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Site Wind Right

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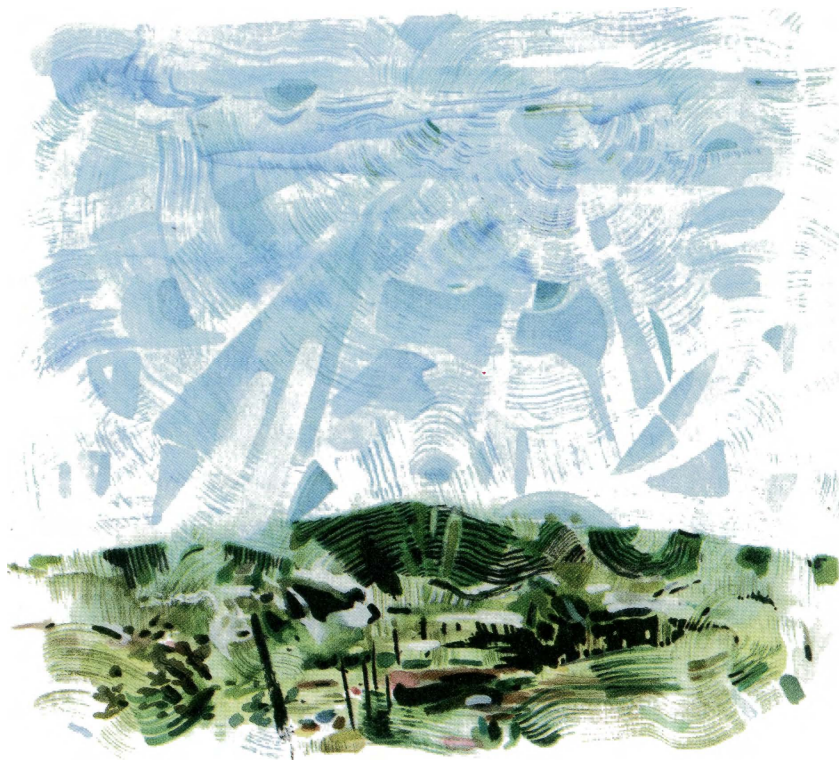
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Prairie Wind
Bryce Lafferty

SITE WIND RIGHT

In early 2002, the director of The Nature Conservancy's (TNC's) Flint Hills Initiative, Brian Obermeyer, was less than one year into his job when he was first introduced to wind energy.

While driving through Iowa to attend a meeting in Minnesota, he noticed a new generation of wind turbines on the horizon. Obermeyer's first thought was, "Wow, that's cool!" He was excited about wind energy's potential to help curb the demand for fossil fuels.

When he stopped to explore and admire the site, Obermeyer had a second, less positive thought. He realized that large arrays of wind turbines could negatively impact wildlife and natural habitats if sited in the wrong places. He knew very well that without careful siting of turbines, prairie chickens and other species requiring wide-open spaces could be further diminished or even disappear from the landscape.

After Obermeyer returned home, his concern grew after learning about three proposed projects to develop wind energy in the heart of the Flint Hills.

Obermeyer and TNC were not alone in being concerned about wind development in places like the Flint Hills. The news of the three wind proposals led to significant local opposition, including from a group that first convened on the steps of the Matfield Green schoolhouse in the summer of 2002. That group, calling itself Protect the Flint Hills, declared, "We strongly oppose placing industrial wind energy complexes in the Flint Hills. The Flint Hills region is not a renewable resource. It's a one-of-a-kind landscape. Industrial wind turbines

should be placed on land that has already been fragmented by farming or other development. Why fragment and compromise this unique and endangered Tallgrass Prairie ecosystem with industrial development when Kansas has millions of acres of already fragmented land with good wind resources?”

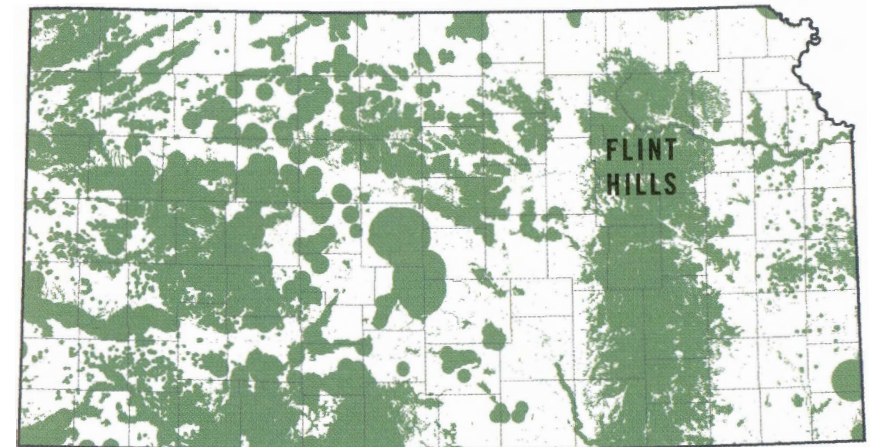
On the other side of the debate were renewable energy proponents eager to see Kansas lead the way for renewable energy. Wind developers were putting considerable investment into expanding wind generating capacity in Kansas, particularly in the Flint Hills. As the development pipeline filled with more project proposals, developers, renewable energy advocates and many of the state’s politicians could see a wind energy wave coming, and they wanted to stake their claims wherever feasible.

As the conversation intensified, TNC teamed up with the Wildlife Management Institute in 2003 to co-organize a workshop in Kansas City focused on wind power and wildlife. It was at that workshop that Rob Manes (then with WMI and now state director of TNC in Kansas) argued that wind siting should be viewed through a new lens. He suggested that the conservation community focus on where turbines could go without causing significant ecological harm, rather than on just

where wind turbines shouldn’t go. While the idea at first seemed unwieldy and impractical, it turned out to have great potential. Manes and Obermeyer, as well as a wide variety of conservation practitioners, field biologists, ecosystem scientists, computer modelers and others, would continue to work together on the issue for years to come.

What TNC started with at that time has evolved over the subsequent two decades into a nearly continental-scale effort. It is now a scientific research and wind-siting protocol effort involving local and regional scientists across the center of the nation. Named Site Wind Right, the effort is helping shape the geospatial configuration of a new generation of electric power facilities in the American wind belt. It represents a way to proactively plan for biodiversity-sensitive siting of wind farms across a continental wind resource. And the practice of systematically taking wildlife habitat into wind facility siting analysis is now gaining attention from policy analysts, engineers and senior corporate executives from Argentina to Australia.

Conceptually, Site Wind Right is straightforward. An initial step is to make a comprehensive geographic information system map of the places that have “suitable” wind resources for power generation in the geographic range



Key Wildlife Areas Relevant To Wind Development
TNC Site Renewables Right, nature.org/siterenewablesright

The map is designed to support project siting and facilitate the avoidance of sensitive species and habitats.

of interest. The second step is to map areas containing the range or habitat of species likely to be impacted by wind development (biodiversity layer), along with areas with potential engineering and land use constraints (infrastructure layer). The final step is to overlay the wind resource layer with the biodiversity and infrastructure layers, thereby showing locations that are low impact for

wildlife and potentially suitable for wind development.

Gathering and mapping the biodiversity knowledge of hundreds of experts at a multitude of institutions is a nontrivial task that can take years to complete, and it requires regular updating. The wind resource map and the location of land use constraints also require updating. In addition, once

the data is in hand, it must be shared, understood and used to site and operate wind farms.

The good news is that the challenges are manageable and the range of suitable, low-impact sites for wind development within the 17-state area of interest is expansive. An in-depth study by TNC indicates approximately 222 million acres of land with suitable wind resources. Of that total, about 90.4 million acres is considered both suitable and low impact for wildlife and key habitats in just these 17 states. This equates to about 1,099 gigawatts of wind power capacity on low-impact, suitable land, equivalent to the total generating capacity from all sources in the U.S.

In Kansas, the same analysis identifies more than 11 million acres of low-impact land suitable for wind development, meaning that in Kansas, there's plenty of opportunity to site wind right.

Site Wind Right, which soon will become Site Renewables Right and expand nationwide with the inclusion of siting information for solar photovoltaic facilities, is not the definitive authority on renewable siting. TNC recommends that developers also refer to the full range of regulatory guidelines and more finely grained analyses. Nevertheless, the big picture

presented by the Site Wind Right methodology remains highly useful.

Furthermore, continued research and scientific advances will enable greater precision regarding where to best site renewable energy facilities while also being good, long-term stewards of nature.

The Site Wind Right methodology is also having an impact outside of the United States. In locations like China and India, wind facility siting programs are emerging, crafted to suit local conditions and legal frameworks. These programs encourage renewable energy developers to site their projects at low, risk sites in those nations. In addition, a recent report released by the International Union for the Conservation of Nature on mitigating the impact of wind and solar energy developments references Site Wind Right as a relevant example.

As both wind and solar technologies in the U.S. and worldwide are deployed at unprecedented rates over the next several decades, a more holistic approach to renewable energy siting and planning will continue to emerge. If the international community is to reach ambitious biodiversity conservation goals (including the protection of native grasslands), mitigating "energy sprawl" will be imperative; this includes the siting of renewables in low-risk areas and not in irreplaceable landscapes like the Flint Hills. The methodology for doing so,



South of Madison, Late Spring Evening — 6 June 2021

Philip Heying

already 20 years in development at TNC, must continue to evolve if land and water resources are to remain largely intact for future generations.

Jim Levitt is the director of the International Land Conservation Network, a program of the Lincoln Institute of Land Policy, based in Cambridge, Massachusetts. This article is adapted from the institute's 2022 publication,

"From the Ground Up: How Land Trusts and Conservancies Are Providing Solutions to Climate Change," available online from lincolnst.edu. Additional information about Site Wind Right can be found in the in-depth case study on the initiative available from the ILCN at landconservationnetwork.org/resources-education. © [2002]. Lincoln Institute of Land Policy. From Levitt and Navalkha, "From the Ground Up"