



Wind power on the prairie: the old and the new. Photo by Ron Klataske

Green Power is Good, But Siting is Crucial

Note: A fuller version of this article, with notes, can be consulted on the AOK website under “News and Articles,” “Prairie Writers.”

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Backgrounds

Even living as we are in the throes of the third industrial revolution, as the service sector outpaces manufacturing, and electronics and high tech displace heavy industry as the drivers of GDP, our economy has not outgrown its need for energy. The graph of US energy usage per capita from 1960 to 2015 has fluctuated in a narrow range from a low of 5,612.08 kg of oil equivalent in 1960 to a high of 8,438.40 kg in 1978, with 6,803.92 kg the latest reported figure, from 2015. But total US energy consumption has increased in almost every year since 1949. In 2017, coal accounted for 17.8% of US primary energy production, trailing petroleum (including crude oil and natural gas plant liquids) at 28%, and natural gas at 31.8%. We—the

US, the planet—cannot continue in this addiction to increasing consumption of dirty, polluting energy sources if we hope to avoid a greater than 1.5 degrees Celsius increase in global warming by mid-century—the predicted tipping-point beyond which, for our complex societies, the planet rapidly slides into becoming uninhabitable.

A shift to renewable, wind-powered energy production would appear to be a godsend, particularly in Kansas, where all of the state except the eastern-most sector is blessed with some of the highest average wind speeds of any place in the country, high even for the so-called “central U.S. Wind Belt.” In eleven years in Kansas, from 2005 to 2016, wind energy jumped from less than 1% to 30% of total electricity generated in the state. Kansas is part of a seventeen-state

area that “encompasses nearly 80 percent of the country’s current and planned onshore wind capacity (AWEA 2019a).”

Kansas has been ranked third in the nation for its potential wind resources. However, it also contains our largest remaining tracts of intact temperate grasslands, among the most altered and least protected habitats in the world (Hoekstra et al. 2005).

Of what was once some 170 million acres from Texas to Canada, the habitat of bison, pronghorns, elk, wolves, and bears, only about 4% of tallgrass prairie remains, two-thirds of it in the Flint Hills of eastern Kansas and Oklahoma. The Flint Hills supports more than 30% of the global population of Buff-breasted Sandpipers during their migration, and has been designated as a Western Hemisphere Shorebird Reserve Network site. But destruction and fragmentation of habitat and other human activity have particularly devastated the ground-nesting grassland birds of this region, as well as the shorebirds that use the prairie lakes and playas, and the big refuges like Cheyenne Bottoms and Quivira National Wildlife Refuge, that are essential resting and refueling sites for their long-distance migrations. An article in *Science* in 2019 reported a decline in grassland-breeding bird populations across the U.S. and Canada of more than 50%, while migratory shorebirds have declined more than 70% in that same period. Species like Least Terns and Piping Plover, as well as Lesser and Greater Prairie-Chickens, are other hallmark denizens of regional habitats have become “species of concern” to the USFWS.

Prospects

So the great Midwestern grasslands are the site of a rapidly growing source of “green” energy—installed wind-generation capacity in Kansas has jumped 500% in the last decade, and in 2019, Kansas ranked fourth nationally in installed wind capacity. But they are also the increasingly threatened, diminished remnant of a once-grand and incredibly rich ecosystem.

The urgent question we face is, can we have both, power and wildlife? And if so, how?

It is true that according to research published back in 2015, bird mortality from wind turbines is dwarfed by other causes: domestic and feral cats account for an astonishing 2.4 billion bird deaths in the U.S. Deaths attributable

to wind turbines amounted to only 234,000 in the U.S., augmented by another 17,000 in Canada. Recall, though, that reported 500% increase in wind-generation capacity in Kansas alone in the past decade. Barring drastic changes in engineering of the turbines themselves, improved bird detection measures, and/or avoidance of inappropriate siting, more wind turbines will inevitably mean more avian (and chiropterid!) fatality statistics. The Obama administration set a challenging target of having wind supply 35 percent of power by 2050 (a huge leap upwards from the 6 percent today). But a 2016 National Renewable Energy Laboratory exploratory study calculated that 73 percent of wind energy’s technical potential might be affected by wildlife issues, and 28 percent by Golden Eagles alone. And Golden Eagles are a “species of concern” on the USFWS radar.

The *USFWS Wind Energy Guidelines* (March 23, 2012) declare that the guidelines are specifically designed to “form the best practical approach for conserving species of concern”—which are defined as including migratory birds, bats, Bald and Golden Eagles and other birds of prey, Prairie and Sage Grouse, and “listed, proposed, or candidate endangered and threatened species.” And raw statistics quantifying bird mortality in general prove a blunt instrument when threats to particular species or types of creatures, such as Golden Eagles, become the urgent question.

When endangered species are at risk, comparing domestic cat kills with wind turbine mortality is beside the point. Some deeply disturbing incidents have been documented, particularly involving raptors. Wind farms first appeared in the United States in the early 1980s. One of the first big



Golden Eagle. Photo by Bob Gress, BirdsInFocus

complexes was sited along the mountain ridges at Altamont, California, a geographical feature frequented by hawks and Golden Eagles riding the wind currents that rise off the slopes. At one time, over 7,000 wind turbines spinning

along the ridge tops killed an estimated 1,300 raptors per year. Lawsuits launched by several local Audubon groups and the California Attorney General brought about a settlement with the operators of the turbines to reduce deaths of Golden Eagles, Red-tailed Hawks, Burrowing Owls, and bats by half. Progress was achieved both by powering down the blades when birds were at risk, and by replacing older turbines with newer versions less lethal to raptors. Nevertheless, Pam Young, the Executive Director of the Golden Gate Audubon Society in Berkeley, California, reported recently that further measures need to be pursued: monitoring of just one Altamont Pass Wind Resource Area site recorded 32 Golden Eagles killed, 111 Red-tailed Hawks, and estimated kills of 49 Burrowing Owls and 1,742 bats, fatality figures that still exceed levels stipulated in the mitigation agreement between the operators and the USFWS.

Proponents of wind energy might argue that we should eliminate feral and outdoor prowling domestic cats before we fight to prevent the expansion of their desperately needed “green” energy, while bird enthusiasts and the USFWS point out that poorly sited wind farms pose an unnecessary, out-sized threat to particular iconic, hallmark species, species already endangered, in some cases, to the tipping point.

But wind energy and conservation of native birds and bats, especially endangered “species of concern,” need not be an all-or-nothing choice.

Joel Merriman, Director of the American Bird Conservancy’s Bird-Smart Wind Energy Campaign, points out that “wind energy and birds can coexist, but only if turbines are sited and managed properly. Alternative energy is critically important to address climate change, but we strongly believe that renewable energy sources should not be embraced without question. It must be demonstrated that the benefits outweigh the impacts.” And Amanda Rodewald, Co-director of the Cornell Laboratory of Ornithology’s Center for Avian Population Studies, cautions that we need to be mindful that generating energy in any manner will impact birds directly or indirectly. Bird mortality from wind turbines may be more obvious than from other sources, but the habitat loss, water contamination, pollution, and greenhouse gas emissions from other energy sources, especially coal, are far more detrimental to birds and other species, including humans. Fortunately, the conservation community has a real opportunity to reduce negative impacts from wind energy by working with industry to properly site turbines and avoid important bird areas.

Particulars

In the past decade, conservation organizations, the government, and cooperative efforts involving both the conservation community and the wind energy industry have devoted a great deal of work to devising practical, sound guidelines for wind turbine site determination, research on potential impact on wildlife and habitat, construction impacts, monitoring of operations, and, when necessary, mitigation of adverse consequences of wind energy generation. Guidelines have even been published to set best practices for decommissioning wind energy operations when their useful lifetime is over (estimated at 20 to 25 years for the average machine).

Guidelines have been published by numerous groups, including the American Bird Conservancy (a wind-risk assessment map highlighting areas important to birds); various state and National Audubon Society chapters; the Nature Conservancy; The Kansas Energy Council; the Kansas Department of Wildlife, Parks, and Tourism; and the already-mentioned national standard, published 23 March 2012, as *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*, a publication based on the work of the Wind Turbine Guidelines Advisory Committee, which served from 2008 – 2011. Rob Manes of the Kansas Nature Conservancy and AOK Board Member Professor Robert Robel from Kansas State University were members of the advisory committee, and there were representatives of renewable energy companies and state wildlife departments, as well as National and Massachusetts Audubon, The Nature Conservancy, Bat Conservation International, Defenders of Wildlife, and the Blackfeet Nation.

All these guidelines agree on basics. There is agreement that wildlife conservation concerns must be addressed at all stages of land-based wind energy development.

“The most important thing a developer can do is to consult with the [USFW] Service as early as possible in the development of a wind energy project.”

The first caveat for developers is that, even if not precluded by federal law, some areas “may be inappropriate for development because they have been recognized as having a high wildlife value based on their ecological rarity and intactness.” But there are other rare and intact values besides wildlife value to be considered. As the Nature Conservancy “Site Wind Right” publication notes, beyond Wind Energy Guidelines, local regulations, and consultation with state and federal wildlife agencies, “there are other social and cultural factors that may make utility-scale renewable development inappropriate in some sites.” In addition to recognizing the need

to avoid siting in unaltered, intact native prairie and other diminished ecosystems of unique features and value, this stipulation recognizes what one AOK member characterized as “people’s desire to embrace and defend their land community—their sunrise and sunset, their night sky.” Rancher and song-writer Annie Wilson describes these relatively intangible and non-monetizable values in one of her songs as “The Clean Curve of Hill Against the Sky”—“The idea is that there are just so few places on earth that you can see that, but you can see it here, where there are no trees, no towers, no buildings. . . just the prairie horizon.” In the case of these unique, irreplaceable scenes and experiences that have roots deep in the psyches of the people who live and work there no less than in the life-modes of the other creatures that inhabit them, it is best, in the words of the title of David Gessner’s recent book (with a nod to Teddy Roosevelt) to *Leave It As It Is*. If for no other reason than goodwill (and avoidance of acrimony and lawsuits), a wise developer will avoid antagonizing the local populace by imposing a wind generation facility on a site where it is widely and bitterly resented.

Clearly, a developer will want to consider whether a wind generation project can profitably be sited on any given piece of land. But to avoid possible legal and financial difficulties down the road, the developer needs to evaluate the potential impacts of the projected facility during construction and operational life on the landscape, the habitat at the site, and the behavior and well-being of the wildlife on site and in the vicinity. Initial surveys should provide a baseline catalogue of resident and visiting fauna as well as indigenous plant species to facilitate monitoring impact through the life of the project. As outlined in the USFWS *Guidelines*, this research and collection of data may take a year or more, and require consultation with experts. “To establish a trend in site use and conditions that incorporates annual and seasonal variation in meteorological conditions, biological factors, and other variables, pre-construction studies may need to occur over multiple years.”

On the basis of the site-specific data collected in this period of research and observation, it will be possible to assess potential impacts on wildlife and plant communities of two kinds: there are first, the obvious direct risks involved in the disruption from construction and the continuing alteration of the landscape by the presence of the turbine towers and ancillary structures, and the threat of birds and bats colliding with the rotor blades. Second, there are “indirect risks:” less obvious effects degrading habitat over time, affecting behavior of wildlife, perhaps having ramifications compromising a larger regional population.

Collision risk in the “rotor-swept zone,” the first thing that would occur to most people anticipating problems, is a direct risk most likely to affect greatly only species like raptors and

cranes and waterfowl, the latter especially if installations intercept the birds’ flight path to refuges and wetlands habitually used; however, the possible danger of collision for migrating passerines, vulnerable during their ascents from and descents to stopping places, and during inclement weather, must also be considered. A study around the Great Lakes using radar has suggested that many migratory birds often fly at lower levels than once thought. More studies are called for.

Bats are a whole subject to themselves; see the longer version of this paper on the AOK website for a brief discussion of barotrauma and direct impact of tips of seemingly leisurely rotating blades that in fact reach speeds approaching 200 miles an hour.

The rotating turbine blades at normal speeds produce another effect on wildlife less obvious than the danger of collision. They can generate levels of sound beyond ambient background levels, masking communication between animals and lessening their ability to detect danger.

“Data suggest noise increases of 3 dB to 10 dB correspond to 30 percent to 90 percent reductions in alerting distances for wildlife, respectively.”

In addition to possible damage to hearing from acoustic over-exposure, turbine rotor sound can cause deleterious behavioral and/or physiological effects.

Other direct effects on wildlife from wind turbine projects include habitat loss owing to construction of turbine pads, roads, and other infrastructure, and habitat fragmentation.

No less than direct impacts, indirect impacts on wildlife and habitat demand attention. As a largely indirect effect, habitat fragmentation is a less apparent issue than replacing prairie grass and sod with concrete, electric transfer stations, and fencing, but its impact on species already beleaguered by regional degradation of preferred habitat can be subtler and far-reaching. Smaller, isolated tracts may strand breeding populations, causing genetic problems and loss of population vigor, and expose a local population to extinction owing to disease or natural disaster (think of the Heath Hen). Fragmented habitat disrupts foraging and shelter, and increases “edge” effects, creating both barriers to traditional patterns of movement, and pathways opening the way to nest predation and nest parasitism. Habitat fragmentation favors introduction of invasive plants, access by predators, and alterations in the natural fire regime, all of which may only become apparent over time. “Indirect impacts may be difficult to quantify but their effects may be significant.” Remember that the prairie ecosystem that



is our concern here is seen as already the most threatened and diminished of any of our North American landscapes.

In the initial stages of choosing a site for a wind energy generation facility, the developer needs to consider the possible impact on particular species, the “species of concern” of the

USFWS guidelines. These include, but are not limited to, species covered by the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA) and the Endangered Species Act (ESA). Species of particular concern in our area include the Whooping Crane, Greater and Lesser Prairie Chicken and other prairie grouse, and raptors in general; the Least Tern and Piping Plover; and the Black-footed Ferret and Prairie Dogs – the last because Prairie Dog towns harbor the endangered ferret, provide nesting holes for Burrowing Owls, and are a magnet for Golden Eagles, Ferruginous Hawks, and other raptors. Although research on the Greater Prairie Chicken is inconclusive, prairie grouse in general have been thought to avoid nesting in proximity to tall structures, like wind turbines. There are reports of leks being abandoned because of nearby construction of wind farms, though there are other studies that show no disruption or a return to use after construction activities ceased. Older investigations recommended 5 mile buffers around leks; however, a more recent seven-year study led by Brett Sandercock of Kansas State University indicated that wind turbines have little effect on Greater Prairie Chicken populations, while other range management practices are much more crucial. In any case, until more solid and consistent data on other species of prairie grouse are available, the Nature Conservancy Site Wind Right guidelines recommend avoiding siting wind facilities in any areas where there are known occurrence records of Attwater’s Prairie Chicken and in the Refugio-Goliad Prairie Conservation Area in Texas; avoidance of Columbian Sharp-tailed Grouse production areas and winter range in Colorado; and creation of buffer zones ranging from 5 km to 2 km around known leks and production areas of prairie grouse in Wyoming, Colorado, Kansas, Oklahoma, and Missouri. Clearly, more research is needed, but in the meantime, prudent avoidance of new wind farms impinging on leks and associated nesting habitat of prairie grouse would seem to be indicated.



Lesser Prairie-Chicken. Photo by Bob Gress, BirdsInFocus



Sharp-tailed Grouse. Photo by Bob Gress, BirdsInFocus



Verbena Dakota Mount Mitchell and *Lythrum alatum* Winged Loosestrife.

Procedures

Substantial agreement exists among all the various published guidelines on basic principles governing siting of wind generation facilities, most of which points are articulated concisely by the KDWPT official statement published in November 2017. They are: 1) Siting should be on previously altered landscapes such as areas of extensive cultivation or urban and industrial development, avoiding intact native prairie and sensitive wildlife habitats and important migration corridors and staging areas. 2) Projects should conform to siting guidelines, such as the *Land Based Wind Energy Guidelines* produced by the USFWS. 3) Adequate studies by qualified experts should be conducted before construction begins, during construction, and during operation of the completed facility, to inventory plant and animal communities and enable careful monitoring of impacts, and devising correctives. 4) Avoidance of siting that creates unmitigable high risk to birds and bats is always preferable to compensatory offsite mitigation efforts. 5) During operation of the site, qualified experts should be employed to conduct censuses of plant and animal communities following on baseline studies, and to determine seasonal use, as for example, rest and refueling sites during migration, or wintering sheltering areas. 6) Scientific experts as well as staff of federal and state wildlife agencies should be involved in assessing impacts of the project's wind energy generation on wildlife and habitat. 7) Finally, most guidelines provide directives anticipating the retrofitting and repowering of the turbines during their useful life, and their eventual decommissioning and restoration of the site to its original state, as nearly as may be. Running through all these guidelines the importance of early and regular communication between developers and the USFWS is stressed.

The USFWS publishes the most comprehensive set of guidelines, breaking down the recommended steps to be taken into five “Tiers,” and providing 27 briefly summarized “Best Management Practices” for operations, plus five more covering retrofitting, eight on repowering, and nine on decommissioning. The tiered approach is designed to assure early discovery of problems, and to facilitate and regularize the process of choosing a site, assessing potential impacts and risks, and dealing with unforeseen problems.

The thoroughness of the “Best Management Practices” recommended in the USFWS *Guidelines* is indeed admirable; many points of detail are worth incorporating into any proposed state or county regulations.

- Bury low and medium voltage connecting power lines associated with the wind energy development, or, if burial is impracticable, locate away from such high bird crossing areas as between roosting and feeding areas, or between lakes, rivers, and prairie and sage grouse leks and nesting habitats;
- Mark them in accordance with Avian Power Line Interaction Committee (APLIC) collision guidelines, and follow the 2006 or most recent APLIC “Suggested Practices for Avian Protection on Power Lines” for power lines, transformers, and conductors.
- Avoid guyed communication towers.
- Equip lights used with motion sensors and switches to keep lights off when not required; likewise, direct lights downward to minimize horizontal and skyward illumination; minimize high intensity lighting.
- Install non-disturbance buffer zones to protect sensitive habitats or areas of high risk for species of concern, as identified in pre-construction studies, determining their extent in consultation with “credible experts as appropriate.” (These buffers also protect the turbines from damage during periodic controlled burns.)
- Avoid impacts on hydrology and stream morphology; use appropriate erosion control measures.
- Use invasive species prevention and control measures as directed by county, state, or federal requirements; clean vehicles and equipment that might import known invasive species into the site, use locally sourced topsoil, and monitor for and remove invasive species at least annually.
- Use native species when seeding or planting during site restoration.
- Demolish or remove no longer needed roads and facilities when the wind facility is retired, and stabilize and re-seed their footprint with native plants appropriate for the soil conditions and native habitat.
- Stockpile topsoils removed during decommissioning and use as topsoil when restoring plant communities.
- Restore the natural hydrology and plant community “to the greatest extent practical” in conjunction with the land owner and state and federal wildlife agencies.

Problems

Attempts to manage the wind industry with voluntary as opposed to mandatory permitting guidelines are not working

Clearly, an immense amount of thought and discussion has gone into devising these detailed guidelines for siting wind energy facilities to minimize impact on vulnerable wildlife and habitat. But the fundamental problem consists in the fact that all these suggested practices and step-by-step directives are just that: “guidelines,” “suggestions,” “voluntary engagements.” Everything is presented in the subjunctive mood: “developers *should*,” “studies *may* need to occur.” Says Dr. Michael Hutchins, National Coordinator of the American Bird Conservancy’s Bird Smart Wind Energy Program, “Attempts to manage the wind industry with voluntary as opposed to mandatory permitting guidelines are clearly not working. Wind developers are siting turbines in areas of vital importance to birds and other wildlife, and this new data shows that the current voluntary system needs radical improvement.” Concerning pre-construction surveys of risk called for in the USFWS guidelines, the ABC reports:

these assessments are typically conducted by industry-hired consultants. We consider such non-independent analyses of risk to be a conflict of interest. Indeed, ABC and others have noted several cases of paid consultants downplaying the potential risk to wildlife so that their clients can obtain the necessary permits and begin construction, including at least two cases in Minnesota. This is highly problematic since, to our knowledge, no wind energy company has ever been shut down post-construction, not even the notorious Altamont facility that has killed thousands of federally-protected birds.

Moreover, the ABC asserts that the USFWS recognizes wind energy companies’ claim that statistics on bird kills on their projects are property of the companies, as if they were “trade secrets.” Without access to such data, how can government agencies, conservationists, or the public hold wind energy companies accountable for damage done?

The only enforcement “teeth” that the voluntary USFWS guidelines have is the option of the government bringing suit against a wind company to recover fines and mandate corrections when “species of concern”—species protected under the MBTA, BGEPA, or ESA (and “candidate species”) are “taken.” Since fatalities among these protected birds exceeding the predicted norms for any given project could result in millions of dollars in costs to an energy company, even after a project has been completed and is operational, there is a strong incentive for companies to be less than forthcoming with data on bird kills. The ABC warns that

Self-reporting of bird (and bat) fatalities continues to be a major conflict of interest, especially since wind energy companies may be subject to expensive fines, mitigation, or prosecution if they are forthcoming. We believe it is time for independent monitoring of bird deaths at wind energy projects.

Although over 400 MBT violations were lodged by the government against oil and gas companies in the two decades preceding the promulgation of the wind energy guidelines, there had been no prosecutions of a wind energy company prior to the issuance of the guidelines. In 2013, however, Duke Energy Renewables was charged with killing 163 protected birds including Golden Eagles, larks, and blackbirds at two Wyoming sites. The following year, also in Wyoming, PacifiCorp Energy was prosecuted for avian mortalities at two of its sites. Both companies pled guilty to having knowingly constructed facilities that they knew would likely kill protected birds. Both companies were fined—Duke \$1 million, PacifiCorp \$2.5 million—and ordered to put in place mitigation plans. However, as noted above, in November 2014, PacifiCorp sued the USFWS to keep information on bird kills secret. As long as such information is not available to the public or researchers, as well as the USFWS, all the provisions in the USFWS guidelines stipulating projections of likely impacts compared with studies of actual mortality figures are nugatory.

Tens of thousands of turbines already exist in sensitive areas for birds, and tens of thousands more are planned.

The ABC has published a very useful bird risk assessment map, which identifies particularly vulnerable areas: “major migratory routes, breeding areas, and sensitive habitats such as wetlands.” The areas identified as “critically important,” colored red on the ABC map, “have extreme potential for major negative impacts on federally protected birds,” but these comprise less than nine percent of the total U.S. land area. In Kansas, the areas around Cheyenne Bottoms and Quivira National Wildlife Refuge and the extreme southwestern corner of the state are the only areas colored red on the ABC map. However, all of the state from Salina and Hutchinson in the east to west of Goodland, Garden City, and Liberal are overlaid with three shadings of yellow-ochre, with the darker shadings that represent Bird Areas of Globally High Importance covering most of the center of the state west of US Highway 81. (There is also a “critically important” red area that starts just north of the Oklahoma state line southwest of Wichita, adjacent to several concentrations of existing wind turbines.) The ABC concludes that overlaying their Bird Risk Assessment Map with U.S. Geological Survey and Federal Aviation Administration maps shows

that “tens of thousands of turbines already exist in sensitive areas for birds, and tens of thousands more are planned.” 5,500 existing turbines are already located in the migratory corridor of the endangered Whooping Crane, and 18,500, with their associated power lines and towers, are planned for that critically important area. “Wind turbines may now be among the fastest-growing human-caused threats to our nation’s birds. Attempts to manage the wind industry with voluntary as opposed to mandatory permitting guidelines are clearly not working. Wind developers are siting turbines in areas of vital importance to birds and other wildlife, and this new data shows that the current voluntary system needs radical improvement”, said Dr. Michael Hutchins, National Coordinator of ABC’s Bird Smart Wind Energy Campaign. Research by ABC with the dateline August 20, 2014 showed that nearly 30,000 wind turbines have already been installed in those red areas marked of “high importance” to federally protected birds in the U.S.; at that time, another 50,000 more were planned in similar areas, including more than 16,000 in the Whooping Crane migration corridor, and 1,800 in sage-grouse breeding strongholds. “We were dismayed not only to find that the wind industry is building turbines in high bird impact areas but also in areas where the wind resources and return on taxpayer investment are marginal at best,” said Dr. George Fenwick, President of ABC. “In fact, more than 10,000 turbines are planned in or close to sensitive bird locations in areas with wind power class grades one or two, the lowest categories for profitability.”

Site proposals included native prairie, migration corridors, wildlife gathering spots, and sites too close to state wildlife areas, all violating state and federal guidelines.

When wildlife advocates in three separate counties in Kansas—Reno, Marion, and McPherson Counties—recently contacted AOK because industrial wind companies were threatening their “land communities,” AOK found that site proposals included native prairie, migration corridors, wildlife gathering spots, and sites too close to state wildlife areas, all violating state and federal guidelines. In Reno county, eight proposed turbines would incur multiple violations, fragmenting native prairie, impacting wetlands, degrading critical habitat for threatened and endangered species, and violating the three-mile buffer around Cheney State Park and the Cheney Lake Wildlife area. The developer ignored objections, noting that Kansas’s guidelines were “purely a recommendation—not a rule or regulation.” When objections were raised, the developer of a proposed site in Marion County simply refused to schedule the recommended KDWPT official site review.

Clearly, there may be good citizens and bad citizens among wind energy producers. Organizations like the American Wind Energy Association and the American Wind Wildlife Institute have cooperated with the Nature Conservancy’s Great Plains Site Wind Right initiative. Evergy, a power company serving more than 1.6 million customers in Kansas and Missouri, is reportedly using Site Wind Right maps in making their wind facility siting decisions. The Skookumchuck Wind Energy Project in western Washington State contrasts markedly with the Humboldt Wind Energy Project on the Bear River and Monument Ridges in California. Skookumchuck, the only approved wind energy project in the Marbled Murrelet’s breeding range, has complied with stipulations that it curtail turbines during high bird activity periods in the Marbled Murrelet breeding season. Curtailment (turning off the rotors) is an approved best practice for wind energy projects at discreet periods when bird or bat activity threatens unacceptable fatalities; it is even used at some California wind turbine sites, for example, at the Tehachapi Wind Resource Area, when an individual condor sporting a miniature radio transmitter or GPS transmitter is tracked as approaching operating turbines. This is a process often referred to as “informed curtailment.” It has been used to avoid collisions of rare and protected species such as Whooping Cranes and Golden Eagles, in addition to California Condors. It is enjoined on the operators in both the PacifiCorp and Duke plea agreements in 2014. (Clearly, fitting all species of concern with radio transmitters or GPS would be impractical; it works for condors because there are so few of them, most released from captive breeding programs.) Some curtailment regimes employ human spotters—a labor-intensive approach that might serve in predictable, limited periods of high activity, say, of Whooping Cranes in migration approaching known resting areas.

Much remains to be known about actual consequences of wind turbine interactions with wildlife and wildlife habitat; research continues, and evidence accumulates for the accuracy of preliminary estimates of impacts on species of concern and others, and for the effectiveness of measures taken to compensate for or mitigate losses predicted in those estimates. But fundamentally, in the USFWS *Guidelines for Best Practices* and similar guidelines issued by state wildlife agencies, conservation organizations, and local governments, we find that we already know that the first requisite for an acceptable wind energy facility is proper siting; and we already know what factors determine proper siting, and what locations and conditions ought to be avoided altogether. But all this accumulated and accumulating knowledge is rendered useless by slapdash preliminary screening of potential sites, short-circuiting of consultation with the USFWS and qualified local authorities, rejection of sound practices as “suggestions, not laws,” and lack of candor in assessing and reporting project impacts.

This is not to mention the reports of wind project developers steam-rolling local authorities to gain permissions, threatening lawsuits if denied, presenting one set of plans for approval and then switching after approval is secured (for example, building wind towers many feet higher than the dimensions submitted and authorized). Bad actors that engage in such behavior can scarcely be expected to follow through with the monitoring studies and reports that assure the safest operation of their facility. That lack of follow-through is doubly damaging, because such studies and reports would become part of the base of information on which future changes to the guidelines will depend.

Federal regulations and laws, not just “guidelines” and suggested practices, are essential.

Despite the shining examples of good citizenship and cooperation afforded by some wind energy companies, a patchwork of state “suggestions” and the largely voluntary federal guidelines constitute a wholly unsatisfactory solution to a growing environmental problem. If nothing else, the lack of a uniform national code that is enforceable would present a constant threat to migratory birds that pass from one jurisdiction to another, and to environmental resources that, in some cases, like our national parks and monuments, though actually located in one state or more, are part of the heritage of the American people at large. This is why federal regulations and laws, not just “guidelines” and suggested practices, are essential.

It will be hard, in America, to persuade legislators to enact adequate laws that would answer to the need. Politicians are reluctant to interfere with owners of private property who wish to supplement their income with wind farm leases, even though the greater good of the community would seem to call for such action. Even the voluntary agreement protecting the Flint Hills in Kansas, negotiated by then-governor Kathleen Sibelius and extended by Governor Sam Brownback, has been challenged by pressure on current Governor Laura Kelly from at least one county board to allow more wind projects into the protected area now known as the “governor’s box.” “Every time we get a new governor the issue comes up again,” says Brad Loveless, Kansas Secretary of Parks, Wildlife, and Tourism. “I don’t imagine there’s a lot of appetite on the part of the Legislature to legislate at protecting certain areas. All it takes to make a project work is a developer willing to site a project, a county that’s willing to accept it and approve it, and somebody that’s willing to buy the power. Given the right circumstances, all those things could come together and they could put wind power in a really bad spot.”

However, we don’t have to oppose wind energy categorically; studies conducted by the Nature Conservancy estimated that even after subtracting sensitive wildlife habitats from the nearly 222 million acres of land suitable for development in the Central Plains based on wind speed and terrain, approximately 91 million acres would remain, amounting to nine percent of the region; and these low-impact areas could yield approximately 1,099 GW of electrical energy. That amounts to more than ten times current U.S. wind capacity and is equivalent to the total generating capacity from all sources (AWEA 2019b, USDOE 2017.)

Green energy is good, but not all wind energy generation is harmless.

“We can and must do better if future generations of Americans are going to have a chance to see some of our nation’s most iconic bird species,” said [Dr. Michael] Hutchins [ABC National Coordinator of the Bird Smart Wind Energy campaign]. “Our nation’s wildlife should not be collateral damage in the battle against climate change, especially when much of the conflict could be easily addressed through better siting of wind projects and improved regulation.”

All the birds pictured in this article are among the species potentially harmed by poorly sited wind turbine projects.

--M. L. Donnelly

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Red-tailed Hawk. Photo by Bob Gress, BirdsInFocus