<ul style="list-style-type: none"> <li>Project development name</li> <li>Nameplate capacity (MW)</li> <li>Anticipated land use (acres)</li> </ul>	<ul style="list-style-type: none"> <li>Removal of all generating infrastructure</li> <li>Return of project area to prior condition or better</li> <li>Payment plan in place for decommissioning</li> </ul>	<ul style="list-style-type: none"> <li>Plans to communicate with neighboring landowners and residents</li> </ul>
Other considerations	Wind considerations	
<ul style="list-style-type: none"> <li>Grid interconnection feasibility</li> <li>Energy system stability, reliability, and resiliency</li> <li>Maintenance and repair plans</li> <li>Definitions of relevant terms</li> </ul>	<ul style="list-style-type: none"> <li>Noise levels (dB)</li> <li>Shadow flicker (hours/year)</li> <li>Beacon lighting</li> <li>Ice shedding</li> </ul>	

## V. RECOMMENDATIONS

Siting and zoning decisions play a large role in shaping a county’s development prospects, economic opportunities, and public receptiveness to projects. As renewable energy projects have increased across the U.S., many states are beginning discussions about how to best handle siting and zoning. Variations of statewide standards have been considered by several states in an effort to streamline the process.<sup>18</sup> A renewable energy siting matrix is a more flexible alternative to statewide standards, and this section highlights recommendations that may help mitigate concerns landowners and community members may have.

### A. LOCAL DECISION MAKING

Decisions regarding land use are best made at the local level. A siting matrix is meant to be a toolbox to assist decision makers, not limit local control. Statewide regulations assume a one-size-fits all approach and ignore local landscape and community considerations. Therefore, the use of the matrix should remain voluntary. Ultimately, county-level officials should make the final decision on whether to award a construction permit for a renewable energy project.

### B. SETBACKS

To determine appropriate types of setbacks and distances, a thorough review of in-state and out-of-state pre-existing regulations should be examined. In addition, assessing the response to these setbacks in each county would be helpful to determine how they advanced or hindered project development and community receptiveness. It may be helpful to use maps when determining recommended setback distances. Maps of dwellings and other locations that may be the subject of setbacks and potential turbine or photovoltaic

panel locations may reveal that proposed setback distances would eliminate the possibility of projects in a county.<sup>19</sup>

### C. COMMUNICATION

As more renewable energy is developed across the country, landowners and community members must play a role in determining how projects can best fit within their communities. Setting responsible zoning guidance that allows for development while protecting the interests of the local community will be crucial to capturing the full benefits of renewable energy development without burdening residents. The committee drafting the siting matrix should allow a reasonable period of time for the public to weigh in on the siting matrix before it is adopted. The public should also be provided time to weigh in on a project during the permit approval process, even if the project meets all the requirements in the siting matrix. Early and frequent outreach to landowners, community members, and other stakeholders empowers residents and can mitigate feelings of unfairness by providing opportunities for them to share their thoughts and concerns. Research has shown that perceived fairness of these processes can significantly affect attitudes toward wind energy projects.<sup>20</sup>

### D. FINAL PRODUCT

The final siting matrix should be comprehensive, scientifically correct, transparent, and easy to use. The matrix should provide clear standards for developers and create clear expectations not only for those who will site and plan projects, but for community members who will live near the energy generation systems. The matrix should also be created in a format that is easy for developers and local officials to use and understand.

19 Nelsen, Lu, and Lauren Taylor. “Review of Wind Energy Setbacks: Commonalities and Differences Among Three States.” Center for Rural Affairs, March 2020, [cfra.org/publications/review-wind-energy-setbacks-commonalities-and-differences-among-three-states](https://cfra.org/publications/review-wind-energy-setbacks-commonalities-and-differences-among-three-states). Accessed May 2022.

20 Hoen, Ben, et al. “Attitudes of U.S. Wind Turbine Neighbors: Analysis of a Nationwide Survey.” Elsevier, *Energy Policy*, Vol. 134, 110981, November 2019, [sciencedirect.com/science/article/pii/S0301421519305683?via%3Dihub#sec3](https://www.sciencedirect.com/science/article/pii/S0301421519305683?via%3Dihub#sec3). Accessed May 2022.

18 Kahn, Jaclyn, and Laura Shields. “State Approaches to Wind Facility Siting.” National Conference of State Legislatures, Sept. 2, 2020, [ncsl.org/research/energy/state-wind-energy-siting.aspx](https://www.ncsl.org/research/energy/state-wind-energy-siting.aspx). Accessed May 2022.

## VI. OTHER PROGRAMS

Although renewable energy siting guidance is a relatively new concept, some policymakers are exploring options for siting and zoning assistance.

### A. SOLSMART

SolSmart is a national program that awards designations to cities, counties, and regional organizations, recognizing them as solar-friendly.<sup>21</sup> A local government may receive either a Gold, Silver, or Bronze designation based on meeting specified criteria that removes obstacles to solar energy development, thereby opening the community to solar market growth.<sup>22</sup> The SolSmart program provides free technical assistance to communities to help address barriers to solar energy development.<sup>23</sup> This reduces a community's administrative costs related to solar development by reducing the time spent on permitting, planning, and zoning procedures.<sup>24</sup>

SolSmart designations signify a community is ready for solar development, which encourages new businesses to come to the community, fosters new job creation, and promotes economic growth. This program is funded by the U.S. Department of Energy Solar Energy Technologies Office and has more than 400 designees across the country.<sup>25</sup>

### B. INDIANA SITING GUIDE

During the 2022 Indiana state legislative session, a bill was signed into law that establishes renewable energy siting guidelines and creates a renewable energy development center within the

Indiana Economic Development Corporation.<sup>26</sup> The guidelines are entirely voluntary, and the renewable energy development center will certify the communities that choose to opt in as “commercial wind or solar energy ready” if they follow the guidelines in the bill.<sup>27</sup>

The goal of the program is to establish some predictability in the siting process across the state, sending the message that Indiana is open and ready for renewable energy development after siting policies in the past have caused issues for project developers. It is reported the concept has widespread support from electric utilities, environmental organizations, local government organizations, and business groups.<sup>28</sup>

## VII. CONCLUSION

The continued growth of renewable energy will require more local leaders to face decisions concerning the siting of renewable energy projects in their communities. The renewable energy industry is complex and rapidly changing, thereby placing a large burden on local decision makers to become knowledgeable on the topic. These local officials are tasked with addressing community concerns, obtaining scientific and accurate information, and working with stakeholders and developers to make the best decisions for their communities. This is a difficult task.

Renewable energy developers also have the difficult task of navigating the patchwork of ordinances from one county to the next, and many counties do not yet have regulations in place pertaining to renewable energy. A lack of siting and zoning regulations and large variances in these

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21 “What is SolSmart?” SolSmart, [solsmart.org/how-we-help/what-is-solsmart](https://solsmart.org/how-we-help/what-is-solsmart). Accessed May 2022.

22 Ibid.

23 “Become designated as a solar-friendly community.” Clean Energy Resource Teams, [cleanenergyresourceteams.org/become-designated-solar-friendly-community](https://cleanenergyresourceteams.org/become-designated-solar-friendly-community). Accessed May 2022.

24 Ibid.

25 “What is SolSmart?” SolSmart, [solsmart.org/how-we-help/what-is-solsmart](https://solsmart.org/how-we-help/what-is-solsmart). Accessed May 2022.

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26 “Actions for Senate Bill 441.” Indiana General Assembly, March 11, 2022, [iga.in.gov/legislative/2022/bills/senate/411#documentd840c47e](https://iga.in.gov/legislative/2022/bills/senate/411#documentd840c47e). Accessed June 2022.

27 Bowman, Sarah. “Bill wants Indiana counties to be wind, solar friendly—but it doesn’t force them.” Indianapolis Star, March 1, 2022, [indystar.com/story/news/environment/2022/03/01/indiana-solar-energy-wind-power-lawmakers-try-again-pass-statewide-standard-sb-411-senate-bill/6570555001/](https://www.indystar.com/story/news/environment/2022/03/01/indiana-solar-energy-wind-power-lawmakers-try-again-pass-statewide-standard-sb-411-senate-bill/6570555001/). Accessed May 2022.

28 Ibid.



regulations can pose challenges for renewable energy developers and for rural communities looking to thrive and grow.

Statewide renewable energy siting matrices can help reduce barriers to renewable energy development by providing guidance to local decision makers while improving transparency, trust, and fairness in the siting process. A siting matrix also creates clear standards for future development that project developers can reference before proposing a project.

A siting matrix should remain—as the name suggests—guidance, rather than a requirement. Every county and community has unique features that should be carefully considered by planning and zoning officials, and these considerations should lead to zoning that addresses the needs of residents. While identifying standards that will operate effectively in every county is difficult, recommending broad principles and thoroughly researched guidance that communities and officials can use during the project permitting process is a possibility.

A renewable energy siting matrix would allow communities to capture the benefits of renewable energy while easing the siting and zoning challenges of a rapidly growing and changing industry.

## ABOUT THE CENTER FOR RURAL AFFAIRS

Established in 1973, the Center for Rural Affairs is a private, nonprofit organization with a mission to establish strong rural communities, social and economic justice, environmental stewardship, and genuine opportunity for all while engaging people in decisions that affect the quality of their lives and the future of their communities. This institution is an equal opportunity provider and employer.

