

County regulations are subject to change and should be reviewed for an understanding of the most recent wind energy siting requirements.

3.3 Taxes

Private property owners are not responsible for any taxes associated with a commercial wind energy facility on their land, other than those associated with their own increased income from rents or royalties received. Developers pay any additional property taxes incurred and all sales and generation tax associated with a wind facility.

Property Tax

A property owner who chooses to lease land to a wind energy developer for wind energy production will not pay additional property taxes for the increased property value from the wind energy facility. The wind energy company pays the property tax to the county based on the fair market value of the facility. In Wyoming, industrial properties are assessed at 11.5 percent of taxable value and then subject to the mill levy of the county.¹⁹ A 100 MW project in Wyoming in its first year of operation will pay roughly \$1.5–2.0 million in property tax.²⁰

Generation Tax

A wind energy company is also required to pay an additional \$1 generation tax per megawatt hour (MWh) of electricity produced from wind beginning January 1, 2012. Companies are exempt from this generation tax for the first three years of wind electricity production. The county in which the wind facility is located and the state share wind generation tax revenues. Each county receives a proportionate amount based on the percentage of assessed value from the wind energy facility, totaling 60 percent of the tax collected. The state receives 40 percent of the tax income, which is placed in Wyoming's General Fund.

Sales Tax

Wyoming exempts sales tax for equipment used in a wind energy project up to the point of transmission interconnection. The state has set a repeal date for this provision of December 31, 2011. To take advantage

of this benefit, developers must have had a written agreement in place with a landholder for a wind facility before January 1, 2010. They must also have purchased the equipment and have it physically located in Wyoming before the sunset date. After the sunset date, all wind energy equipment will be subject to the statewide 4 percent sales tax, plus any additional county sales and use taxes.

4 Living with Wind Development

4.1 Lifestyle Impacts

Most wind turbines in Wyoming are located in rural areas where ranching or farming is taking place or where there is low-density housing development. While wind energy projects can benefit landowners, there is potential for negative impacts as well, and disrupted viewsheds, increased noise, and decreased privacy can be a concern. Maintenance employees must access turbine sites, production areas, and storage areas via a network of roads, and for landowners accustomed to living in isolated areas, acceptance of some level of disruption may be necessary. The risk of lifestyle or other land-use disruptions from wind energy development can be reduced, although not eliminated, by careful planning and foresight by the landowner and developer.

Wind and Agriculture

Landowners and developers must consider the compatibility of commercial wind energy development with existing uses of agricultural land. While proponents of wind energy highlight its compatibility with crops and grazing livestock, noting that these activities can take place right to the base of a wind turbine, there may be other disruptions to landowners that lease lands for wind projects. For instance, each tower requires an access road for maintenance and repair that could reduce efficiency of field operations. It is important to note that landowners participating in a variety of USDA programs should consult with USDA before entering into a wind energy agreement (see Box 4).

Mitigation of agricultural impacts. Landowners can negotiate with wind developers for reimbursement for livestock and crop displacement costs. Loss of field efficiency can be minimized if roadways run the same direction that field operations are conducted. Landowners should also negotiate reclamation provisions into their lease agreements to mitigate land disturbance. Landowners may also wish to consider language in the lease agreement that addresses gate closures or provisions for sensitive areas, such as riparian areas, that they would like to remain protected.

Noise, Lighting, and Property Access

Wind turbine operation and construction are associated with noise, lights, and regular maintenance visits by wind facility personnel. These impacts can alter the environment of those living in rural or exurban areas.

Noise. For some turbines, noise production has decreased as the technology has advanced, and wind itself is often sufficient to mask sounds generated by a wind development; however, individuals vary widely in their tolerance for noise and may be annoyed by turbine

Box 4: Wind Energy Development on Agricultural Lands Enrolled in USDA Programs

Landowners who hold a mortgage from the Farm Service Agency (FSA) are subject to restrictions and a rigorous approval process to site a wind facility on their property. Participants in any of the following U.S. Department of Agriculture (USDA) programs must gain USDA approval to enter a wind energy lease agreement while continuing participation in the program:

- **Conservation Reserve Program (CRP).** Up to five acres of wind turbines can be approved on CRP lands, providing environmental impacts have been considered, without a termination penalty. Additional acreage could be approved if the state FSA office appeals to the federal office. The five acre figure is cumulative and is derived by totalling the square footage of land area devoted to the footprint of the wind turbine. Access roads, transformers, and other equipment are not included in the five acre figure.
- **Commodity program payments.** Wind development would have an effect on commodity program payments if base acreage is taken out of production.
- **Farm Ranch Land Protection Program (FRPP).** Landowners with easements should consult with the National Resources Conservation Service (NRCS) if considering commercial wind development.
- **Grassland Reserve Program (GRP).** Wind development cannot be authorized on GRP lands unless environmental impacts to the land are evaluated through the National Environmental Policy Act (NEPA) process and it is demonstrated that no reasonable alternatives exist.

The following USDA programs do not have any restrictions on wind energy development:

- **Environmental Quality Incentives Program (EQIP),**
- **Conservation Security Program (CSP), and**
- **Wildlife Habitat Incentives Program (WHIP).**

Wind development in wetlands could impact a landowner's ability to participate in other USDA programs. Landowners should consult with the USDA (either NRCS and/or FSA) before agreeing to development on wetlands.

Source: Gregor Goertz, Wyoming State Executive Director of the Farm Service Agency, U.S. Department of Agriculture, personal communication, 5 April 2011.

“whooshing.” The noisiest times of a wind project are generally during the months of construction and decommissioning when there is increased construction noise, personnel, and truck traffic.

Lighting and shadow flicker. Modern commercial-scale wind turbines are generally tall enough to enter airspace and therefore are subject to Federal Aviation Agency (FAA) regulations. To indicate the location of the turbines, the FAA requires developers to mark them with pulsing red or white warning lights that impact nighttime viewsheds. A different lighting impact of turbines is “shadow flicker,” which is when turbine blades pass in front of the sun to create a recurring shadow.

Interference and property access. Other issues may arise because of potential landowner obligations to the developer to avoid interfering with turbine energy production. “Interference” includes constructing buildings or planting trees above a certain height within a certain distance of a turbine. Wind facility personnel must also access a property for regular maintenance. In addition, developers may prefer to restrict hunting on the lands they are leasing to protect turbines and operational equipment. In general, if a use is not expressly stated in a lease agreement it is assumed not to exist, so if a landowner wishes to retain certain land uses (such as hunting) the land use should be explicitly stated in the lease agreement.

Mitigating issues of noise, lighting, and property access. Sound standards can be negotiated with the developer for construction and personnel activities, including reasonable hours of activity. In addition, permitting for wind projects includes complying with local government sound ordinances that will set an acceptable decibel level for all activities.

Light disturbances, such as pulsing nighttime lights, are difficult to avoid, and a landowner will experience some degree of lighting impact from the turbines. There is, however, a new technology that detects the presence of an aircraft and only illuminates the turbines in its presence; as of the publication of this guide, one wind developer operating in Wyoming has proposed to include this technology as part of its wind facility. To

minimize shadow flicker, computer models can predict where it may occur so that developers can design the wind development in such a way that lessens the disturbance.

Property access mitigation measures can take the form of landowners negotiating setbacks from residential areas and property lines and also general exclusion areas that the developer or operator has no right to access. Landowners and developers can also work together in the lease negotiation process to determine access routes and access points. Landowners should also carefully consider their future building needs when negotiating any building restrictions that may be part of a wind energy agreement. Landowners who value hunting as part of their lifestyle or as an economic activity may wish to consider their willingness to cede hunting rights prior to entering a wind energy lease agreement. It is important for both the landowner and his or her legal counsel to understand the degree of flexibility s/he is willing to offer when negotiating these issues.

Wind and Land Conservation

Typically, the overarching purpose of a conservation easement is to protect open space, wildlife habitat, visual quality and aesthetics, and traditional land uses such as agriculture. Since conservation easements are intended to protect these resources through limiting development on the land they protect, landowners who place easements on their land agree to give up some or all development rights in perpetuity. It may be possible to structure a conservation easement agreement to allow the construction and use of small-scale wind turbines or towers for personal ranch use, but land trusts will generally include provisions in an easement that prohibit construction of industrial or commercial facilities, which includes commercial wind facilities. Landowners who have an interest in hosting a commercial wind facility and are also interested in conservation easements should consider protecting important habitat areas, such as riparian corridors or winter range, through a conservation easement and leaving other land open for wind energy development.

Environment and Wildlife

Wind turbines have the potential to impact wildlife. The severity of impacts depends primarily on the animals and habitat present and also on how the wind development is designed and sited. The primary wildlife impacts of wind developments are likely to be:

- Direct fatalities, such as bird and bat collisions with turbines.
- Possible loss of and fragmentation of habitat due to turbines and roads.
- Possible indirect effects, such as wildlife avoidance of an area due to disturbance.

Because most research has been conducted on measuring direct fatalities of bird and bat species, impacts to other species are largely unknown at this time.

Birds and bats. While bird and bat mortality is the greatest wildlife impact of wind turbines, in 2006 the National Academy of Sciences estimated that wind energy is responsible for fewer than 3 of every 100,000 bird deaths caused by human (and feline) activities.²¹ However, wind developments can still substantially impact resident or migrating bird and bat populations when there are site-specific conditions, such as a large population of golden eagles, a migration pathway for songbirds, or hibernation sites or migration pathways for bats. Of particular concern in Wyoming is impact on the greater sage-grouse (see Box 5).

While today's turbines move at a slower rate than those of the past, and tubular-tower structures provide fewer perching opportunities for birds than previous lattice-tower models, impacts can still be relatively high at some sites. Golden eagle mortality is an increasing concern for wind energy development, and the U.S. Fish and Wildlife Service (USFWS) in January 2011 released "Draft Eagle Conservation Plan Guidance" to provide guidelines on how to evaluate potential impacts on eagles from proposed wind energy projects.²²

Big game. Wyoming is home to large big game populations of pronghorn antelope, mule deer, white-tailed deer, bighorn sheep, and elk, among others. The effects of wind energy development on large ungulates remain largely unknown. The primary influence of wind projects on big

game species may be the effects of habitat fragmentation and disturbance that causes animals to avoid an area. This is particularly a concern if big game species are displaced from important seasonal habitats such as winter ranges, parturition areas, or migration corridors.²³

Vegetation. Other potential environmental concerns include invasive plant species and weed control associated with disturbance from construction and road development. Landowners may consider a contractual provision in the wind energy lease agreement that provides for an annual weed abatement program.

Mitigating impacts to wildlife. During the investigative stages of commercial wind energy development, developers are responsible for conducting an environmental assessment. Proper siting is the best way to reduce the potential for bird collisions; migratory pathways and areas that are heavily used by endangered species are probably unsuitable for wind development. To that end, development—while not prohibited—is "not recommended" in designated sage-grouse core areas. The Wyoming Game and Fish Department has published guidelines for wind energy development that cover big game winter ranges, sage-grouse habitat, priority watersheds, and other important habitats.²⁴ The USFWS draft "Land-Based Wind Energy Guidelines" suggest avoiding high bird concentration areas, such as wetlands and bird refuges; avoiding known daily flyways, such as between roosting and feeding areas; and avoiding bat migration corridors.²⁵ In addition, developers may wish to avoid siting wind energy facilities within crucial big game ranges including winter, identified parturition, and migration corridors.

Cultural and Historical Resources

The environmental assessment conducted by the developer will identify and consider cultural and historical resources. The presence of archaeological sites or the listing of property on the National Register of Historic Places can have implications for wind energy development. If part of a property is listed or is eligible for listing on the National Register of Historic Places, developers will be required to avoid the property or to mitigate the effects of the development on the site.²⁶

Box 5: Greater Sage-Grouse Core Areas

In Wyoming, wind energy development is constrained by sage-grouse core areas, as delineated in the Governor of Wyoming's Executive Order #2011-5. Many of the most attractive wind development sites are within sagebrush ecosystems inhabited by the greater sage-grouse, a species of conservation concern. Wind development is not recommended in core areas, and when greater sage-grouse protection areas coincide with private lands, developers may be denied permits or held to more stringent requirements concerning the collection of baseline data and monitoring. The core areas are regularly updated, and landowners should check the Wyoming Game and Fish Web site (http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/index.asp) for the most recent version of the map.

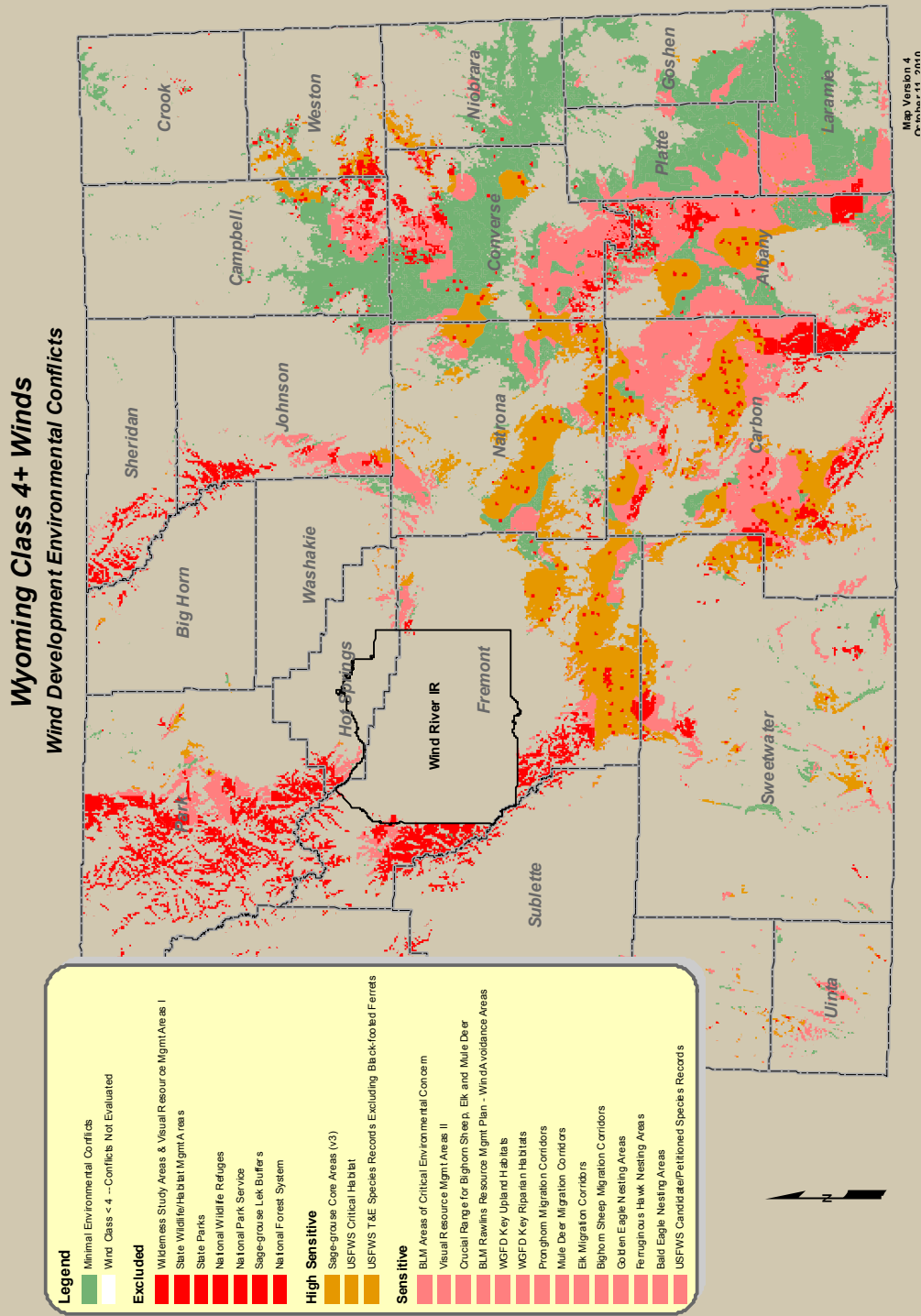


Figure 8. Wyoming greater sage-grouse core areas (Version 4). The colored areas represent locations with commercial wind energy development potential. Areas in green are lands on which there is little conflict identified. Areas represented in red indicate state or federally protected land and will likely be excluded from development; those in orange have been designated sage-grouse buffers or critical habitat. (Source: Wyoming Game and Fish.)

4.2 Community Impacts

Communities impacted by a variety of electricity-producing technologies struggle with the local costs of energy development while the primary benefits (i.e., electricity) are generally exported. These projects do, however, benefit communities that house them through increased jobs, greater tax revenue, and, at times, investments by energy developers directly into the community. As wind energy continues to post record growth in Wyoming, some communities are experiencing more collector or transmission lines, turbines that affect viewsheds, an uneven distribution of payments among landowners, as well as noise, light, and wildlife disturbances.

Public costs of wind energy projects include those associated with road improvement or maintenance from increased trucking or increased stress on community services, such as schools and law enforcement, which occurs when there is an influx of construction workers and their families. To address these costs, any project greater than 30 turbines must go through the industrial siting permitting process, and the Industrial Siting Council will assess the project's impacts and can choose how to distribute impact assistance funds to counties (see Section 3.2). In addition, many counties' bonding requirements include compensation for road damage.

Economic Impacts

Wind energy development brings economic gain to a community during construction through direct impacts, such as job creation, and indirect impacts, such as increased business for motels/hotels, restaurants, and other local businesses. Jobs demanded during the construction phase of a wind energy facility include truck drivers, crane operators, and personnel for earth moving, cement pouring, management, and other support tasks. After construction, wind energy facilities also require full-time employees, and there are typically four to eight jobs created per 100 MW of installed capacity.²⁷

Social Impacts

Visual impacts of wind turbines are generally the largest source of contention within communities. Landowners adjacent to wind projects who are not directly

receiving economic benefits, in particular, may object to their presence. Neighbors to wind facilities may be particularly sensitive to a drop in property value if they are sited near a wind development, and their objections can lead to project delays or litigation.

Mitigating Community Impacts

Because of possible impacts on others in the area, landowners who are considering a commercial wind project may wish to communicate with neighbors and local community members about the possibility of the development early in the process. It is also important that, when assessing the impacts of wind energy projects, consideration is given not only to the landowners who lease the land for the project but also to other affected but uncompensated landowners. Landowner wind energy associations (see Section 2.3) are one way to address these concerns.

When seeking to mitigate visual impacts on a community, it is possible to evaluate the importance of a landscape to the surrounding community in advance. It is also important to integrate the project into the surrounding landscape and consider landscape elements in wind project design. Additional mitigation strategies for visual impacts include:

- Designing for visual order and avoiding clutter;
- Constructing facilities away from ridgelines and steep slopes;
- Clustering turbines and providing breaks in arrangement;
- Using color treatment on towers to reduce visual impact; and
- Burying lines and cables to minimize surface disturbance.²⁸

Conclusion

This guide outlines the process of commercial wind energy development on private lands and provides landowners with a reference for some considerations that should be taken into account when contemplating wind energy development on their land. When engaging in the commercial wind development process, landowners should consult additional resources (see Appendix I) and seek knowledgeable legal counsel.