

# AMPLIFYING CLEAN ENERGY WITH CONSERVATION

## PART THREE: EXPLORING WIND ENERGY AND STEWARDSHIP



A REPORT BY CODY SMITH,  
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# AMPLIFYING CLEAN ENERGY WITH CONSERVATION PART THREE: EXPLORING WIND ENERGY AND STEWARDSHIP

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December 2020

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Part Three: Exploring Wind Energy and Stewardship

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Cover photo by Cody Smith.  
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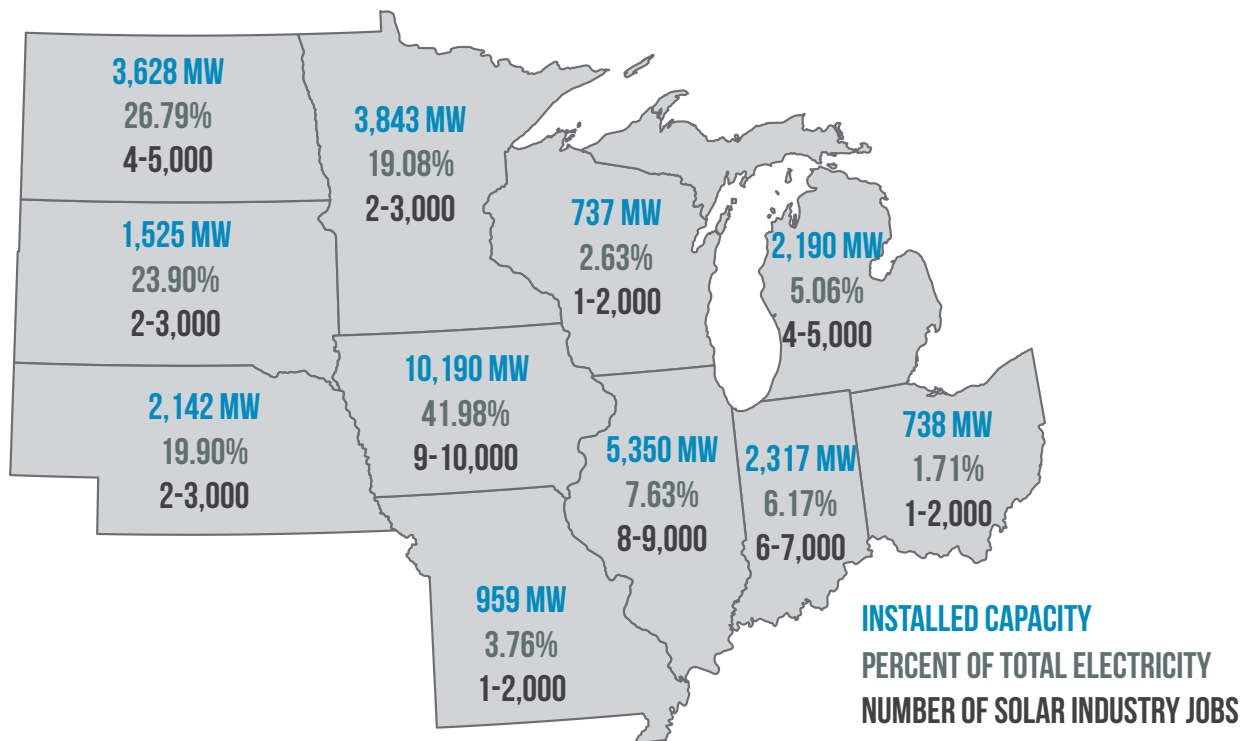
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FIGURE 1. MIDWEST STATES EXPERIENCING HIGH WIND ENERGY EXPANSION



## I. INTRODUCTION

Renewable energy has rapidly expanded throughout the U.S. as prices of production have fallen and the cost of operating fossil fuel-based generation resources continues to grow. Market forces have facilitated the widespread adoption of wind energy by utilities, rural electric cooperatives, and other commercial generators of electricity as a primary method of providing low-cost, renewable energy to their consumers. Looking to the future, as the country continues to chart a path forward to address the realities of a changing climate, rural communities have the opportunity to leverage their position as the hosts of wind energy projects to identify more strategies to amplify clean energy resources with investments in conservation.

## II. WIND ENERGY PREVAILS IN THE MIDWEST

Several states across the Midwest have embraced the economic potential of renewable wind energy with approximately 33,619 megawatts of installed wind energy in 2019, averaging about 14 percent of

all electric production.<sup>1</sup> Meanwhile, the wind energy industry directly employs anywhere between 40,011 and 51,000 jobs across the 11 Midwestern states.<sup>2</sup> See Figure 1. As utilities continue to make investments in lower-cost renewable sources of energy, total wind capacity in the U.S. is expected to reach 113.43 gigawatts in 2020 and to grow to 404.25 gigawatts by 2050.<sup>3</sup>

## III. A POTENTIAL OPPORTUNITY FOR CONSERVATION

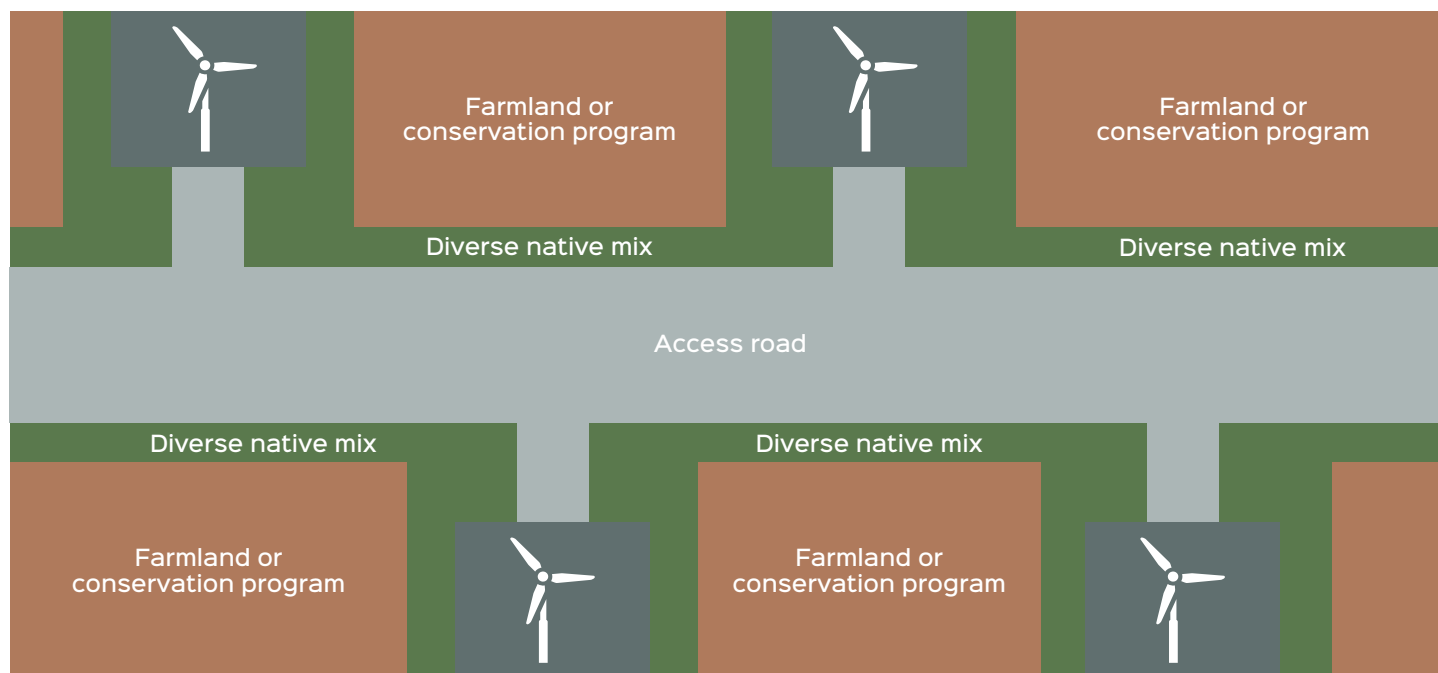
Wind energy projects offer an unexplored opportunity for the establishment of native vegetation

1 “Wind Energy State Information.” WINDEXchange, U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, [windexchange.energy.gov/states](http://windexchange.energy.gov/states). Accessed August 2020.

2 “State Fact Sheets.” American Wind Energy Association, April 2020, [awea.org/resources/fact-sheets/state-facts-sheets](http://awea.org/resources/fact-sheets/state-facts-sheets). Accessed August 2020.

3 “Wind Vision.” U.S. Department of Energy, [energy.gov/maps/map-projected-growth-wind-industry-now-until-2050](http://energy.gov/maps/map-projected-growth-wind-industry-now-until-2050). Accessed May 2020.

**FIGURE 2. POTENTIAL AREAS FOR CONSERVATION ADOPTION**



(including naturalized, non-invasive vegetation). Project developers and landowners have the ability to work together, allowing both parties to stack the environmental benefits of renewable wind energy with investments in the conservation of natural resources. Integrating native vegetation into site management practices creates habitat for at-risk pollinators and wildlife while improving water quality and building soil health, increasing community benefits of projects. Native vegetation can:

- Increase pollinator populations, including honey bees, native bees, and monarch butterflies, by three-and-a-half times greater.<sup>4</sup>
- Provide habitat for upland wildlife (i.e. ring-necked pheasants) that lost more than 1.8 million acres of habitat in Iowa between 1990 and 2018.
- Reduce nitrogen loss to water bodies by 60 percent and phosphorus loss by 90 percent.
- Reduce peak stream flows by up to 40 percent during flood events.<sup>5</sup>

4 Schulte, Lisa A., et al. "Prairie strips improve corn-soybean croplands." *Proceedings of the National Academy of Sciences of the United States of America*, October 2017, 114 (42) 11247-11252; DOI: 10.1073/pnas.1620229114.

5 "Flood Resilience Program." Iowa Watershed Approach, Iowa Department of Homeland Security and Emergency Management, 2017, [iowawatershedapproach.org/programs/resilience/](http://iowawatershedapproach.org/programs/resilience/). Accessed August 2020.

## IV. FINDING OPPORTUNITIES ON PROJECT SITES

With high levels of wind energy penetration in the Midwest, and a rapidly-growing amount of turbines being installed, project developers can work with landowners and project engineers to implement native vegetation on site.

- Opportunities exist alongside adjacent infrastructure, such as access roads and other associated facilities for establishment of native vegetation.
- Project developers should consult with private and public landowners who host turbines to discuss potential areas that would be good candidates for combining wind energy and native, naturalized, non-invasive vegetation.
- Landowners may request the integration of this practice into land lease agreements. This would create a scenario where vegetation management associated with the project also provides additional ecosystem services associated with native vegetation.



Although row crops planted to the base of wind turbines take up a small area of land, the opportunity to utilize farm conservation programs to receive cost-share for conservation does exist.

## V. COLLABORATION COULD EQUALIZE COST AND AMPLIFY IMPACT

Understandably, many farmers continue to plant row crops up to the base of wind turbines due to the relatively small area of land they occupy. However, this could present an opportunity for project developers to work with these producers to utilize farm conservation programs to receive cost-share for conservation practices on project sites. See Figure 2 on page 2. Some programs include:

- The Conservation Reserve Program (CRP), the Environmental Quality Incentives Program (EQIP), and the Conservation Stewardship Program (CSP).
- Project developers could also evaluate their existing and proposed site plans to identify adjacent infrastructure such as areas along access roads and power distribution lines to seed diverse mixes of native and naturalized, non-invasive species, helping reduce on-site erosion concerns and demonstrate a commitment to conservation.

## VI. PUBLIC OFFICIALS COULD STEER INVESTMENT

Local stakeholders and project developers have the chance to work together to explore utility-scale wind energy sites as a way to invest in conservation. County officials who have the authority to regulate the zoning and siting of wind energy projects have a unique opportunity to ensure this practical investment in natural resources. Some examples could include:

- County officials could require or advise project developers to provide a comprehensive land reclamation and/or site restoration plan that includes the establishment of this perennial vegetation once construction of the project is complete, as well as after the project is retired from operation.
- These types of recommendations would be best suited for a “site/vegetation management” and/or a “site restoration” section of a county ordinance.
- Developers should be encouraged to work with their lessor to identify areas on project sites where pragmatic investments in native vegetation could add value to the project.
- Any ordinance should ensure there are no impediments to farming or other land uses desired by the landowner both during and after project operation and construction.

In addition to locally-led policy efforts, state regulators could work with project developers and local stakeholders to develop guidance for wind energy projects in their jurisdiction.

- A state public service commission or utilities board, as well as environmental regulators, may include investments in perennial vegetation as a consideration in the issuance of project permits and approval, as well as help guide project siting conversations.
- With a balance of local input and considerations of project developer needs, state regulators are well positioned to work with qualified natural resources professionals to establish best practices for developers, making this a new norm for wind projects and adding value for every ratepayer they serve. In addition, opportunities for state-supported cost-share to landowners who implement this practice remain unexplored.



Local stakeholders and project developers have the chance to work together to explore utility-scale wind energy sites as a way to invest in conservation.

## VII. BUILDING VALUE FOR ALL STAKEHOLDERS

As the industry continues to create hundreds of thousands of jobs, stimulate local and state tax revenue, and help reduce greenhouse gas emissions, investments in native and naturalized, non-invasive vegetation can ensure habitat for at-risk pollinators and wildlife while improving quality of life for all. Coupling conservation with renewable energy infrastructure projects and saving money are not mutually exclusive. In fact, research has demonstrated investments in perennial vegetation can save project developers up to three times the cost of managing traditional turfgrass sites.<sup>6</sup> By taking these actions, officials, developers, and communities can help:

- Reduce erosion concerns,
- Improve water quality,
- Build soil health,
- Provide pollinator habitat,
- Create wildlife habitat,
- Reduce noise levels,
- Expand local benefits of a project, and
- Stimulate the local native seed supply economy (i.e. retailers, service providers).

<sup>6</sup> Argonne National Laboratory, produced for the U.S. Department of Energy's InSPIRE Study. Obtained via personal communication with Fresh Energy, April 2020.

## VIII. CONCLUSION

Rural communities will play a key role in a clean energy future. An abundance of suitable land and wind resources has made, and will continue to make, these areas of the country desirable for the location of utility-scale wind energy projects. Sound public policy at the local, state, and federal levels will continue to steer or deter investment and the resulting economic stimulation offered by renewable energy projects.

Rural Americans will continue to see economic development opportunities through land-lease payments to landowners, state and local tax revenue, and the creation of high-wage jobs in their communities. Simultaneously, exploring opportunities for leveraging low-cost, renewable wind energy as an investment in natural resources conservation will allow the value of these projects to be amplified for all stakeholders.

## 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.



