

STATE ENABLING LEGISLATION FOR COMMERCIAL-SCALE WIND POWER SITING AND THE LOCAL GOVERNMENT ROLE

An Environmental Law Institute Report



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Executive Summary

Siting of commercial-scale wind facilities (>5MW) is determined primarily by state laws. State laws either leave siting regulation to local governments, prescribe and constrain the role for local governments, establish state standards, or preempt local governance by having state institutions govern siting.

Siting regulation is extremely important to the advancement of wind generation in the United States. Installed wind power, now exceeding 40 gigawatts nationally, still represents only 2 percent of electric power generation. Major siting decisions lie ahead for state and local governments as the nation diversifies its energy portfolio. An increase in the number of new wind facilities, siting in more locations and in more heavily populated areas, will require attention to the laws and regulations that govern siting.

Responsibility for Siting. Local governments exercise some authority over commercial-scale wind facility siting in 48 of the 50 states. In thirty-four states, local governments have substantial autonomy to regulate the siting of most or all commercial-scale wind facilities. A few additional states authorize local governments to regulate wind facility siting, but make the scope of local regulation subject to limitations defined by state law. Eleven states set size thresholds for state regulatory involvement – with local governments in these states regulating smaller facilities and state boards regulating larger ones (either exclusively or concurrently with local governments). In just under a third of the states, siting of most or all commercial-scale wind facilities requires approval by *both* state and local government bodies. Only a few states reserve the regulation of siting of all or virtually all commercial-scale wind facilities to state boards and commissions. The content of the applicable regulations is more important, in general, than the level of government responsible for the decision.

State Regulation of Local Siting. Several states that assign siting responsibilities to local governments have specified some of the content and the limits of local regulation. Some states grant authority to local governments to protect wind areas from incompatible uses that might interfere with the ability to site wind facilities. Some state laws, such as those in Wyoming and South Dakota, specify minimum setback distances to be applied by local governments regulating wind siting. Wisconsin law specifies the adoption of detailed state standards that local governments may use to regulate, but the adopted state regulations were suspended by the legislature before they could go into effect. New York law superficially limits local regulation of wind facilities, but only by requiring that such local regulation be adopted by the locality through its zoning and building regulatory laws, and/or by otherwise carrying out state environmental and safety requirements. Some states have adopted procedural laws that facilitate local regulation or review of local decisions. And others have adopted direct regulations (such as Oklahoma’s law requiring decommissioning of facilities, for example) that apply regardless of local regulations.

State Standards for State Boards. About 1/5 of the states have directed boards and commissions to develop statewide regulations to deal with wind facility siting issues subject to state approval. These requirements most often specify standards for setbacks, wildlife, noise, decommissioning, and other issues. Ohio’s authority includes, for example, the ability to “prescribe reasonable regulations...including, but not limited to, their location, erection, construction, reconstruction, change, alteration, maintenance, removal, use, or enlargement and including erosion control, aesthetics, recreational land use, wildlife protection, interconnection with power lines and with regional transmission organizations, independent transmission system operators, or similar organizations, ice throw, sound and noise levels, blade shear, shadow flicker, decommissioning, and necessary cooperation for site visits and enforcement investigations.”

Content of Siting Regulation. This study reviewed state siting laws and regulations, and all statewide “model” ordinances prepared for use by local governments. Whether siting regulation is local, state, or both, the regulatory approach must include authority to address:

- Facility Location
- Visual Impacts
- Safety Requirements
- Setbacks from Property Lines and Structures
- Wildlife and Habitat Protection
- Noise
- Shadow flicker
- Electromagnetic interference
- Decommissioning
- Other (roads, neighboring property, insurance, erosion).

In general, regulatory treatment of these issues offers the following lessons:

- Wind energy should be an authorized land use in identified use districts and overlay districts (by either by right or permit), and not excluded from entire jurisdictions except on the basis of specific impacts (such as those below) that cannot be addressed in a given jurisdiction except by exclusion.
- Regulations should provide for evaluation of visual impacts on important viewsheds, and should provide for uniform and unobtrusive structures consistent with aircraft safety and other safety requirements.
- Safety requirements, including site access requirements, should protect the general public and should address access and site engineering.
- Setbacks should be authorized from property lines and structures (particularly inhabited structures on nonparticipating adjacent properties), but these should not be excessive nor more than ordinarily required to meet safety and noise requirements. Setbacks greater than 1.1 maximum turbine height are generally not needed unless they are to address specific considerations relating to impacts on identified residents, public facilities, or resources. Local governments should not impose excessive setbacks in order to exclude wind energy facilities.
- Habitat protection should address avoidance of key habitats, minimization of impacts, and mitigation for unavoidable impacts; it should rely on a step-wise approach of site identification, evaluation, permitting and monitoring. Local habitat-related requirements should be informed by state and federal expertise and should be structured to supply needed information.
- Noise standards should ordinarily be set using statewide standards and methods; and electromagnetic interference issues should also be resolved on a technical basis using state or federal requirements where available. Ideally, shadow flicker can be addressed with appropriate siting and/or setback from occupied structures; regulations can specify site evaluation requirements as well as performance standards.

- Decommissioning of facilities must be provided for, including requirements for triggering of decommissioning requirements and site restoration issues, and financial assurance is often appropriate.
- Local and state governments can address other issues. Among these, regulations concerning the use and maintenance of public and private roads may deserve attention given the particular demands of wind facility construction and maintenance.

Model State Enabling Language. Current experience with commercial-scale wind siting across the United States does not now suggest a preference for siting by either local or state governments or by any particular combination of the two. This study draws on existing examples to provide model language to address the needs of state legislators seeking to draft enabling language and siting authority under any of these models of governance.

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I. INTRODUCTION

Choices made by state legislatures will profoundly affect the development and location of commercial-scale wind power electric generating facilities in the United States. A rapid and orderly transition to increased reliance on wind energy will require state policymakers to consider and improve state laws that define the framework for siting such facilities.

This report examines how authority for siting decisions may be allocated between local governments and state agencies, and what constraints may be defined by state laws. It specifically examines authority for siting decisions affecting wind energy facilities greater than 5 megawatts (MW) capacity.¹

State Siting Laws Matter

The National Academy of Sciences has identified wind facility impacts of potential interest to state and local regulators: environmental, health, aesthetic, cultural, economic and fiscal, electromagnetic interference, and cumulative impacts.² Some of these impacts may be of particular interest to local governments, while others may be best addressed with a standardized approach or resolution by state policy.

In addressing (or not addressing) these impacts, state laws directly affect wind facility siting opportunities, and the choices made by wind developers. While other factors – such as financial viability, tax credits, access to markets, power purchase contracts, renewable energy

portfolio standards, and access to transmission – deserve attention in supporting the transition to a wind-powered electricity generation sector, siting laws are also important.

Yet, in the public policy arena, siting has been largely disregarded. For example, even in the most recent “state of the states” report, the National Renewable Energy Laboratory (NREL) did not include siting policy in its review of state “policies supporting renewable energy development and best practices.”³ A more systematic approach to siting policy will be needed as proposals for commercial-scale wind projects expand to additional states, new lands and waters, and to more counties and municipalities.⁴ Thirty-eight states have some commercial-scale wind facilities constructed and operating within their borders, and fourteen of these have over 1000 MW of constructed capacity. Nevertheless twelve states have no commercial-scale wind facilities at all.⁵ And even states with existing wind facilities may not

¹ This threshold has been selected in order to easily distinguish laws governing facilities intended to produce power for wholesale distribution and sale from those that primarily serve on-site users, homeowners, or small community systems. A number of state laws addressing wind power recognize a legal distinction at this size. Some policy organizations prefer the term “utility-scale” and use a threshold of 20 MW.

² National Research Council, *Environmental Impacts of Wind-Energy Projects* (National Academy Press. 2007).

³ Elizabeth Doris, J. McLaren, V. Healey & S. Hockett, *State of the States 2009: Renewable Energy Development and the Role of Policy*, NREL/TP-6A2-46667 (NREL, October 2009). This otherwise useful report focuses on state laws and policies for contractor licensing, equipment certification, generation disclosure, grants, green power purchasing and aggregation, interconnection, line-extension analysis, mandatory utility green power consumer option, net metering, public benefit/system benefit charge, rebates, renewable energy access laws, renewable energy production incentives, renewable portfolio standards, and tax incentives.

⁴ Through 2010, the United States has over 40 gigawatts of installed wind capacity (American Wind Energy Association, *AWEA US Wind Industry Year-End 2010 Market Report* (Jan. 2011), representing about 2 percent of electric power generation capacity according to the Energy Information Administration. <http://www.eia.doe.gov/cneaf/solar.renewables/page/wind/wind.html>. In 2008, the Department of Energy announced a goal of achieving 20 percent wind generation by the year 2030. U.S. Department of Energy, *20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply* (July 2008), available at http://www1.eere.energy.gov/windandhydro/wind_2030.html.

⁵ American Wind Energy Association, *AWEA US Wind Industry Year-End 2010 Market Report* (Jan. 2011).

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have clear, straightforward, siting laws and procedures.

In the last several years, several states have substantially enacted or amended their laws affecting wind power siting.

State legislators interested in providing a clear framework for the evaluation of wind facility proposals, including those seeking to encourage the siting and development of wind facilities,⁶ will need to determine what scope of local authority over siting is consistent with the state's energy and environmental goals. State laws define the powers of local governments to regulate land uses, and may specifically address local authority over wind facilities in particular. Alternatively, state laws may limit local governments to specific issues, or they may entirely preempt local government jurisdiction over siting. State laws may confer siting powers upon state agencies and commissions.

Two Key Decisions

1. State policymakers and legislators first need to decide *whether* local governments should be engaged in siting decisions at all for commercial-scale wind facility siting. If local governments should play a role, then state law should define whether the local government is the sole decisionmaker, a dual decisionmaker exercising independent responsibility alongside a separate and independent state process, or a contributor to a state decisionmaker which has the ultimate say. Alternatively, state law may preempt local government action and confer exclusive authority on a state body such as a public utility commission or state siting board.

In the absence of state legislation to the contrary, local governments will apply their land use planning and zoning powers as well as other regulatory "police" powers to address issues relating to wind facility siting. Law professors Patricia Salkin and Ashira Ostrow note that because land use regulation has "traditionally

been a function of local governments...in many states, local zoning authorities are primarily responsible for approving and siting wind farms."⁷ While this default to local government siting regulation is the norm in the majority of states, in others, state laws specifically determine whether a state-level board exercises exclusive or concurrent authority.

State legislators should make an explicit decision about the role of local government. This is important if the path to wind power siting is to be clear and predictable. Without such a choice, local regulatory results may occur that may not serve state (or national) renewable energy objectives.

2. If local control is not entirely preempted, state legislators will need to determine what limits should be placed by state law on the *content* of local government regulations. Local governments' actions on the siting of commercial-scale wind facilities have, for example, included bans, moratoria, adoption of detailed construction and site requirements, and *ad hoc* decisions granting or denying special use and conditional use permits. Local regulations and permit conditions may, for example, identify particular zones where facilities are permissible or prohibited; prescribe limits on noise, lighting, hours of operation, access, color, and height; define setbacks from property lines and other uses or buildings; provide for safety, wildlife protection, and access; and require decommissioning, insurance, and other technical matters.

While local government regulations and decisions may reflect the interests of their constituents, local control may also impose some broader social costs. For example, some local governments have acted to exclude facilities from areas where the wind resource is very valuable regionally or within a state as a potential source of energy. Locally-enacted noise, visual, siting configuration, and other criteria may not necessarily be consistent with

⁶ The National Academy of Sciences panel notes that "there is little anticipatory planning for wind-energy projects." NRC, at 147.

⁷ Patricia E. Salkin & Ashira Pelman Ostrow, "Cooperative Federalism and Wind: A New Framework for Achieving Sustainability," 37 HOFSTRA L. REV. 1049, 1065 (2009).

state policies or with practices elsewhere in the same state. In the absence of state legislation defining local government powers and setting standards, wind siting may labor under a handicap as each locality independently works out its own approaches.⁸

Why is the Local/State Issue Particularly Important in Wind Facility Siting?

States that regulate electric power generation often assign responsibility for approving larger generating plants to their public utilities commissions or boards, and limit local government regulation of these large facilities. For example, the South Dakota Public Utilities Commission only has jurisdiction over energy facilities with generating capacities over 100 MW.⁹ But wind facilities raise some new siting issues not necessarily faced when the regulatory thresholds for conventional generating facilities were originally adopted.

Many commercial-scale wind projects are much smaller in rated output than the typical large fossil-fuel electric power generating facilities often subject to state, rather than local, regulation. Yet the land impacts of these smaller wind facilities can be substantial. A 50 MW 30-turbine wind farm can occupy a large and dispersed land area, and the turbine sites are often intermingled with other uses. Moreover, potential locations for wind facilities differ substantially from thermo-electric generating facilities as well. For example, they often occupy ridge-tops rather than valleys (as they do

not need access to cooling water). Potential wind facility siting conflicts and issues such as aesthetics, proximity to homes and farms, noise, and impacts on nearby neighbors, vary from those encountered with traditional forms of electric power generation.

In a recent study, the National Renewable Energy Laboratory examined the land use requirements of 172 commercial-scale wind facilities constructed in the U.S. since 2000.¹⁰ NREL found that the land area directly disturbed and occupied by the constructed wind facilities (the direct impact area) ranged from 0.06 hectares/megawatt (ha/MW) to 2.4 ha/MW, with 80 percent of the projects directly occupying 0.4 ha/MW or less (with a larger area subject to temporary disturbance during construction). However, NREL also found that the land area “footprint” of each wind project as a whole (total wind plant area) ranged from 9 ha/MW to 100 ha/MW; a very few “outlier” projects fell above or below this range. Eighty percent of the evaluated projects used 10-50 hectares per megawatt of generation capacity. Based on these findings and the tables appended to the study, it is clear that **nearly all commercial-scale wind facilities involve project areas of 1000 hectares or greater**, and most substantially more than this.

This means that local governments regulating commercial-scale wind facility siting will typically be dealing with areas of land larger than 2,500 acres (approximately 4 square miles). This is a very large area indeed compared with other local planning and zoning decisions and site plan approvals with which they more commonly deal (e.g. for housing developments, commercial centers, and even industrial facilities).

⁸ To help address common issues some states and private bodies have prepared model ordinances to assist local elected officials. See Table 3, *infra* at 39. NREL and the National Association of Counties prepared a guide for county commissioners, which helps identify key resources for use by local officials in considering whether to permit wind energy facilities. M. Costanti, et al., *Wind Energy Guide for County Commissioners* (NREL, 2006). AWEA also prepared a siting guide and model ordinance template for use with small wind systems. AWEA, *In the Public Interest: How and Why to Permit for Small Wind Systems* (Sept. 2008).

⁹ S.D. CODIFIED LAWS §§ 49-41B-2; 49-41B-4.

¹⁰ Paul Denholm, Maureen Hand, Maddalena Jackson, and Sean Ong, *Land-Use Requirements of Modern Wind Power Plants in the United States*, NREL/TP-6A2-45834 (NREL, August 2009).

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Wind facilities raise some unique issues for local governments. In general, state laws intended to define the scope of local governance in wind facility siting should address issues at the state level by providing some common standards for matters of state concern in siting (such as wildlife, noise, impacts on public resources or roads). State laws may also define the subject matter left to local governments with some precision to ensure that issues such as decommissioning of facilities and definition of setback lines are addressed in a coherent manner.

This report identifies existing state laws and model ordinances to help inform state policymakers about their options in allocating certain decisional issues to local government.

II. WHO MAKES THE SITING DECISIONS?

As a threshold matter, state legislators must decide whether responsibilities for siting wind facilities should lie with a state siting board, with local governments, or with both. This Chapter provides a guide to the ways that states have allocated wind facility siting responsibilities. The approaches (ranging from most to least local influence) are:

1. Local siting with local autonomy
2. Local siting with a defined scope
3. Dual authority with independent decisions
4. Dual authority with state preemption
5. State siting incorporating local requirements
6. State siting

1) Local Siting with Local Autonomy

In this governance model, local governments are responsible for siting decisions over wind facilities and state law does not limit local siting regulatory power. In the absence of explicit state regulatory jurisdiction over siting, local governance will apply. This model may also apply even if a state public utility commission remains responsible for issuing a certificate of need authorizing the production of electric power or for decisions about transmission or connection to the grid, where these determinations do not address facility siting.

This model of regulation is most deferential to local interests. It allows local governments to prohibit wind facilities altogether or to limit them to particular zones and locations. It allows them to prescribe conditions for construction, operation (at least in part), and decommissioning. Because it maximizes local autonomy, this model may make wind facility siting very difficult for a wind energy project developer where there is local opposition. Conversely, however, it may facilitate rapid

approval where the local decisionmakers (elected boards and councils, and appointed planning and zoning boards and commissions) strongly support wind development.

Where a local government has not enacted rules or established zoning regulations for wind energy facilities, this model may lead to disputes when such facilities are proposed. Such disputes may include whether wind facilities are allowable uses by right, approvable subject to conditions, or not allowed at all without rezoning and new regulations. This prospect may, in turn, prompt some local governments to adopt a moratorium on considering and approving applications for wind facilities in order to allow the local government to develop suitable regulations and ordinances (in those states where planning moratoria are allowed by state land use laws). Thus, local autonomy may impose a cost in time and uncertainty where local governments have not provided explicitly for wind facilities.

Whether or not they write new ordinances, local governments operating under this model of autonomy will need to develop expertise (either on their professional staffs or through engaging consultants) in order to deal effectively with proposals for wind facilities. Such experts will be needed to draft ordinances, evaluate applications, and to devise and apply appropriate conditions. There may, consequently, be less uniformity in approach than in states where siting decisions are made by a state body, or where state expertise is used to develop prescribed standards and conditions. Applicants will also need to prepare for public hearings where citizens may take positions on local siting decisions.

Table 1: Local government siting autonomy

These 34 states give local government substantial autonomy over both the process and substantive requirements for siting of commercial-scale wind facilities. *This list does not include states that incorporate local ordinance requirements into a state agency siting process, or states whose laws place specific constraints on local siting decisions.*

Alabama
Alaska
Arizona
Arkansas
California
Delaware
Florida
Georgia
Idaho
Illinois
Indiana (DNR consultation may be necessary)
Iowa (under 25 MW)
Kansas
Kentucky (under 10 MW; both state and local where over 10 MW)
Louisiana
Maryland (under 70 MW)
Massachusetts (under 100 MW)
Michigan
Mississippi
Missouri
Montana (DEQ may regulate aspects of environmental compliance)
New Hampshire (under 30 MW)
New Mexico (under 300 MW)
North Carolina
North Dakota (under 60 MW)
Oklahoma
Oregon (under 35 MW, unless developer elects to use state siting process)
Pennsylvania
Rhode Island (under 40 MW)
South Carolina
South Dakota (under 100 MW)
Tennessee
Texas
Utah

State legislators seeking either to promote or constrain wind power development will find that the local autonomous siting approach can produce great variability. This approach can be consistent with development of a wind industry if other factors support it. **Texas**, the state with the most installed wind capacity (over 10,000 MW),¹¹ delegates all wind facility siting decisions to local governments.¹² **North Dakota**, where siting decisions are exclusively local for projects up to 60 MW, is also among the top ten states with the greatest installed wind capacity.

At the same time, local autonomy can lead to individual battles over whether or not to allow commercial-scale wind, as well as over what standards and conditions should be imposed by a county, town, or city. In **Kansas** local governments are responsible for wind facility siting decisions.¹³ Although it is up to county and local governments to decide whether to permit wind facilities, Kansas has over 1000 MW installed capacity. The state has issued a handbook for counties on how to draft ordinances for commercial wind power.

Nevertheless, local governments may decide to reject wind power as a permissible land use. For example, Waubensee County, an 800-square mile rural county in Kansas's scenic Flint Hills, adopted an initial moratorium on consideration of conditional use permits for commercial wind energy facilities, in order to consider revisions to its land use plan and zoning ordinances. Then in 2004, the county board of commissioners adopted an updated comprehensive plan and revised zoning ordinance. While the county's planning commission had recommended a

zoning ordinance that would allow commercial wind facilities as a conditional use, the board instead adopted a zoning ordinance that prohibited "commercial" wind projects – defined as able to generate 100 KW, or as a single generating unit taller than 120 feet, or as more than one unit of any size proposed by the same person or group of persons on the same or adjacent parcels or as part of a unified generating system. Land owners and wind rights holders filed suit, and in 2009 the Kansas Supreme Court upheld the county zoning ordinance, finding that the board's decision to prohibit commercial wind was within its legislative discretion, and that it was reasonably supported by the record. The court noted that a total ban might be "unwise" but was not illegal. The court held that the county's action was not expressly nor impliedly preempted by state law, as the Kansas Electric Public Utilities Act preempts local regulation of siting only for nuclear power plants and for electric transmission lines above a certain voltage.¹⁴

In **Illinois**, which has over 2,000 MW in installed wind capacity, state law explicitly grants counties the power to "establish standards for wind farms and electric-generating wind devices. The standards may include, without limitation, the height of the devices and the number of devices that may be located within a geographic area."¹⁵ The statutes also mandate a procedure for notice and hearing. Counties may regulate siting of wind facilities in their unincorporated areas further than 1.5 miles from a municipality, while municipalities may regulate wind development within 1.5 miles of their borders.¹⁶

¹¹ Statistics on installed wind capacity are from the American Wind Energy Association, State Fact Sheets, available at http://www.awea.org/learnabout/publications/factsheets/factsheets_state.cfm

¹² Patricia E. Salkin & Ashira Pelman Ostrow, "Cooperative Federalism and Wind: A New Framework for Achieving Sustainability," 37 *HOFSTRA L. REV.* 1049, 1065 fn. 90 (2009).

¹³ State enabling legislation gives cities and counties the power to adopt zoning ordinances, providing a non-exhaustive list of areas of permissible regulation. *KAN. STAT. ANN.* § 12-753.

¹⁴ *Zimmerman v. Bd. of County Comm'rs*, 289 Kan. 926, 218 P. 3d 400 (Kansas, 2009) (the county board adequately considered aesthetics, conformance with the comprehensive plan, and wishes of residents).

¹⁵ 55 ILL. COMP. STAT. 5/5-12020.

¹⁶ 55 ILL. COMP. STAT. 5/5-12020; 65 ILL. COMP. STAT. 5/11-13-26. The same laws prohibit counties or municipalities from adopting setbacks from the property line of greater than 1.1 times the turbine height for wind energy systems used "exclusively by an end user" but no such limitation is imposed on local regulation of commercial wind facilities.

2) Local Siting with Defined Scope

Some states have determined that local governments should exercise control over wind facility siting, but have enacted statutes constraining the scope of local control. This model generally recognizes that local governments are not well suited to address all aspects of wind facility siting, and so takes some subjects off the table for local governments. Such limitations on local authority have been enacted where state governments have wanted to encourage wind power development or where specific issues are believed to be better resolved at a higher level of governance. State legislation can help provide more regulatory predictability, even while allowing local governments some scope for exercise of their discretion. This model also offers a way for state legislatures to foster decisions that reflect state-wide interests and not just local needs. It provides a middle path between assigning all siting duties to a state body and leaving all siting to independent local governments – by defining what the local governments may address, and in some cases what standards must be applied by those governments.

In **New York**, formerly among the top ten states for installed wind capacity, but where new facility siting has fallen off, local governments are exclusively responsible for regulating siting. However, New York state law limits the local restrictions that may be placed on an “alternate energy facility” – that is, a wind or other renewable energy facility with a capacity under 80 MW that is not located in a city with over a million people, nor within Adirondack Park or Catskill Park. Local governments may not impose conditions or requirements –

other than those provided by otherwise applicable state laws (i) for the protection of the employees engaged in the construction and operation of any such facility or (ii) for protection of freshwater or tidal wetlands *or other than those necessary to comply with local zoning and building laws or ordinances* or other than those issued by a state agency pursuant to a delegation of authority pursuant to federal law, or other than [state laws dealing with

environmental quality review or regulation of reservoir releases].¹⁷

The highlighted provision is, on the surface, somewhat tautological: Local governments may not impose requirements except for those they impose under zoning and building laws. What this appears to mean is that local governments cannot “freelance” their environmental regulation of commercial wind, but must actually adopt provisions that are consistent with, and justified in the context of, their zoning scheme.

Some states using the model of state-defined or constrained local regulation have taken an additional step. Their legislation directs a state body to develop siting standards and criteria that must be used by local governments. For example, **Wisconsin**, which now gives local governments the exclusive power to issue permits for wind energy systems under 100 MW, has adopted comprehensive restrictions on the local permitting process. The Wisconsin Public Service Commission, with the advice of a temporary Wind Siting Council, is charged with promulgating rules that:

specify the restrictions a political subdivision may impose on the installation or use of a wind energy system . . . The subject matter of these rules shall also include decommissioning and may include visual appearance, lighting, electrical connections to the power grid, setback distances, maximum audible sound levels, shadow flicker, proper means of measuring noise, interference with radio, telephone, or television signals, or other matters. A political subdivision may not place a restriction on the installation or use of a wind energy system that is more restrictive than these rules.¹⁸

Additionally, the PSC must specify the documentation that applicants will be required to submit to demonstrate compliance and require applicants to demonstrate the ability to carry out

¹⁷ N.Y. ENERGY LAW § 21-106(2) (emphasis added).

¹⁸ WIS. STAT. § 196.378(4g)(a)(4). The rules, adopted by the PSC in 2010 were rejected by a review committee of the state legislature on the day they were to have gone into effect, March 1, 2011.

a decommissioning plan.¹⁹ In order for a local government to regulate wind energy systems, it must enact an ordinance pursuant to the applicable law.²⁰ A county ordinance does not apply if there is an applicable town ordinance.²¹

In **Wyoming**, local governments that permit wind facilities with capacities over 0.5 MW must provide for compliance with state requirements. These include provisions for emergency management plans, decommissioning, setback requirements, prohibitions on advertising on the equipment, and other rules.²² State permits are also required for facilities with more than 30 turbines.

3) Dual Authority with Independent Decisions

In about a quarter of the states, wind facility developers must obtain approvals from both the local government and a state body. The different regulatory authorities apply separate, but sometimes overlapping, criteria. This approach allows project to go forward only if they satisfy **both** state and local concerns in separate processes.

Under this model, local government review may be either unconstrained by specific limitations or restricted within a scope prescribed by state laws as described above, while a state body makes its determinations based on provisions of state law typically aimed at energy regulation or state siting concerns. While the state approval assures that state-wide energy or public policy concerns are reflected in the siting decision, the local government may be able effectively to veto a state decision by denying a permit outright or by imposing conditions that cannot be met by an applicant.²³

State/local regulatory models (4) and (5), below, discuss some means by which these conflicts can be resolved or overridden. Unlike some of the approaches discussed below, however, under the straight “dual” approval model, there is no opportunity for state agencies to guarantee the siting of a facility where local ordinances and local governing board decisions do not allow it.

One state using this approach is **South Dakota**, where wind facilities with capacities greater than 100 MW require a permit from the state Public Utilities Commission.²⁴ The South Dakota Energy Facility Permit Act specifies the factors that shall be considered in any permitting decision, and specifically authorizes the PUC to regulate decommissioning plans for wind facilities.²⁵ The PUC process provides multiple avenues for local participation. A local review committee issues a report on the proposed project’s impacts and any mitigation recommendations, which the PUC may adopt.²⁶ The committee is composed of representatives from affected tribes, counties, cities, school boards, and a representative of the utility.²⁷ Additionally, the county and city where a proposed project is located are considered parties to a proceeding and may present evidence at the hearing on the project.²⁸ However, the South Dakota PUC permit *for energy generation facilities does not preempt* local ordinances, whereas a PUC permit for an energy transmission facility does preempt local regulation.²⁹ Thus, an applicant must comply with both processes.

Bluefield Daily Telegraph (Feb. 3, 2010). Maryland’s Allegany County enacted an ordinance requiring a 2,000 foot setback from occupied dwellings, and 1,000 feet from other structures. M. Sawyers, “County approves restrictions on industrial wind projects,” Cumberland Times-New (June 5, 2009).

²⁴ S.D. CODIFIED LAWS §§ 49-41B-2; 41B-4.

²⁵ S.D. CODIFIED LAWS §§ 49-41B-7; 49-41B-35.

Regulations regarding wind facility decommissioning and information disclosure in wind facility applications may be found at S.D. ADMIN. R. 20:10:22:33.01 and 20:10:22:33.02.

²⁶ S.D. CODIFIED LAWS § 49-41B-20.

²⁷ S.D. CODIFIED LAWS § 49-41B-6.

²⁸ S.D. CODIFIED LAWS §§ 49-41B-17; 41B-19.

²⁹ S.D. CODIFIED LAWS § 49-41B-28.

¹⁹ WIS. STAT. § 196.378(4g)(c)-(d).

²⁰ WIS. STAT. § 66.0401(4)(g).

²¹ WIS. STAT. § 66.0401(6)(a)(1).

²² WYO. STAT. §§ 18-5-501 - 504.

²³ For example, Virginia’s Tazewell County board enacted a ridgeline structures ordinance prohibiting any structure exceeding 40 feet on designated ridgelines. Charles Owens, “No to windmills: Board blocks turbine project,”

In **Virginia**, a utility must obtain a certificate of public convenience and necessity from the State Corporation Commission before constructing an electric generation facility.³⁰ This state function does not preempt local permitting authority. The Commission must consider the facility’s potential environmental impact and mitigation measures.³¹ In order to avoid duplication with other permitting processes, however, the Commission deems this requirement satisfied for all matters that are governed by another local, state, or federal permit.³² Thus, matters that are “within the authority of, and were considered by” the local government in making its decision are conclusive “and the Commission shall impose no additional conditions with respect to such matters.”³³

For example, Virginia’s State Corporation Commission found that Highland County’s conditional use permit for a commercial wind farm under its zoning ordinance addressed the issues of property values, tourism, viewshed, height restrictions, setbacks, lighting, color of structures, fencing, security, erosion and sediment control, signage, access roads, and decommissioning.³⁴ So the Commission did not need to address these issues. The 38 MW project was approved after it received both the Commission’s approval (which addressed some siting issues not addressed by the county) and the county’s conditional use permits.

In 2009, the Virginia legislature exempted from State Corporation Commission review “small renewable energy projects,” defined to include wind projects rated at 100 MW or less that receive a “permit by rule” from the Virginia Department of Environmental Quality. Local zoning ordinances will still apply of their own force.³⁵ The new law requires that as a condition

of the permit-by-rule applicants must submit a “certification by the governing body of the locality or localities wherein the small renewable energy project will be located that the project complies with all applicable land use ordinances.”³⁶

In **Iowa**, the state utilities board issues certificates prior to the construction of any electric generation facility with a capacity greater than 25 MW.³⁷ The legislature directed the utilities board to adopt rules with appropriate siting criteria to be used in the certification process.³⁸ The board’s rules require the consideration of several factors, including whether the proposed facility complies with local ordinances “and, if not, whether the location of the proposed facility at the proposed site is reasonably justified from an economic, technical, and social standpoint.”³⁹ However, local governments still control their own planning and zoning enforcement, and so may reach a contrary result.

4) Dual Authority with State Preemption

This governance model generally requires project proponents to obtain both local and state-level permits. What sets it apart from the previous model is that – in a limited set of circumstances – the state agency may preempt local regulation. This allows the system to maintain a great degree of local control over decisions, while providing a mechanism for assuring that local decision making does not have unwanted consequences on important state-wide interests.

In order to ensure that local concerns are sufficiently addressed and that state preemption

³⁰ VA. CODE ANN. § 56-265.2.

³¹ VA. CODE ANN. § 56-46.1.

³² VA. CODE ANN. § 56-46.1.

³³ *Id.*

³⁴ *Application of Highland New Wind Development*, PUE-2005-00101 (Dec. 20, 2007).

³⁵ VA. CODE ANN. §§ 10.1-1197.5, 10.1-1197.8, 56-46.1.I. The new legislation addresses both utility-constructed generation and non-utility generation projects. Virginia’s

attorney general’s office advised the DEQ that siting-related issues remain within the purview of local governments.

³⁶ VA. CODE ANN. § 10.1-1197.6(B)(2). The DEQ “permit-by-rule” rules went into effect December 22, 2010.

³⁷ IOWA CODE §§ 476A.1; 476A.2.

³⁸ IOWA CODE § 476A.12.

³⁹ 199 IOWA ADMIN. CODE 24.10(476A).

is predictable and orderly, it is desirable to provide clear guidelines or legislative direction on how that power of preemption should be exercised, and on what issues.

Colorado and **New Mexico** both allow state agencies to override local ordinances when it is necessary to ensure the public's access to electricity. Colorado public utilities must obtain certificates from the state public utilities commission before constructing new facilities, and the law generally requires that all local permits be submitted with the application to the PUC.⁴⁰ If the local permits are not issued within 180 days of a preliminary application or 90 days of a final application, they are deemed approved.⁴¹ If the local authorities deny the permits or impose unreasonable conditions, applicants may appeal the local decision to the PUC.⁴² If the commission finds

that the conditions imposed by a local government action unreasonably impair the ability of a public utility or power authority to provide safe, reliable, and economical service, the commission shall make and serve an order directing that such . . . structure be erected in the manner and within the time specified in such order. If the commission orders the erection of a new structure, the selection of the site for such structure shall be subject to the approval of the commission.⁴³

In New Mexico, where the Public Regulation Commission must approve the location of generation facilities with capacities over 300 MW, siting decisions must comply with local regulations "unless the commission finds that the regulation is unreasonably restrictive and compliance with the regulation is not in the interest of the public convenience and necessity, in which event and to the extent found by the commission the regulation shall be inapplicable and void as to the siting."⁴⁴

⁴⁰ COLO. REV. STAT. §§ 40-5-101(1); 40-5-103(1).

⁴¹ COLO. REV. STAT. § 29-20-108(2).

⁴² COLO. REV. STAT. § 29-20-108(3).

⁴³ COLO. REV. STAT. §§ 40-4-102(1) (allowing a successful appellant to seek fees and costs from the local government).

⁴⁴ N.M. STAT. ANN. § 62-9-3.

In **Connecticut**, electric generation facilities that may have a significant adverse effect on the environment require a certificate from the Connecticut Siting Council.⁴⁵ Approval by the council does not automatically preempt local siting regulation, but there are statutory deadlines for local decision making and any aggrieved party may appeal a local decision to the Council, which has discretion to affirm, modify, or revoke the order.⁴⁶ "The council is empowered to review decisions from zoning commissions on a de novo basis, applying concerns that transcend those involved in local zoning decisions, and that review may . . . result in the approval of a particular site although the facility failed to meet the requirements of local zoning regulations."⁴⁷

5) State Siting Incorporating Local Requirements

In a few states, state bodies issue siting permits through a one-stop process that incorporates local policy requirements in a single state certificate or permit. While the state body must implement local ordinances, including those that may differ from state policy priorities, this model prevents local officials from exercising unfettered discretion under vague ordinances. Local government decisionmakers must act with clarity and expedition in order to have their concerns adequately reflected in the state certificate or permit.

One state using this approach is **North Dakota**, where energy generating facilities with capacities over 60 MW are regulated by the state's Energy Conversion and Transmission Facility Siting Act. The Act specifies that:

1. The issuance of a certificate of site compatibility [from the North Dakota Public Service Commission] or a route permit shall

⁴⁵ CONN. GEN. STAT. § 16-50k(a).

⁴⁶ CONN. GEN. STAT. § 16-50x(d).

⁴⁷ *Preston v. Connecticut Siting Council*, 20 Conn. App. 474, 484-85 (App. Ct. Conn. 1990).

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... be the sole site or route approval required to be obtained by the utility.

2. A certificate of site compatibility for an energy conversion facility shall not supersede or preempt any local land use, zoning, or building rules, regulations, or ordinances and no site shall be designated which violates local land use, zoning, or building rules, regulations, or ordinances.⁴⁸

When the commission considers an application, it must take several factors into account, including problems raised by local governments and existing plans for development near a site.⁴⁹

Similarly, **Rhode Island**'s Energy Facility Siting Act, which regulates energy facilities over 40 MW, mandates that the state Energy Facility Siting Board issue a facility's sole permit in consultation with local agencies. In this scheme, local permitting agencies and local governments

shall sit and function at the direction of the siting board. These agencies shall follow the procedures established by statute, ordinance, and/or regulation provided for determining the permit, license, assent, or variance, but, instead of issuing the permit, license, assent, or variance, shall forward its [sic] findings from the proceeding, together with the record supporting the findings and a recommendation for final action, to the siting board.⁵⁰

The act requires that the Board only issue a license if it finds

the objective of ensuring that the construction and operation of the proposed facility will be accomplished in compliance with all of the requirements of the laws, rules, regulations, and ordinances, under which, absent this chapter, a permit, license, variance, or assent would be required, or that consideration of the public health, safety, welfare, security and need for the proposed facility justifies a waiver of some part of the requirements when compliance cannot be assured.⁵¹

This last clause offers a limited basis for preemption where compliance cannot be assured. The Board's approval constitutes the granting of all permits that would otherwise be required.

Oregon has adopted a one-stop permitting process through its Energy Facility Siting Council that is mandatory for all wind facilities with capacities greater than 35 MW. One unique feature of Oregon's system is that applicants seeking to develop facilities with capacities less than 35 MW can opt-in to the state council permitting process.⁵²

Certificates require compliance with local ordinances: "The site certificate or amended site certificate shall require both parties to abide by local ordinances and state law and the rules of the council in effect on the date the site certificate or amended site certificate is executed," but the council may also require compliance with later-adopted ordinances that respond to significant threats to health, safety, or the environment.⁵³ The only exception to this rule applies when there is a direct conflict between the substance of state statutes and local ordinances:

If compliance with applicable substantive local criteria and applicable statutes and state administrative rules would result in conflicting conditions in the site certificate or amended site certificate, the council shall resolve the conflict consistent with the public interest. A resolution may not result in a waiver of any applicable state statute.⁵⁴

The council must notify and consult with local officials regarding potential conflict resolution.⁵⁵ The certificate from the council will "bind the state and all counties and cities and political subdivisions in this state as to the approval of the site and the construction and operation of the facility."⁵⁶ Local governments must promptly issue permits in compliance with

⁴⁸ N.D. CENT. CODE § 49-22-16.

⁴⁹ N.D. CENT. CODE § 49-22-09.

⁵⁰ R.I. GEN. L. § 42-98-7.

⁵¹ R.I. GEN. L. § 42-98-11(b)(2).

⁵² OR. REV. STAT. § 469.320(8).

⁵³ OR. REV. STAT. § 469.401(2).

⁵⁴ OR. REV. STAT. § 469.504(3).

⁵⁵ OR. REV. STAT. § 469.505(2).

⁵⁶ OR. REV. STAT. § 469.401(3).

the certificate without conducting hearings. Those permits may only be reviewed for compliance with the certificate. The local governments are empowered to enforce the terms of the permits they issue.⁵⁷ The local government also retains all powers over matters that do not relate to siting, such as building code compliance, fees, and employee safety.⁵⁸

Minnesota also has a nuanced version of a one-stop permitting system. All wind facilities with capacities over 5 MW require a permit from the Public Utilities Commission.⁵⁹ This is the only siting approval an applicant needs, and it “preempts all zoning, building, or land use rules, regulations or ordinances adopted by regional, county, local, and special purpose governments.”⁶⁰ Minnesota’s system is unique, however, because it allows *counties* to assume responsibility for processing permits for wind facilities with capacities up to 25 MW.⁶¹ Counties must apply the PUC’s siting standards, but share the PUC’s discretion to grant variances in the public interest.⁶² The PUC is required to provide the counties with technical assistance in their role as wind energy decisionmakers.⁶³ County permitting decisions are made under the general county land use and permitting procedures and, like other county decisions, may be appealed to a district court.⁶⁴

Another important feature of Minnesota’s system is that counties have the opportunity to adopt strict ordinances that will be respected in the state’s one-stop permitting process. The PUC is charged with adopting rules that address the criteria it will use in siting wind facilities.⁶⁵ At the same time, the permitting authorities must consider county ordinances that are stricter than state rules:

A county may adopt by ordinance standards for [Large wind energy conversion systems (“LWECS”)] that are more stringent than standards in commission rules or in the commission’s permit standards. The commission, in considering a permit application for LWECS in a county that has adopted more stringent standards, shall consider and apply those more stringent standards, unless the commission finds good cause not to apply the standards.⁶⁶

Both Minnesota and Oregon are among the top ten states with the greatest installed wind capacity.

6) State Siting

Several states have eliminated any role for their local governments in wind facility siting – either for all such facilities or for those over a certain size. In this approach, state boards issue siting permits that preempt all local siting actions, approvals, or disapprovals. However, most of these require at least review and consideration of local land use objectives.

Some states have adopted this approach based on a history of contention over various forms of energy facility siting, and have found it convenient to extend this authority over wind facilities that might experience similar controversy if left to local review and approval. This model has the advantages of fully privileging state level concerns about energy portfolio mix, environmental tradeoffs, and mitigation, and addressing siting as a statewide issue rather than as a locally-driven matter for competition or exclusion. On the other hand, this state-centered siting approach must find ways to hear and accommodate local concerns wherever possible in order to maintain public legitimacy and to address those concerns that are in fact local in effect.

New Hampshire’s site evaluation committee is responsible for certifying wind

⁵⁷ OR. REV. STAT. § 469.401(3).

⁵⁸ OR. REV. STAT. § 469.401(4).

⁵⁹ MINN. STAT. § 216F.04.

⁶⁰ MINN. STAT. § 216F.07.

⁶¹ MINN. STAT. § 216F.08.

⁶² MINN. STAT. § 216F.08(c).

⁶³ MINN. STAT. § 216F.08(d).

⁶⁴ MINN. STAT. § 216F.08(a)-(b).

⁶⁵ MINN. STAT. §§ 216F.05; 216F.08(c).

⁶⁶ MINN. STAT. § 216F.081.

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energy facilities with capacities over 30 MW.⁶⁷ In order to issue the certificate, the committee must find that the facility “will not unduly interfere with the orderly development of the region with due consideration having been given to the views of municipal and regional planning commissions and municipal governing bodies.”⁶⁸ The legislature’s purpose was to “ensure that the construction and operation of energy facilities is treated as a significant aspect of land-use planning in which all environmental, economic, and technical issues are resolved in an integrated fashion.”⁶⁹ State siting committee decisions for these commercial-scale wind facilities are believed to preempt all aspects of local land-use controls.⁷⁰ However, the site evaluation committee may exempt an applicant from its jurisdiction if:

- (a) Existing state or federal statutes, state or federal agency rules or municipal ordinances provide adequate protection of the objectives of RSA 162-H:1;
- (b) A review of the application or request for exemption reveals that consideration of the proposal by only selected agencies represented on the committee is required and that the objectives of RSA 162-H:1 can be met by those agencies without exercising the provisions of RSA 162-H;
- (c) Response to the application or request for exemption from the general public indicates that the objectives of RSA 162-H:1 are met through the individual review processes of the participating agencies; and
- (d) All environmental impacts or effects are adequately regulated by other federal, state, or local statutes, rules, or ordinances.⁷¹

In **Vermont**, a certificate of public good from the state public service board is necessary for the construction of any energy generation facility whose production is not solely for on-site consumption.⁷² The board must find that the facility “will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality.”⁷³ The state supreme court has held that the board’s decisions preempt local regulation and no local permits are necessary for projects that have been approved by the board.⁷⁴

Washington’s state siting scheme provides optional routes to approval. The state siting council covers any alternative energy facility, including any wind facility, that “chooses to receive certification under [the Energy Facilities Site Locations Act], regardless of the generating capacity of the project.” In contrast, state siting council jurisdiction over traditional energy facilities depends on their generating capacity.⁷⁵ The Energy Facility Site Evaluation Council (EFSEC) prepares a report for every application within its jurisdiction, recommending a disposition to the governor.⁷⁶ When the council recommends approval, the governor may approve, reject, or order reconsideration.⁷⁷ Approval pursuant to the EFSEC process explicitly “preempts the regulation and certification of the location, construction, and operational conditions of certification of the

⁶⁷ N.H. REV. STAT. ANN. §§ 162-H:2; 162-H:4.

⁶⁸ N.H. REV. STAT. ANN. § 162-H:16(IV).

⁶⁹ N.H. REV. STAT. ANN. § 162-H:1.

⁷⁰ New Hampshire Local Government Center, Legal Briefs, February 2010 (wind power siting preemption), available at http://www.nhlgc.org/attachments/services/legal/LegalBriefs/Preemption_of_wind_powered_generation_facilities.pdf, citing *Public Service Company of New Hampshire v. Hampton*, 411 A.2d 164 (N.H. 1980) (Committee’s decisions preempt local regulation of transmission lines to a nuclear power plant).

⁷¹ N.H. REV. STAT. ANN. § 162-H:4(IV).

⁷² 30 VT. STAT. ANN. § 248(a)(2)(A).

⁷³ 30 VT. STAT. ANN. § 248(b)(1).

⁷⁴ *South Burlington v. Vermont Elec. Power Co.*, 133 Vt. 438 (1975) (local enactments are meant to be advisory, rather than controlling); see also *In re UPC Vermont Wind LLC*, 2009 Vt. 19 (Vermont Supreme Court, Feb. 6, 2009) (board gave “due consideration” to regional land use plan, where wind energy facility was sited in an area that the plan designated as rural).

⁷⁵ REV. CODE WASH. § 80.50.060. Conventional thermal generating plants are subject to EFSEC jurisdiction if they are 350 MW or larger. REV. CODE WASH. § 80.50.020

⁷⁶ REV. CODE WASH. § 80.50.100(1).

⁷⁷ REV. CODE WASH. § 80.50.100(2)(a)-(c).

energy facilities.”⁷⁸ Washington is fifth among the states with the greatest installed wind capacity, much of it approved by county governments rather than under the EFSEC process. Even though local ordinances are not controlling, the council must nevertheless determine whether a project would comply with local and regional land use plans and zoning ordinances.⁷⁹ In its draft certification agreements, presented to the governor for decision, the council must include “conditions to protect state or local governmental or community interests affected by the construction or operation of the energy facility, and conditions designed to recognize the purpose of laws or ordinances, or rules or regulations promulgated thereunder, that are preempted or superseded...”⁸⁰

The state certification process provides opportunity for local participation. Counties and cities each appoint a voting member to the siting council when a proposed project would be located within their boundaries.⁸¹ As the council studies potential sites, it may cooperate with local governments in its assessment of environmental impacts.⁸² Members of the public can participate at information hearings, which are held as close as is practicable to a proposed site.⁸³ An alternative energy facility is eligible for an expedited application process if it would comply with all local and regional plans and ordinances and not significantly affect the environment.⁸⁴

In **Wisconsin**, the Public Service Commission has exclusive jurisdiction over the siting of “large electric generating facilities”, with nominal capacities over 100 MW.⁸⁵ State certification preempts local regulation: if a large project certified by the PSC is “precluded or

inhibited by a local ordinance, the installation and utilization of the facility may nevertheless proceed.”⁸⁶ In reviewing an application, the PSC shall consider the standards in the rules it promulgates to restrict local ordinances.⁸⁷

The **Ohio** Power Siting Board has exclusive jurisdiction over the siting of all wind energy facilities over 5 MW.⁸⁸ Historically, the Ohio Board exercised exclusive jurisdiction to site all energy generation facilities over 50 MW. But in 2008, the legislature created a category of “economically significant wind farms” – wind energy facilities with capacities between 5-50 MW – and extended the Board’s exclusive jurisdiction to cover these projects. Clear statutory language preempts local ordinances from regulating the siting, construction or operation of these wind energy facilities:

No public agency or political subdivision of this state may require any approval, consent, permit, certificate, or other condition for the construction or initial operation of a major utility facility or economically significant wind farm authorized by a certificate issued pursuant to Chapter 4906 of the Revised Code. Nothing herein shall prevent the application of state laws for the protection of employees engaged in the construction of such facility or wind farm nor of municipal regulations that do not pertain to the location or design of, or pollution control and abatement standards for, a major utility facility or economically significant wind farm for which a certificate has been granted under this chapter.⁸⁹

⁷⁸ REV. CODE WASH. § 80.50.110(2).

⁷⁹ REV. CODE WASH. § 80.50.090(2) (determination to be made after public hearing).

⁸⁰ REV. CODE WASH. § 80.50.100(1).

⁸¹ REV. CODE WASH. § 80.50.030(4)-(5).

⁸² REV. CODE WASH. § 80.50.175(3).

⁸³ REV. CODE WASH. § 80.50.090(1).

⁸⁴ REV. CODE WASH. § 80.50.075.

⁸⁵ WIS. STAT. § 196.491(1)(g).

⁸⁶ WIS. STAT. § 196.491(8)(i).

⁸⁷ WIS. STAT. § 196.491(dg).

⁸⁸ OHIO REV. CODE ANN. §§ 4906.01(B)(1); 4906.13(A).

⁸⁹ OHIO REV. CODE ANN. § 4906.13(B).

Washington Siting Preempting Local Decision

The Supreme Court of Washington recently upheld an EFSEC decision in which a commercial wind project sought state approval after receiving an unsatisfactory result from the county board. Horizon Wind Energy initially applied to EFSEC for a siting certificate. Because its proposal would not have complied with the applicable county zoning code, which required specific rezoning for any wind farm site plus a site-specific plan amendment, Horizon requested EFSEC to preempt the county requirements. However, it then withdrew the request to EFSEC and asked the county to grant rezoning. Horizon proposed a reduction in the size of the project and offered 1000-foot setbacks from property boundaries. The Kittitas County Board requested Horizon to consider 2000-foot setbacks. Horizon offered 1320, and the board then denied the rezoning application. Following this adverse result, Horizon filed a new application with EFSEC for preemption, and EFSEC approved the application, imposing a setback of 4x the turbine height (1320-1640 foot setbacks). Washington's governor directed EFSEC to reconsider this decision; and EFSEC reaffirmed its recommendation, adding some requirements to "microsite" turbines within the project site to the extent possible. The governor then signed the certification. Opponents of the project filed suit, and using an expedited review procedure allowed under the statute, EFSEC moved the case directly to the state supreme court. The court affirmed the state decision, holding that EFSLA "preempts the regulation and certification of the location, construction, and operation conditions of certification of the energy facilities." *Residents Opposed to Kittitas Turbines v. State Energy Facility Site Evaluation Council*, 197 P.3d 1153 (Wash. 2008).

The Ohio legislature ordered the Board to adopt regulations covering several aspects of wind facility siting, including setbacks, aesthetics, wildlife protection, ice throw, noise, shadow flicker, and decommissioning.⁹⁰

Transmission

In addition to those states that exercise exclusive control over the siting of commercial-scale wind facilities, it is worth noting that most states exercise some form of central authority over *energy transmission* siting through their public utility commissions or an equivalent body. Some states have taken special steps to assure that transmission infrastructure is available to carry electricity from areas with the greatest wind resources to population centers.

While these policies do not directly alter the process or standards for siting generating facilities, they may influence siting decisions by magnifying the incentive to develop wind energy generation in certain locations. For instance, the **Texas** Public Utility Commission is responsible for designating "competitive renewable energy zones" and "develop[ing] a plan to construct transmission capacity necessary to deliver to electric customers, in a manner that is most beneficial and cost-effective to the customers, the electric output from renewable energy technologies" in those zones.⁹¹ Similarly, **Michigan's** 2008 Clean, Renewable, and Efficient Energy Act called for the mapping of "Wind Energy Resource Zones" where transmission lines would be subject to an expedited siting process.⁹²

⁹⁰ OHIO REV. CODE ANN. § 4906.20(B)(2).

⁹¹ TEX. UTIL. CODE ANN. § 39.904(g).

⁹² MICH. COMP. LAWS § 460.1141 et seq.

Figure 1: Local Government Commercial-Scale Wind Siting >5 MW

States may allow exclusively or predominantly local siting, provide for shared state and local siting decisions, provide for local siting below a specific size threshold and state siting above that threshold (or with election of a state process), or provide that state siting boards are responsible (to the exclusion of local governments). For the sake of simplicity, Figure 1 does not note all allocations of authority. For example, in New Mexico there is dual permitting above 300 MW (a very large wind facility); in Kentucky local governments have exclusive authority below 10 MW.

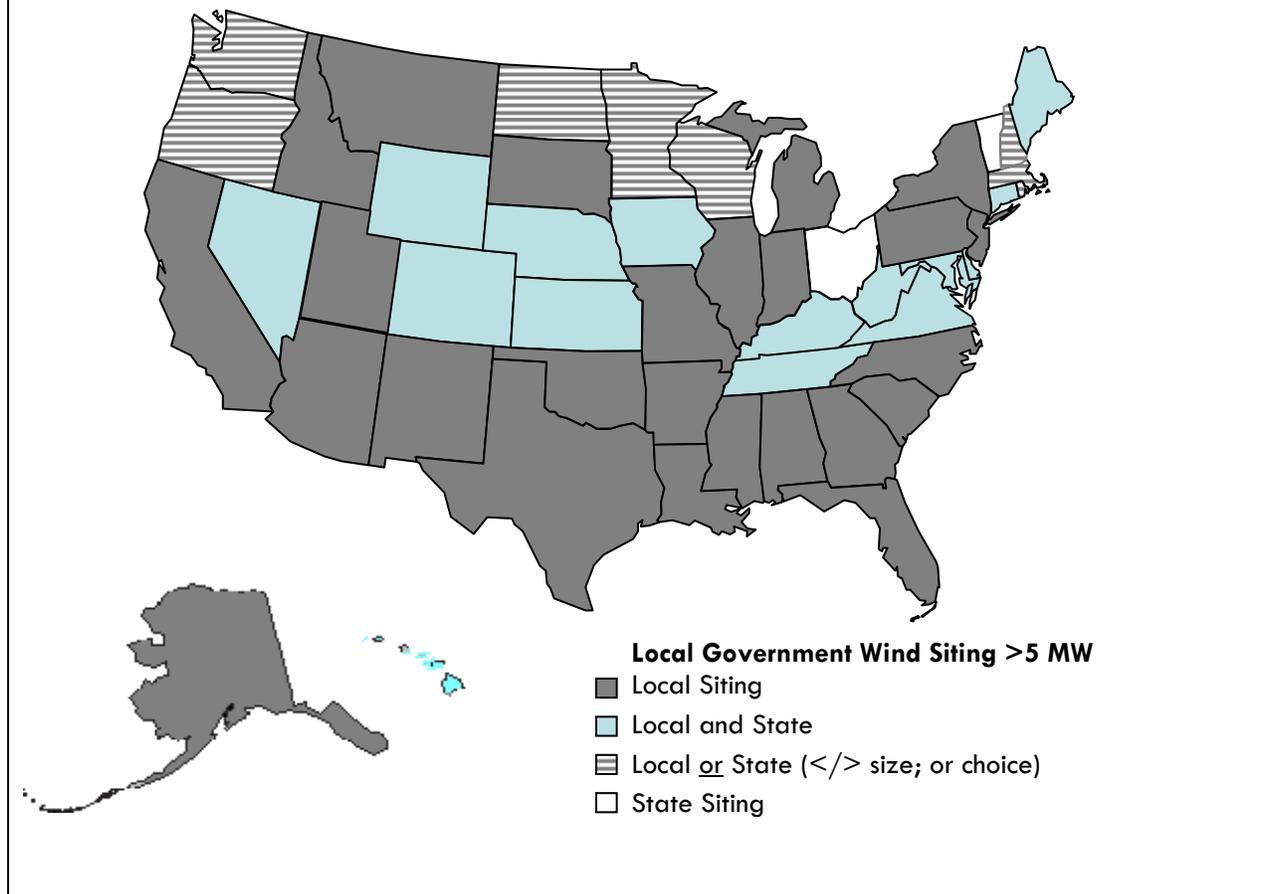


Table 2: Government authority over siting commercial-scale wind energy facilities (Table excludes all end-user systems, net meter systems, and small systems <5 MW)

State	Local govt. sole siting authority	Local govt. sole siting author. w limits	Dual local and state siting regulation	State board sole siting authority
AL	X			
AK	X			
AZ	X			
AR	X			
CA	X			
CO			X	
CT			X ^a	
DE	X			
FL	X			
GA	X			
HI	Some use districts		Rural/ag districts	Conserv districts
ID	X			
IL	X			
IN	X			
IA	< 25 MW		> 25 MW	
KS	X			
KY	< 10 MW		> 10 MW	
LA	X			
ME	<20 acres in municip		>20 acres in municip	Unorganized areas
MD	< 70 MW		> 70 MW	
MA	< 100 MW			> 100 MW. ^b
MI	X			
MN		Counties 5-25 MW if state delegates		> 25 MW; & 5-25 MW if not delegated. ^c
MS	X			
MO	X			
MT	X			
NE			X	
NV	X			
NH	< 30 MW			> 30 MW. ^c
NJ	X		Permit/permit by rule in coastal	
NM	< 300 MW		> 300 MW. ^a	
NY	> 80 MW	< 80 MW		
NC	X			
ND	< 60 MW			> 60 MW. ^b
OH				X
OK	X	Decomm req.		
OR	< 35 MW, unless developer election			> 35 MW, and where developer < 35 MW elects ^{a,b}
PA	X			
RI	< 40 MW			> 40 MW. ^b
SC	X			
SD	< 100 MW	Setback req.	> 100 MW	
TN	X			
TX	X			

Who Makes The Siting Decisions?

UT	X			
VT				X ^c
VA			DEQ permit-by-rule 5-100 MW. SCC siting > 100 MW	
WA	X (unless developer elects state review)	Energy overlay zone → deferential review		X (if developer so elects) ^a
WV			X	
WI		< 100 MW (state regs)		> 100 MW
WY		> .5 MW, but less than 30 turbines	30 or more turbines	

^a State may preempt local decisions in some circumstances.

^b Incorporates local standards.

^c Must consider local plans and/or ordinances.

Fig. 2: Approach to Siting by Top 10 States in Installed Wind Capacity

Exclusive Local Government Regulation (4)
TX, CA, IL, OK
Local Regulation < # MW & State Regulation > # MW (3)
MN, ND, WY
Local Regulation < # MW & Dual State-Local Regulation > # MW (1)
IA
Dual State-Local Regulation (0)
None
Local or State Regulation (choice) (2)
OR, WA
Exclusive State Regulation (0)
None
States with 1400 MW and above installed through 2010

Fig. 3: Approach to Siting by the States with No Installed Commercial-Scale Wind Capacity

Exclusive Local Government Regulation (9)
AR, AL, GA, FL, LA, MS, NC, NV, SC
Local Regulation < # MW & State Regulation > # MW (1)
RI
Local Regulation < # MW & Dual State-Local Regulation > # MW (1)
KY
Dual State-Local Regulation (1)
VA
Local or State Regulation (choice) (0)
None
Exclusive State Regulation (0)
None
States with 0 commercial-scale wind capacity installed through 2010

III. STATE-DEFINED PARAMETERS FOR LOCAL GOVERNMENT WIND SITING DECISIONS

Where local governments exercise some or all siting authority for commercial-scale wind facilities, some state laws define or limit the content of these local decisions. Approaches include specific grants of authority that encourage local governments to make siting more likely, as well as express limitations on the standards that may be set by local regulation. State laws also may contain provisions that affect the procedural treatment of applications for wind facilities under local ordinances.

Grants of Authority

States can encourage local ordinances that accommodate wind energy by including language about wind energy in state enabling legislation.

Illinois's relatively simple laws explicitly grant counties the power to set standards for wind energy devices, and among other things to determine their allowable height, and determine the number of such devices that may be located in a given area.⁹³ This grant of authority makes it clear that certain often-contested issues are directly within the jurisdiction of county governments, thus making it clear that the size of these operations is a matter for local control.

Other states explicitly empower local governments to protect access to wind resources. Such legislation may encourage local governments to identify and plan zones where wind energy generation is an anticipated or potentially desirable land use. Under **Colorado's** enabling legislation on county planning, one of the topics that county and regional planning commissions may consider

when they create master plans is: “Methods for assuring access to appropriate conditions for solar, wind, or other alternative energy sources.”⁹⁴

In **Oregon**, “A planning commission may recommend to the governing body ordinances intended to implement part or all of the comprehensive plan. The ordinances may provide, among other things, for . . . Protecting and assuring access to wind for potential electrical generation or mechanical application.”⁹⁵ Avoiding any ambiguity about the privilege afforded wind energy generation as a land use, the law further states: “An ordinance enacted by authority of this section may prescribe limitations designed to encourage and protect the installation and use of solar and wind energy systems.”⁹⁶ Similarly, Oregon’s enabling legislation for cities provides that city councils “may consider, in enacting ordinances governing building setback lines and maximum building height, the impact on available wind resources. The ordinances shall protect an existing wind energy system’s wind source to the extent feasible.”⁹⁷

Nebraska law enables counties and municipalities to promulgate zoning provisions that encourage wind energy generation. All counties or municipalities having zoning or subdivision jurisdiction are authorized to include considerations for the encouragement of solar energy and wind energy use and the protection of access to solar energy and wind energy in *all applicable zoning regulations or ordinances and comprehensive development plans*. Such considerations may include, but not be limited to, regulation of height, location, setback, and use of structures, the height and location of vegetation with respect to property boundary lines, the type and location of energy systems or their components, and the use of districts to

⁹⁴ COLO. REV. STAT. § 30-28-106(3)(a)(IV).

⁹⁵ OR. REV. STAT. § 215.110(1).

⁹⁶ OR. REV. STAT. § 215.110(5).

⁹⁷ OR. REV. STAT. § 227.290(3). While these provisions are undoubtedly helpful for small wind and generation by end-users, they are written broadly enough to enable local governments to protect and enable larger wind facility siting.

⁹³ 55 ILL. COMP. STAT. 5/5-12020.

encourage the use of solar energy systems and wind energy conversion systems and protect access to solar energy and wind energy. Comprehensive development plans may contain an element for protection and development of solar energy and wind energy access which will promote energy conservation and ensure coordination of solar energy and wind energy use with conventional energy use.”⁹⁸

While some of these authority-granting provisions are undoubtedly aimed at protecting access for small wind and end-user generators, the language is often broad enough to include consideration of commercial-scale wind as well.

Limitations on Local Regulation

Several states have enacted limits constraining local governments’ ability to regulate wind energy siting. This strategy varies tremendously and can address a wide array of state concerns. Some states prohibit regulation that they deem too restrictive, while other states set required minimum regulatory standards.

States seeking to cabin local discretion over siting commercial wind farms have generally enacted detailed regulatory schemes. However, comprehensive regulation is not the only option. For instance, **Illinois**’ grant of authority to local governments to regulate wind energy siting includes a single limitation applicable only to regulation of systems that provide energy exclusively to end users. For these end-user generating systems, state law provides that local governments may not impose setback requirements greater than 1.1 times the height of the structure from the property line.⁹⁹ **South Dakota** law imposes setback requirements on wind turbines taller than 75 feet. These turbines “shall be set back at least five hundred feet or 1.1 times the height of the tower, whichever

distance is greater, from any surrounding property line.”¹⁰⁰

Where local regulation has a successful history, state legislatures may want to consider legislation that addresses only areas in which local governments have introduced undesirable impediments to wind energy siting. For example, rather than setting specific standards, states may place a general prohibition on unreasonable local regulation or require local planners to promote wind energy. In **Nevada**, where local regulation and permitting processes apply to wind projects, the enabling legislation for local planning authorities has special provisions to protect small wind projects. First, “zoning regulations must be adopted in accordance with the master plan for land use and be designed . . . to promote systems which use solar or wind energy.”¹⁰¹ Additionally, “A governing body shall not adopt an ordinance, regulation or plan or take any other action that prohibits or unreasonably restricts the owner of real property from using a system for obtaining wind energy on his or her property.”¹⁰² The law defines an unreasonable restriction to include:

the placing of a restriction or requirement on the use of a system for obtaining wind energy which significantly decreases the efficiency or performance of the system and which does not allow for the use of an alternative system at a substantially comparable cost and with substantially comparable efficiency and performance.¹⁰³

Reasonable regulations may relate to height, noise, safety, or FAA compliance.¹⁰⁴ While these Nevada laws only apply to end-user projects, this mode of state regulation may also be appropriate for promoting commercial-scale wind generation in states where local governments are responsible for siting decisions. Legislatures should clearly define the facilities

⁹⁸ NEB. REV. STAT. § 66-913.

⁹⁹ 55 ILL. COMP. STAT. 5/5-12020; 5 ILL. COMP. STAT. 5/11-13-26(b).

¹⁰⁰ S.D. CODIFIED LAWS § 43-13-24 (allowing reduced setbacks where there is a written agreement with the adjacent landowner).

¹⁰¹ NEV. REV. STAT. ANN. § 278.250(2)(n).

¹⁰² NEV. REV. STAT. ANN. § 278.02077(a).

¹⁰³ NEV. REV. STAT. ANN. § 278.02077(c).

¹⁰⁴ NEV. REV. STAT. ANN. § 278.02077(b).

that they mean to protect or promote when writing these limitations and provisos; they may do so in terms of megawatt capacity, number of turbines, or energy end users.

Wisconsin has the most comprehensive and detailed limitations on local decisions affecting wind siting. In 2009 the state overhauled its approach to wind facility siting with 2009 Wisconsin Act 40, mandating that the state Public Service Commission promulgate rules for siting those wind facilities that fall under local jurisdiction (that is, facilities with capacities under 100 MW).¹⁰⁵ If a local government wants to regulate wind energy systems, it must enact an ordinance pursuant to the applicable state law.¹⁰⁶ “No political subdivision may place any restriction, either directly or in effect, on the installation or use of a wind energy system that is more restrictive than the rules promulgated by the commission.”¹⁰⁷ Act 40 authorizes an appeal to the PSC from decisions of local governments under their ordinances.¹⁰⁸

The statute directed the PSC, with the advice of a wind siting council composed of a cross-section of interest groups, to promulgate rules “that specify the restrictions a political subdivision may impose on the installation or use of a wind energy system.” The statute required that these rules address a specific set of topics, including setbacks (accounting for health effects from noise and shadow flicker), financial responsibility for decommissioning, the information an applicant must submit to demonstrate compliance, and local decision-making procedures.¹⁰⁹ Additionally, the PSC “may include visual appearance, lighting,

electrical connections to the power grid, setback distances, maximum audible sound levels, shadow flicker, proper means of measuring noise, interference with radio, telephone, or television signals, or other matters.”¹¹⁰

The PSC issued its final rules in August 2010, adopting them in final form in December. The rules were published in the Wisconsin Administrative Register but were rejected by the state legislature’s Joint Committee for Review of Administrative Rules on March 1, 2011, the day they were scheduled to go into effect. This throws the scope of local regulation into some confusion.

The allowable setback requirements would have been 1.1 times turbine height from non-participating property lines, public road rights-of-way, and overhead communication or electric lines; and 3.1 times turbine height from non-participating residences or occupied community buildings.¹¹¹ Permissible noise standards were set at 45 dBA for nighttime hours and 50 dBA for daytime hours, as measured from the outer walls of non-participating residences and occupied community buildings.¹¹² The rules would have allowed local governments to prohibit facilities from causing more than 30 hours per year of shadow flicker for non-participating residences or occupied community buildings, and allow mitigation measures for facilities that will cause more than 20 hours of shadow flicker annually.¹¹³ They would have specified when decommissioning must be performed, the extent of required site restoration, and the permissible forms of surety for the cost of decommissioning.¹¹⁴ The PSC also anticipated issuing and updating “measurement, compliance, and testing” protocols for noise, stray voltage, shadow flicker, and communications interference.¹¹⁵ The PSC also would have authorized local

¹⁰⁵ WIS. STAT. § 196.378(4g).

¹⁰⁶ WIS. STAT. § 66.0401(4)(g).

¹⁰⁷ WIS. STAT. § 66.0401(1m).). The only time that a local government may impose restrictions that are more restrictive than those provided by the PSC is when an applicant seeks to site a wind facility greater than 1 MW in an area mapped before June 2, 2009, under an adopted comprehensive plan for primarily residential or commercial use. Wis. Stat. § 66.0401(4)(f). And even then, the PSC may grant an appeal of a denial of siting in such an area if it determines that doing so is “consistent with the public interest.” WIS. STAT. § 66.0401(5)(b)3.

¹⁰⁸ WIS. STAT. § 66.0401(5).

¹⁰⁹ WIS. STAT. § 196.378(4g).

¹¹⁰ WIS. STAT. § 196.378(4g)(a)(4) (emphasis added).

¹¹¹ WIS. ADMIN. CODE PSC § 128.13(1) (citations are to the suspended rules).

¹¹² WIS. ADMIN. CODE PSC § 128.14(3).

¹¹³ WIS. ADMIN. CODE PSC § 128.15(2)-(4).

¹¹⁴ WIS. ADMIN. CODE PSC § 128.19.

¹¹⁵ WIS. ADMIN. CODE PSC § 128.50(2).

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governments to require facility owners to provide annual monetary compensation (“good neighbor payments”) to non-participating landowners whose land was located within half a mile of a turbine.¹¹⁶ The PSC also adopted several procedural rules dealing with application procedure, notice requirements, appeal of local decisions to the PSC, and the resolution of public complaints of non-compliance.¹¹⁷ The statute provides for a strict timeline to ensure rapid review by local governments of complete applications, requiring a decision within 90 days unless extended (for up to 90 days) pursuant to enumerated reasons.¹¹⁸

Under the 2009 Act, apart from the now-suspended rules, Wisconsin local governments must comply with statutory restrictions that predate the regulatory scheme described above. Under these provisions, a local government restriction on a wind energy system is only valid if it satisfies *one* of the following three criteria: “a) Serves to preserve or protect the public health or safety; b) Does not significantly increase the cost of the system or significantly decrease its efficiency; c) Allows for an alternative system of comparable cost and efficiency.”¹¹⁹

Before the enactment of 2009 Wisconsin Act 40, one state appellate court interpreting this language had struck down county-adopted standards for wind facilities, finding that this language “requires a case-by-case approach, such as a conditional use permit procedure, and does not allow political subdivisions to...make policy.”¹²⁰ Act 40 authorizes local governments to regulate prospectively, but the absence of state rules (for the time being) makes the scope of their authority very uncertain.

The Wisconsin statute promotes investigation of wind potential throughout the

state by prohibiting local governments from restricting or prohibiting “testing activities to determine the suitability of a site for the placement of wind energy system.”¹²¹

New York also limits the siting restrictions that local governments may place on wind facilities under 80 MW. While preserving the authority of local zoning, building codes and ordinances, the state environmental impact assessment law, and other select state laws over these facilities, the statute precludes local governments from imposing any conditions or requirements that are not provided by these laws.¹²²

Other states have focused on setting *minimum* standards for aspects of wind facility siting carried out by local governments. This ensures that statewide concerns will be addressed in the local siting process. Moreover, once the state has invested time and expertise in developing standards, local governments may decide to forego more stringent regulation if they believe state standards are adequate.

In **Wyoming**, all local permitting for wind facilities with capacity over 0.5 MW must comply with a detailed set of state requirements.¹²³ Under state law, no wind energy facility may be built without a permit from the county or counties where it will be located.¹²⁴ For facilities with 30 or more turbines, the applicant must obtain a permit from both the county and the state Industrial Siting Council.¹²⁵ For facilities with fewer than 30 turbines, applicants may be referred to the Council for additional permitting if “a board of county commissioners finds there are potentially significant adverse environmental, social or economic issues which the county board of commissioners does not have the expertise to consider or authority to address.”¹²⁶

¹¹⁶ WIS. ADMIN. CODE PSC § 128.33(3).

¹¹⁷ WIS. ADMIN. CODE PSC §§ 128.40 (application procedure); 128.105 (notice requirements); 128.51 (commission review); 128.40 (public complaints).

¹¹⁸ WIS. STAT. § 66.0401(4)(d),(e).

¹¹⁹ WIS. STAT. § 66.0401(1m).

¹²⁰ Ecker Brothers v. Calumet County, 2009 WL 2032336 (Wis. App. July 15, 2009).

¹²¹ WIS. STAT. § 66.0401(3). However, the law allows a political subdivision to petition the PSC to establish reasonable restrictions on such testing.

¹²² N.Y. ENERGY LAW § 21-106(2).

¹²³ WYO. STAT. § 18-5-501(a)(ii).

¹²⁴ WYO. STAT. § 18-5-502.

¹²⁵ WYO. STAT. §§ 35-12-106(a); 35-12-102(a)(vii)(E).

¹²⁶ WYO. STAT. § 18-5-509(a).

Wyoming counties issuing wind energy permits must develop rules “governing the notice that the application for a permit must provide to the record owners and claimants of mineral rights located on and under lands where the wind energy facility will be constructed.”¹²⁷ Among the many requirements for obtaining a local permit, applicants must develop emergency management plans that are reviewed by local officials, provide plans for decommissioning and waste management, and certify that there will be no advertising on the equipment other than the manufacturer’s or applicant’s logo on the nacelle of the turbine.¹²⁸ Applications that do not automatically fall under Industrial Siting Council jurisdiction must “provide a detailed summary of any significant adverse environmental, social or economic effects that the proposed wind energy facility may have together with any preliminary plans developed to alleviate any of the adverse effects.” All applications must conform to the following minimum setback requirements for the base of towers: 1) 110% of tower height from all property lines, unless waived by the owners of the land that falls within that distance, 2) 110% of tower height from any public road right-of-way, 3) the greater of 550% of tower height or 1000 feet from any platted subdivision, unless waived by the owners of the land that falls within that distance, 4) 550% of tower height or 1000 feet from any residential building or occupied structure, unless waived by the structure’s owner, and 5) half a mile from the limits of any city or town.¹²⁹

As discussed above, the state of **Washington** has the authority to handle wind facility siting through its Energy Facility Site Evaluation Council. However, it also shapes local decision making through a statute that governs judicial review of local “land use

decisions concerning wind power generation projects” that are within an “energy overlay zone.”¹³⁰ An energy overlay zone is “a formal plan enacted by the county legislative authority that establishes suitable areas for siting renewable resource projects based on currently available resources and existing infrastructure with sensitivity to adverse environmental impact.”¹³¹ These provisions are designed to make it easier to identify appropriate locations for wind facilities, and to grant the relevant land use approvals. Under judicial review, local government decisions regarding wind energy projects will be deemed reasonable when the local ordinance for that zone is consistent with the state department of fish and wildlife’s wind power guidelines; or the local jurisdiction prepared an environmental impact statement on the energy overlay zone and the local ordinance “requires project mitigation, as addressed in the environmental impact statement and consistent with local, state, and federal law,” requires site-specific fish and wildlife and cultural resources analysis, and the local jurisdiction has adopted an ordinance that addresses “critical areas” as defined under Washington state law.¹³²

These judicial review standards provide strong incentive for local zoning ordinances to address state concerns (about wildlife and other land use impacts), and for applicants to make use of these zones and comply with mitigation and other requirements for habitat protection. Klickitat County established its energy overlay zone in 2004 following preparation of an environmental impact statement, and more than 1000 MW of wind capacity has been constructed in the county. Pursuant to a 2005 settlement agreement (resolving a challenge to the EIS), the county agreed to reevaluate its energy overlay zone within 7 years or after construction of 1000 MW. In August 2010 the county completed the

¹²⁷ WYO. STAT. § 18-5-504(c). “The rules shall conform to rules adopted by the industrial siting council for the same purpose pursuant to *W.S. 35-12-105*.”

¹²⁸ WYO. STAT. § 18-5-503(a).

¹²⁹ WYO. STAT. § 18-5-504(a). The counties may adopt stricter standards than these state requirements, but do not have the power to relax the state requirements.

¹³⁰ WASH. REV. CODE § 36.70C.130.(3)-(4).

¹³¹ WASH. REV. CODE § 36.70C.020.

¹³² WASH. REV. CODE § 36.70C.130.(3). The Washington Department of Fish and Wildlife Wind Power Guidelines are available at department of fish and wildlife’s wind power guidelines.

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review and confirmed the continuation of the zone under the same terms and conditions.¹³³

A state's general environmental laws may affect local siting decisions for wind projects. For example, state environmental impact assessment laws in **Washington**,¹³⁴ **California**,¹³⁵ **New York**,¹³⁶ and **Hawaii**¹³⁷ require that local governments perform environmental reviews before approving certain projects and/or plans and ordinances. Thus, while local governments may exercise siting authority, they must identify impacts, mitigation, and ways of meeting state-prescribed environmental outcomes.

The background of state environmental regulation varies a great deal from state to state. In **Michigan**, for instance, wind energy facilities must comply with laws that protect the state's unique sand dune resources.¹³⁸

Administration of Local Land Use Ordinances

State laws can determine the treatment that wind facilities will receive under their local governments' land use ordinances.

Nebraska law authorizes local governments to grant zoning variances from regulations that unduly restrict wind energy facilities and protect access to wind resources "if such relief may be granted without substantial detriment to the public good and without substantially impairing

the intent and purpose of such regulation or ordinance."¹³⁹

In **New Jersey**, the legislature has made it easier for wind project proponents to get variances from local zoning ordinances by deciding that wind generation will be considered an "inherently beneficial use."¹⁴⁰ In general under New Jersey land use law, a zoning variance may be granted when the local zoning boards find (1) "special reasons" exist for the variance; and (2) the variance "can be granted without substantial detriment to the public good and will not substantially impair the intent and the purpose of the zone plan and zoning ordinance."¹⁴¹ However, for inherently beneficial uses, the first requirement is presumed to be met; and the second requirement is met if the project would not cause a substantial detriment to the public good, given the balance of any harms against the project's benefits and reasonable ameliorating conditions.¹⁴²

Under **Hawaii's** unique framework for land-use management, the state's Land Use Commission is responsible for categorizing all the land in the state into four types of districts: urban (under primarily county control), rural, agriculture (special use permits issued by the state), and conservation (under exclusive state control).¹⁴³ State law makes wind energy generation a permissible use in agricultural

¹³³ Klickitat County, Washington, Resolution No. 10910 (August 10, 2010), available at <http://www.klickitatcounty.org/planning/FilesHtml/eoz%20resolution%2010910.pdf>

¹³⁴ State Environmental Policy Act, WASH. REV. CODE § 43.21C.010 et seq.

¹³⁵ CAL. PUB. RES. CODE § 21000 et seq.

¹³⁶ 6 NYCRR Part 617 State Environmental Quality Review (SEQR).

¹³⁷ Hawaii Environmental Policy Act (HEPA), HAW. REV. STAT. §§ 343 (1995) (setting out the requirements for Environmental Impact Statements) and 344 (1995) (giving a broad declaration of the Hawaii state environmental policy).

¹³⁸ MICH. COMP. LAWS Part 353 Sand Dune Protection and Management.

¹³⁹ NEB. REV. STAT. § 66-914.

¹⁴⁰ "Inherently beneficial use" means a use which is universally considered of value to the community because it fundamentally serves the public good and promotes the general welfare. Such a use includes, but is not limited to, a hospital, school, child care center, group home, or a wind, solar or photovoltaic energy facility or structure." N.J. STAT. § 40:55D-4. "Wind, solar or photovoltaic energy facility or structure" means a facility or structure for the purpose of supplying electrical energy produced from wind, solar, or photovoltaic technologies, whether such facility or structure is a principal use, a part of the principal use, or an accessory use or structure." § 40:55D-7.

¹⁴¹ N.J. STAT. § 40:55D-70(d).

¹⁴² *Sica v. Wall Board of Adjustment*, 603 A.2d 30 (N.J. 1992).

¹⁴³ HAW. REV. STAT. § 205-1 et seq. State of Hawaii Land Use Commission, <http://luc.state.hi.us/about.htm#ROLE%20OF%20THE%20COMMISSION>.

districts.¹⁴⁴ Moreover, under the general state planning law, to transfer an interest in a portion of a rural lot, a landowner must obtain a county permit for a subdivision or an easement.¹⁴⁵ Recognizing that renewable energy projects may have acreage requirements that do not coincide with existing or future lot boundaries, and that the uncertain legal status of unapproved partial-lot easements was a barrier to project finance under federal stimulus funding for renewable energy, the Hawaii legislature created a temporary exemption from rural subdivision requirements for renewable energy projects in 2009.¹⁴⁶ For leases entered through June 30, 2013:

Easements may be created and granted over lands within the agricultural or conservation state land use district, for the purpose of developing and financing a renewable energy project or accessing a renewable energy project that is a permitted use in the district, even if the leased land or easement area has not been subdivided as a separate subdivided lot or easement.¹⁴⁷

While resolving the property subdivision issue, this law does not “exempt the actual development, construction, or operation of any use, project, or improvement from any applicable state or county laws, ordinances, restrictions, permits, or approvals, including restrictions on allowable uses or conditions and requirements for adequate infrastructure or mitigation measures.”¹⁴⁸

Hawaii also has an Energy Resources Coordinator, who is responsible for developing an efficient plan for processing all the necessary approvals for renewable energy facilities, in consultation with state and county agencies.¹⁴⁹ The Coordinator also facilitates the process for individual applicants.¹⁵⁰ While wind is a

renewable form of energy under the law, coordination assistance is only given to facilities with capacities over 200 MW.¹⁵¹

Many states have programs under which agricultural or forest land is taxed by local governments based on a lower valuation so long as it is maintained in the agriculture or forest use. These differential tax programs exist in almost every state, and most require repayment of back taxes at a higher valuation, or payment of a penalty if the property is subdivided or removed from agricultural or forest use. **Pennsylvania** in 2010 enacted a law allowing rural landowners to lease property enrolled in its tax program to wind energy developers without triggering an obligation to pay back taxes on the property as a whole.¹⁵²

Direct Regulation of Aspects of Locally-sited Wind Energy Facilities by State Law

A state may enact provisions that directly regulate aspects of the wind energy industry that raise the greatest state-wide concerns, without interfering with local authority over siting. This approach to regulation allows states to accomplish many of their goals regarding the operation of wind energy facilities, but without constructing or defining an entire siting regime or prescribing standards for local governments.

One state following this approach is **Oklahoma**. In Oklahoma, siting decisions are an entirely local matter. However, the Oklahoma Wind Energy Development Act, which enters into force on January 1, 2011, acknowledges both the importance of wind development’s role in the state economy and the importance of protecting public health and the interests of landowners who lease property for wind farms.¹⁵³ To these ends, the statute thoroughly regulates wind facility decommissioning. Within

¹⁴⁴ HAW. REV. STAT. § 205-4.5(a)(14) (2010).

¹⁴⁵ 2009 HAW. SESS. LAWS, Act 173, § 1.

¹⁴⁶ 2009 HAW. SESS. LAWS, Act 173, § 1; HAW. REV. STAT. §§ 201N-13; 201N-14.

¹⁴⁷ HAW. REV. STAT. § 201N-14(a)(2).

¹⁴⁸ HAW. REV. STAT. § 201N-14(e)(1).

¹⁴⁹ HAW. REV. STAT. § 201N-3.

¹⁵⁰ HAW. REV. STAT. § 201N-3.

¹⁵¹ HAW. REV. STAT. § 201N-1.

¹⁵² Pa. H.B. 1394 (2010).

¹⁵³ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, § 160.12).

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12 months of a facility's abandonment, the facility's owner must remove all turbines and associated facilities and restore any disturbed earth to its preexisting condition, unless the landowner specifically requests otherwise.¹⁵⁴ In addition, "After the fifteenth year of operation of a wind energy facility, the owner shall file with the Corporation Commission evidence of financial security to cover the anticipated costs of decommissioning;" the law provides an exhaustive set of options for how the owner may demonstrate security.¹⁵⁵ For landowners whose lease payments depend on the amount of electricity generated on their land, the law establishes a transparent reporting system so that landowners can verify that they are adequately compensated.¹⁵⁶ Finally, Oklahoma requires that facility owners have liability insurance that covers both the facilities and the land.¹⁵⁷

Nebraska, under a law passed in 2009, has specified certain requirements for the terms of wind agreements. Nebraska law requires that agreements with landowners for wind energy conversion or wind study must be in writing and recorded, must provide for decommissioning and for financial security to guarantee decommissioning, must "run with the land," and may not sever the wind resource from the surface estate. It also limits the term of such agreements to no more than forty years, and provides that such agreements expire if the wind energy facility has not been in operation within ten years of commencement of the agreement unless extended by mutual agreement of the parties.¹⁵⁸ Nebraska also requires that interests in land relating to wind energy systems or wind measurement equipment be recorded in county deed records and contain certain information, including "the nature of the [property] interest created; the consideration paid for the transfer; a

description of the improvements the developer intends to make on the real property, including, but not limited to: Roads; transmission lines; substations; wind turbines; and meteorological towers; [and] a description of any decommissioning security as defined in section 76-3001 or local requirements related to decommissioning."¹⁵⁹

¹⁵⁴ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, § 160.14) (reserving the rights of landowners and developers to use lease terms with even stricter decommissioning requirements).

¹⁵⁵ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, § 160.15).

¹⁵⁶ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, §§ 160.16-160.18).

¹⁵⁷ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, § 160.19).

¹⁵⁸ NEB. REV. STAT. §§ 76-3001 to 76-3004.

¹⁵⁹ NEB. REV. STAT. § 66-911.01.

IV. SITING REQUIREMENTS FOR STATE BOARDS

State legislatures that delegate at least part of the standard-setting task to their state siting boards usually identify the issues that shall become the subject of regulation.

The **Oregon** legislature delegated regulatory responsibility to the Energy Facility Siting Council. The EFSC developed very detailed siting rules that specifically apply to wind facilities, even though it received minimal statutory guidance. The statutory grant of authority states that the EFSC “shall adopt standards for the siting, construction, operation and retirement” of all energy generation facilities within its jurisdiction. The statute identifies an extensive list of subjects that the standards may address, but does not limit EFSC from addressing additional subjects.¹⁶⁰ Under this authority, the EFSC required that wind energy facilities must reduce visual impacts by using the minimum lighting necessary to comply with FAA and other regulations, and not displaying any advertising or other signs in addition to those required by law.¹⁶¹ Wind facility developers must take specific steps to restrict public access.¹⁶² The regulations also require developers to reduce environmental impacts by using existing road, transmission, and substation infrastructure.¹⁶³ Facilities must avoid creating artificial habitat for raptors and their prey, such as above-ground foundations where weeds can accumulate, electrical equipment near the ground that provides shelter and warmth, and perching opportunities.¹⁶⁴

In **Ohio**, the legislature delegated a great deal of regulatory authority that the state’s Power Siting Board has not yet exercised. The

law granted the PSB exclusive jurisdiction over “economically significant wind farms” – wind facilities with capacities of 5-50 MW. It specifically commanded the PSB to

prescribe reasonable regulations regarding any wind turbines and associated facilities of an economically significant wind farm, including, but not limited to, their location, erection, construction, reconstruction, change, alteration, maintenance, removal, use, or enlargement and including erosion control, aesthetics, recreational land use, wildlife protection, interconnection with power lines and with regional transmission organizations, independent transmission system operators, or similar organizations, ice throw, sound and noise levels, blade shear, shadow flicker, decommissioning, and necessary cooperation for site visits and enforcement investigations.¹⁶⁵

However, rather than setting specific limits, the Ohio PSB adopted regulations that require information disclosure and analysis of these issues in the application process. For instance, the PSB’s regulations on shadow flicker require the applicant to “evaluate and describe the potential impact from shadow flicker at adjacent residential structures and primary roads, including its plans to minimize potential impacts if warranted.”¹⁶⁶ In contrast, the statute demands specific setback limitations. These have been incorporated into the final PSB regulations. The siting law and regulations require that the rules prescribe minimum setbacks of 1.1 times the total turbine height from property lines, and 750 feet from residential structures.¹⁶⁷ These minimum setbacks may be waived by the adjacent property owners.¹⁶⁸

The **Iowa** legislature authorized the state utilities board to adopt siting criteria, but did not specify the content. The board shares

¹⁶⁰ OR. REV. STAT. § 469.501(1) (eleven subsection list subjects ranging from seismic hazards to impacts on plants and wildlife).

¹⁶¹ OR. ADMIN. R. 345-024-0015(1).

¹⁶² OR. ADMIN. R. 345-024-0015(2).

¹⁶³ OR. ADMIN. R. 345-024-0015(3)(a)-(c).

¹⁶⁴ OR. ADMIN. R. 345-024-0015(3)(d).

¹⁶⁵ OHIO REV. CODE ANN. § 4906.20(B)(2). The Board already had authority over power generation siting for all facilities capable of generating more than 50 megawatts. See OHIO REV. CODE ANN § 4906.01(B)(1)

¹⁶⁶ OHIO ADMIN. CODE § 4906-17-08(A)(6).

¹⁶⁷ OHIO REV. CODE ANN. § 4906.20(B)(2); OHIO ADMIN. CODE 4906-17-08(C)(1)(c).

¹⁶⁸ OHIO REV. CODE ANN. § 4906.20(B)(2); OHIO ADMIN. CODE 4906-17-08(C)(1)(c)(iii).

jurisdiction with local governments over siting energy facilities with capacities over 25 MW. Under the Iowa Code, the “board shall adopt rules . . . including but not limited to the promulgation of facility siting criteria.”¹⁶⁹ The board has not issued any siting criteria specific to wind energy facilities. The generic siting criteria that it has adopted for energy generation facilities supplies a list of factors that the board shall consider, including “[w]hether the construction, maintenance, and operation of the proposed facility will be consistent with reasonable land use and environmental policies, and consonant with reasonable utilization of air, land, and water resources, considering available technology and the economics of available alternatives” and “[w]hether the proposed facility meets the permit and licensing requirements of regulatory agencies.”¹⁷⁰ The siting criteria also incorporate statutory and industry standards for engineering practices.¹⁷¹

In **Minnesota**, a detailed statutory scheme divides responsibility for permitting decisions for large wind facilities (over 5 MW) between the Public Utilities Commission and local governments. The law directed the PUC to adopt rules addressing, among other things, 1) environmental review requirements, 2) “criteria that the commission shall use to designate [large wind facility] sites, which must include the impact of [the facilities] on humans and the environment,” and 3) conditions for turbine design, site layout, operation, and decommissioning.¹⁷²

The PUC complied with this statutory mandate without adopting siting standards. To satisfy the environmental review requirements for Large Wind Energy Conversion Systems (LWECS), an applicant must submit an analysis of potential environmental impacts, proposed mitigation measures, and unavoidable impacts that may affect a long list of environmental characteristics:

¹⁶⁹ IOWA CODE § 476A.12 (governing the regulation of all kinds of electric power generation facilities with capacities over 25MW).

¹⁷⁰ 199 IOWA ADMIN. CODE 24.10(476A)(b)-(d).

¹⁷¹ 199 IOWA ADMIN. CODE 24.10(476A)(e).

¹⁷² MINN. STAT. § 216F.05.

Minnesota Application Analysis for Large Wind Energy Conservation Systems

- demographics, including people, homes, and businesses
- noise
- visual impacts
- public services and infrastructure
- cultural and archaeological impacts
- recreational resources
- public health and safety, including air traffic, electromagnetic fields, and security and traffic
- hazardous materials
- land-based economics, including agriculture, forestry, and mining
- tourism and community benefits
- topography
- soils
- geologic and groundwater resources
- surface water and floodplain resources
- wetlands
- vegetation
- wildlife
- rare and unique natural resources

Minn. Rules 7854.0500(7).

After considering a complete application, the PUC issues a draft siting permit, receives public comment, and then adopts a final permit (unless a contested case requires a more formal hearing process). The permit term is 30 years. The following brief rules govern siting criteria and permit conditions for these wind facilities:

The commission shall not issue a site permit for an LWECS unless the commission determines that the project is compatible with environmental preservation, sustainable development, and the efficient use of resources, and the applicant has complied with this chapter. . . The commission may include in a site permit conditions for turbine type and designs, site layout and construction, and operation and maintenance of

the LWECS, including the requirement to restore, to the extent possible, the area affected by construction of the LWECS to the natural conditions that existed immediately before construction of the LWECS and other conditions that the commission determines are reasonable to protect the environment, enhance sustainable development, and promote the efficient use of resources.¹⁷³

The Minnesota PUC issued an order in 2008 specifying the general and minimum permit standards it would apply.¹⁷⁴ Standards include minimum property line setbacks of 3 rotor diameters (760 - 985 ft) on east-west axis and 5 rotor diameters (1280-1640ft) north-south axis (assuming turbines with 78-100 meter rotor diameters); residential noise standards requiring setbacks of 750-1500 feet depending on turbine models and local conditions, and various other requirements including siting, engineering, restoration, and surveys.¹⁷⁵

In **South Dakota**, wind energy facilities with capacities over 100 MW must obtain permits from the state Public Utilities Commission and comply with requirements relating to decommissioning, public notification and information disclosure. The South Dakota Energy Facility Permit Act provides that the PUC may adopt rules “To require bonds, guarantees, insurance, or other requirements to provide funding for the decommissioning and removal of a wind energy facility.”¹⁷⁶ Under this authority, the PUC requires that an applicant for a wind energy facility:

provide a plan regarding the action to be taken upon the decommissioning and removal of the wind energy facilities. Estimates of monetary costs and the site condition after

decommissioning shall be included in the plan. The commission may require a bond, guarantee, insurance, or other requirement to provide funding for the decommissioning and removal of a wind energy facility. The commission shall consider the size of the facility, the location of the facility, and the financial condition of the applicant when determining whether to require some type of funding. The same criteria shall be used to determine the amount of any required funding.¹⁷⁷

Under the statutory standard for receiving a permit, an applicant must prove that the facility does not threaten the environment, the social and economic conditions of existing or expected inhabitants of the area, the health and safety of the inhabitants, or the orderly development of the region.¹⁷⁸ Among the information that applicants must disclose is:

- (1) Configuration of the wind turbines, including the distance measured from ground level to the blade extended at its highest point, distance between the wind turbines, type of material, and color;
- (2) The number of wind turbines, including the number of anticipated additions of wind turbines in each of the next five years;
- (3) Any warning lighting requirements for the wind turbines;
- (4) Setback distances from off-site buildings, right-of-ways of public roads, and property lines;
- (5) Anticipated noise levels during construction and operation;
- (6) Anticipated electromagnetic interference during operation of the facilities;
- (7) The proposed wind energy site and major alternatives as depicted on overhead photographs and land use culture maps¹⁷⁹

In addition, the PUC can prepare or require an environmental impact statement that complies with the South Dakota Environmental Policy Act.¹⁸⁰ This Act allows agencies to prepare or require an EIS for approvals that may have a significant effect on the environment, with the

¹⁷³ MINN. R. 7854.1000(3)-(4).

¹⁷⁴ Minnesota Public Utilities Commission, *In the Matter of Establishment of General Permit Standards for the Siting of Wind Generation Projects Less than 25 Megawatts*, ORDER ESTABLISHING GENERAL WIND PERMIT STANDARDS, Docket No.E,G-999/M-07-1102 (January 11, 2008).

¹⁷⁵ *Id.* available at <http://energyfacilities.puc.state.mn.us/documents/19302/PU C%20Order%20Standards%20and%20Setbacks.pdf>

¹⁷⁶ S.D. CODIFIED LAWS § 49-41B-35(3).

¹⁷⁷ S.D. ADMIN. R. 20:10:22:33.01.

¹⁷⁸ S.D. CODIFIED LAWS § 49-41B-22.

¹⁷⁹ S.D. ADMIN. R. 20:10:22:33.02.

¹⁸⁰ S.D. CODIFIED LAWS § 49-41B-21.

applicant paying for the cost of the assessment.¹⁸¹

In some states, state regulators require special analyses to gather information relevant to unique impacts of wind facilities. For wind energy projects larger than 2 MW and taller than 50 feet, the **Colorado** Public Utilities Commission imposes survey and consultation requirements to protect wildlife.¹⁸² These siting-related regulations were adopted without specific statutory direction as to their content.¹⁸³ Under PUC rules the developers' bids to Colorado utilities for meeting renewable energy standards must include proof of consultation with the Colorado Division of Wildlife and other appropriate government agencies.¹⁸⁴ After the bidding process, the renewable energy supply contract must require project developers to certify "as a condition precedent to achieving commercial operation" that:

The developer has performed site specific wildlife surveys (referred to herein as the Environmental Surveys) which are conducted on the facility's site prior to construction; [and that] the developer, with good faith effort, used the results of the Environmental Surveys and available monitoring in developing the design, construction plans, and management plans of the facilities to avoid, minimize, and/or mitigate any adverse environmental impacts to state and federally listed species, to species of special concern, to sites shown to be local bird migration pathways, to critical habitat, to important ecosystems, and to areas where birds or other wildlife are highly concentrated and are considered at risk.¹⁸⁵

The developer must also commit to providing the results of the pre-construction surveys to the state Division of Wildlife prior to project construction, and a summary of survey and monitoring results upon commercial operation.¹⁸⁶

¹⁸¹ S.D. CODIFIED LAWS § 34A-9-4.

¹⁸² 4 COLO. CODE REGS. 723-3656. These requirements do not apply to net metered facilities.

¹⁸³ COLO. REV. STAT. § 40-2-124(i) authorized "rules necessary for the administration of this article."

¹⁸⁴ 4 COLO. CODE REGS. 723-3656(b).

¹⁸⁵ 4 COLO. CODE REGS. 723-3656(c).

¹⁸⁶ 4 COLO. CODE REGS. 723-3656(c).

In **Virginia**, recent legislation shifts jurisdiction for permitting wind facilities with capacities under 100 MW from the State Corporation Commission to the Department of Environmental Quality.¹⁸⁷ The statute directed the DEQ to develop a "permit by rule" for these wind facilities, to become effective by 2011.¹⁸⁸ Effective December 22, 2010, developers apply to the Virginia DEQ for a permit by rule, which the DEQ authorizes as long as the application meets the requirements of the published rules.¹⁸⁹ (Under the previous system, still applicable to wind facilities larger than 100 MW, developers would apply to the SCC for an individual permit, environmental agencies would submit recommendations to the SCC regarding the proposed site, and the SCC would decide what environmental requirements to impose.)¹⁹⁰

Virginia's new permit-by-rule requires extensive pre-application analysis, determination of whether a project will have significant adverse impacts on wildlife or historic resources, and a mitigation plan for any such impacts. All developers must complete a desktop wildlife survey, a year-long raptor migration survey, and a bat acoustic survey. The results of those studies or the location of the project site in a Coastal Avian Protection Zone may trigger the requirement for additional studies.¹⁹¹ For a project with a likely significant adverse impact, applicants must first attempt to avoid the impact, second attempt to mitigate unavoidable impacts, and then may offset impacts that cannot be minimized.¹⁹² Applicants must "take all

¹⁸⁷ 2009 Va. Acts ch. 854 (codified at VA. Code § 10.1-1197.5 et seq.), available at <http://www.vawind.org/Assets/Docs/081510/legp504.pdf>.

¹⁸⁸ 2009 Va. Acts ch. 854 (codified at VA. Code § 10.1-1197.5 et seq.), available at <http://www.vawind.org/Assets/Docs/081510/legp504.pdf>.

¹⁸⁹ 27 Va. Regs. Reg. 6 (Nov. 22, 2010) (to be codified at 9 VA. ADMIN. CODE 15-40-10 et seq.).

¹⁹⁰ Va. Code Ann. § 56-46.1 (2010).

¹⁹¹ 9 VA. ADMIN. CODE 15-40-40(A).

¹⁹² 9 VA. ADMIN. CODE 15-40-60(A). The department will find likely significant adverse impacts if 1) bats or a hibernaculum are found within the disturbance zone, 2) state-listed species or potential sea turtle nesting sites are found within the disturbance zone, or 3) "the proposed project is likely to diminish significantly any aspect of a

reasonable measures to avoid significant adverse impacts” on state-listed threatened and endangered species and avian resources in Coastal Avian Protection Zones.¹⁹³ Likely significant adverse impacts on bats trigger the requirement “to curtail operation of wind turbines on low wind speed nights when bats are likely to be active within the disturbance zone and to monitor the efficacy of these measures.”¹⁹⁴ There are also special protections for sea turtles, such as restrictions on construction in sea turtle habitat during nesting and hatching season.¹⁹⁵ The rule also includes monitoring requirements for wildlife impacts; after a year, the mitigation plan must be revised according to the results of the monitoring.¹⁹⁶

When impacts on historical resources cannot be minimized through project design or screening, developers may offset the impacts through projects that have “a demonstrable public benefit and benefit for the affected or similar resource.” If such projects are not possible, the impacts “will be mitigated through archaeological data recovery.”¹⁹⁷

Applications must also include a viewshed analysis of the impacts on any state or federally designated scenic resources within five miles of the project site.¹⁹⁸ The permit-by-rule, however, does not require any specific measures to minimize or mitigate scenic impacts.

Maine has established statutory standards for large wind farms that it enforces through state permitting processes, while allowing municipal governments to enact even stricter

standards. The appropriate permitting authority for a wind project in Maine depends on the acreage footprint of the project and its location. For land in the state’s organized municipalities, local governments exercise land use controls under their enabling legislation.¹⁹⁹ If the project will occupy more than 20 acres, the state Department of Environmental Protection is the “primary siting authority” designated by the Maine Wind Energy Act to enforce statewide standards.²⁰⁰ In the state’s unorganized areas, the state Land Use Regulatory Commission (LURC) is the primary siting authority for wind facility permitting.²⁰¹

The Maine Wind Energy Act provides for expedited wind energy development, meaning a “grid-scale wind energy development that is proposed for location within an expedited permitting area,” meaning the organized areas of the state and areas within the unorganized part of the state identified by the LURC.²⁰² The Act sets siting standards protecting scenic resources, addressing setbacks, and requiring tangible community benefits. The issue of scenic resources receives more attention than any other aspect of impact mitigation. The primary permitting authority must determine whether the “development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance.”²⁰³ Applicants are required to submit visual impact assessments for

historical resource’s integrity.” 9 Va. Admin. Code 15-40-50.

¹⁹³ 9 VA. ADMIN. CODE 15-40-60(B)(1); 9 VA. ADMIN. CODE 15-40-60(B)(3).

¹⁹⁴ 9 VA. ADMIN. CODE 15-40-60(B)(4). The rule further states that “the combined cost of mitigation and post-construction monitoring, in each year after year one, shall not exceed 120 hours of curtailment per year per turbine, averaged. The combined cost of mitigation shall consist of lost revenue from curtailment of wind turbines, including lost production tax credits.”

¹⁹⁵ 9 VA. ADMIN. CODE 15-40-60(B)(2).

¹⁹⁶ 9 VA. ADMIN. CODE 15-40-50(B)(6).

¹⁹⁷ 9 VA. ADMIN. CODE 15-40-60(C)(2)-(3).

¹⁹⁸ 9 VA. ADMIN. CODE 15-40-40(C)(2).

¹⁹⁹ ME. REV. STAT. ANN. tit. 35-A, § 3001 (Home Rule), and the provisions of the Planning and Land Use Regulation Act, ME. REV. STAT. ANN. tit. 35-A, § 4312, etc. seq. (Comprehensive Planning and Land Use Regulation, or “Growth Management Act”).

²⁰⁰ ME. REV. STAT. ANN. tit. 35-A, § 3451(8); ME. REV. STAT. ANN. tit. 38, § 482(2)(a). Any commercial wind farm will generally be greater than 20 acres.

http://arionenergy.com/wind_energy_basics

²⁰¹ ME. REV. STAT. ANN. tit. 35-A, § 3451(8).

²⁰² ME. REV. STAT. ANN. tit. 35-A, §§ 3451(3), (4).

²⁰³ ME. REV. STAT. ANN. tit. 35-A, § 3452(1). This is a more lax standard than what generally governs development under state jurisdiction (*viz.* that the project fit “harmoniously into the existing natural environment.”) ME. Rev. Stat. Ann. tit. 38, § 484(3).

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projects within three miles of scenic resources of state or national significance; there is a rebuttable presumption that an assessment is unnecessary for projects 3-8 miles from such scenic resources.²⁰⁴ “Scenic resource of state or national significance” is a term that is precisely defined in the statute, and these resources are to be catalogued by state agencies in order to facilitate their protection.²⁰⁵

The primary siting authority must issue findings regarding whether the facilities will be “constructed with setbacks adequate to protect public safety.”²⁰⁶ In so doing, it “must consider the recommendation of a professional, licensed civil engineer as well as any applicable setback recommended by a manufacturer of the generating facilities” and may require additional information from the applicant.²⁰⁷ Thus, the state has created a flexible standard rather than a strict numerical requirement.

One unique requirement under Maine’s commercial wind siting regime is the determination of “tangible benefits” to the host community. As part of the “tangible benefits” requirement for an “expedited” wind permit application, a project must include a “community benefits package” worth at least \$4,000 per year per wind turbine, averaged for a 20-year period.²⁰⁸ Additionally, an application for an expedited wind energy development must include documentation of tangible benefits to the host community, including estimates about job creation, property taxes, energy generation, and the community benefits package.²⁰⁹ The requirement does not apply to 1) facilities for which the host community has waived the requirement, 2) facilities with capacities of less than 20 MW, 3) some facilities located in Indian territories, and 4) facilities owned by non-profit,

²⁰⁴ ME. REV. STAT. ANN. tit. 35-A, § 3452(3)-(4).

²⁰⁵ ME. REV. STAT. ANN. tit. 35-A, § 3457.

²⁰⁶ ME. REV. STAT. ANN. tit. 35-A, § 3451(9). The Department of Conservation must designate scenic viewpoints on state public reserved lands and on pedestrian trails (eg, the Appalachian Trail), while the State Planning office is responsible for a scenic inventory on coastal land. ME. REV. STAT. ANN. tit. 35-A, § 3455.

²⁰⁷ ME. REV. STAT. ANN. tit. 35-A, § 3455.

²⁰⁸ ME. REV. STAT. ANN. tit. 35-A, § 3454(2-4).

²⁰⁹ ME. REV. STAT. ANN. tit. 35-A, § 3454(1).

public, or quasi-public entities.²¹⁰ The primary siting authorities are also responsible for enforcing compliance with general development laws and regulations. A development application must comply with the Site Location of Development Law, the Natural Resources Protection Act, and the DEP regulations promulgated pursuant to those laws.²¹¹

Under the DEP siting regulations, hourly sound levels resulting from the routine operation of the development may not exceed fifty-five dBA during the day and forty-five dBA at night.²¹² Additionally, if the facility is sited in the habitat of a listed protected species or other protected natural resource, the applicant must show that the development “will not unreasonably harm any significant wildlife habitat.”²¹³ The Supreme Judicial Court of Maine recently upheld DEP approval of a wind facility when the DEP addressed these concerns with conditions for post-construction monitoring for sound impacts and wildlife impacts, applying the “substantial evidence” standard for judicial review of agency decisions.²¹⁴

When legislatures delegate the task of developing siting regulations to state agencies and commissions, they should provide sufficient direction to assure that the legislative intent will be fulfilled.

²¹⁰ ME. REV. STAT. ANN. tit. 35-A, § 3454(3).

²¹¹ ME. REV. STAT. ANN. tit. 38, §§ 481-490 (2008) (the Site Law); ME. REV. STAT. ANN. tit. 38, §§ 480-A to 480-GG (2008) (the NRPA); ME. REV. STAT. ANN. tit. 12, § 685-B(4)(A) (requiring compliance for LURC approval).

²¹² CODE ME. R. 06 096 375 § 10(C)(1)(a)(v).

²¹³ ME. REV. STAT. ANN. tit. 38, § 480-D(3).

²¹⁴ *Friends of Lincoln Lakes v. Board of Env'tl. Protection*, 989 A.2d 1128 (Maine Supreme Judicial Court, March 11, 2010). The case made use of provisions for “expedited wind energy development” ME. REV. STAT. ANN. tit. 38, § 344(2A)(A)(1), and for expedited appeal to the Supreme Judicial Court for the same, ME. REV. STAT. ANN. tit. 38, § 346(4). Two other recent wind project approvals were upheld under the expedited wind energy development process. *Concerned Citizens to Save Roxbury v. Board of Env'tl. Protection*, 2011 ME 39 (Maine Supreme Judicial Court, March 24, 2011), *Martha A. Powers Trust v. Board of Env'tl. Protection*, 2011 ME 40 (Maine Supreme Judicial Court, March 24, 2011)

In **Vermont**, the Public Service Board (PSB) may not issue a certificate of public good to site any energy generation facility unless it makes several findings, including that the facility “will not unduly interfere with the orderly development of the region,” with due consideration given to municipal and regional plans and recommendations; and that it “will not have an undue adverse effect on esthetics, historic sites, air and water purity, the natural environment and the public health and safety,” with due consideration to other statutory criteria.²¹⁵

PSB regulations implementing these provisions require that petitions to construct wind energy generation facilities “must include a view-shed analysis that includes an analysis of aesthetic impacts for a ten-mile radius from the proposed project site.”²¹⁶ Additionally, “[i]n addressing the impact of the proposed project on orderly development, the petitioner must include an assessment of the impact on all towns within this ten-mile radius.”²¹⁷

The PSB has not adopted generally applicable regulations that define acceptable impacts. Rather, the PSB has used a judicially crafted test to evaluate on a case-by-case basis whether aesthetic impacts are unduly adverse. That test, which was originally developed to interpret a similarly worded standard for state land development, considers an adverse impact “undue” if:

- (1) it violates a clear, written community standard intended to preserve the aesthetics or scenic, natural beauty of the area; or (2) it offends the sensibilities of the average person; or (3) the applicant has failed to take generally available mitigating steps that a reasonable person would take to improve the harmony of the proposed project with its surroundings.²¹⁸

In **Washington**, the Energy Facilities Site Evaluation Council applies the standards set forth in its general regulations for all energy facilities, and applying the state environmental impact analysis requirements. It has not adopted wind-specific standards in its regulations.²¹⁹

²¹⁵ 30 VT. STAT. ANN. § 248(b).

²¹⁶ VT. CODE R. 5.403(B)(3) (effective October 15, 2006). As in Colorado, this requirement does not apply to facilities subject to net metering. VT. CODE R. 5.403(C).

²¹⁷ VT. CODE R. 5.403(B)(2).

²¹⁸ In re Amended Petition of UPC Vt. Wind, LLC, 969 A.2d 144 (Vt. 2009).

²¹⁹ Wash. Admin. Code §§ 463-06 to 463-85. EFSEC is also responsible for complying with the State Environmental Policy Act, REV. CODE WASH. §43.21C. The Act requires consideration and mitigation of a project’s probable significant adverse environmental impacts. Wash. Admin. Code § 463-47-140.

V. EXAMPLE STANDARDS FOR WIND POWER SITING

Whether wind siting regulation is by a local government or a state body, regulators will need to address at least the following key issues:

- Facility Location
- Visual Impacts
- Safety Requirements
- Setbacks from Property Lines and Structures
- Wildlife and Habitat Protection
- Noise
- Shadow flicker
- Electromagnetic interference
- Decommissioning
- Other

This list of key siting issues is drawn from review of existing state statutes, regulations, and model ordinances.²²⁰ It is similar to the wind facility siting considerations identified by the National Academy of Sciences in its 2007 report.²²¹ State legislatures specifying standards for state boards, or seeking to define the scope of local regulation, will need to consider what the state law should say about *each* of these topics. If state law is silent on any of these, then state boards or local governments will need to develop approaches to address them. Model ordinances have provided some assistance to municipalities under these circumstances. See Table 3.

Absent statutory direction, questions may arise as to whether authority exists for a local or state body to regulate some of these impacts. For example, can local governments address electromagnetic interference? Who determines allowable noise standards? Can financial

assurances for decommissioning be required under local zoning and permitting authority? Do state wildlife laws preempt local consideration of habitat impacts?

This Chapter examines how current state laws and model ordinances deal with these specific siting issues in practice.

Facility Location

One key issue is determining where commercial-scale wind facilities may be located. Local governments may be authorized to assign them to particular zoning districts, to require them to undergo special review as a special or conditional use, or even to exclude them from some or all districts. Some local governments may want to use a wind power “overlay” district to provide for wind facilities without changing the underlying zoning. In states where there is a state siting body, the location question requires a determination about whether (and under what circumstances) a state decision overrides local land use requirements.

Wind Facility Use Districts. Most model ordinances advise local governments to specify the zoning classifications within which large wind facilities are a permitted, conditional, or special use. North Carolina’s model ordinance makes commercial wind facilities subject to special use permitting in all zones.²²² Minnesota’s model ordinance provides for conditional use permitting of wind facilities in agriculture, light industry, and heavy industry districts.²²³ While not making any particular recommendations, Wisconsin’s draft model ordinance lays out two options for zoning: 1) selecting zoning classifications where wind facilities are allowed, or 2) creating a wind energy overlay district.²²⁴ Washington’s state law providing for deferential judicial review of

²²⁰ See e.g., WIS. STAT. § 196.378(4g) (content of rules specifying subject matter of local regulation of wind facilities).

²²¹ National Research Council, *Environmental Impacts of Wind-Energy Projects* (National Academy Press, 2007). However the Academy committee also identified economic impacts and cultural impacts separately.

²²² MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 5 (N.C. Wind Working Group 2008).

²²³ MODEL WIND ORDINANCE 6 (Clean Energy Resource Teams, et al. 2005).

²²⁴ WIS. MODEL WIND ORDINANCE FOR TOWNS/COUNTIES § 3.2 (Wis. Pub. Serv. Comm. Draft 2007).

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wind energy siting decisions in “energy overlay zones” encourages zoning to accommodate wind development.²²⁵

Limits on Power to Exclude Wind Facilities.

State legislatures can restrain the ability of local governments to prohibit or zone out wind energy facilities. State statutes may require zoning regulations and land use plans to promote wind energy and prohibit ordinances that bar or unreasonably restrict wind energy.²²⁶ Legislators should take care to define the types of wind facilities that are covered by such statutory protections. An increasing number of local governments have begun to enact ordinances to exclude commercial-scale wind facilities.²²⁷ State legislatures can prohibit such ordinances.²²⁸

Protecting Access to Wind Resources.

Colorado’s enabling legislation on county planning allows county and regional planning commissions to consider “methods for assuring access to appropriate conditions for solar, wind, or other alternative energy sources” when they create master plans.²²⁹ Nebraska law authorizes local governments to protect access to wind energy through their zoning regulations, ordinances, and plans. Further, the Nebraska law includes a non-exhaustive list of measures that may be used to ensure access to wind, including “regulation of height, location, setback, and use of structures, the height and location of vegetation with respect to property boundary lines, the type and location of energy systems or their components, and the use of districts.”²³⁰

²²⁵ REV. CODE WASH. § 36.70C.130.

²²⁶ See NEV. REV. STAT. ANN. § 278.02077(a) (requiring local ordinances to accommodate and promote small wind projects). See also definitions for reasonable and unreasonable restrictions at NEV. REV. STAT. ANN. § 278.02077(b)-(c).

²²⁷ The Industrial Wind Action Group website compiles news items primarily focused on communities that have acted to inhibit or exclude commercial-scale wind projects. <http://www.windaction.org/news>

²²⁸ E.g. OHIO REV. CODE ANN. § 4906.13.

²²⁹ COLO. REV. STAT. 30-28-106(3)(a)(IV).

²³⁰ NEB. REV. STAT. § 66-913.

Visual Impacts

Each of the model ordinances regulates visual impacts of wind facilities. This can be an important local issue, and has statewide implications for scenic viewsheds, cultural landscapes, and other significant areas. The following visual impact topics were addressed more than any others.

Impacts on Viewsheds. Model ordinances sometimes use siting restrictions to protect scenic resources, either by restricting siting within or near officially designated scenic zones, or by requiring setbacks from certain types of resources. The New York model includes both kinds of regulations: Ordinances may require that “where wind characteristics permit, wind towers shall be set back from the tops of visually prominent ridgelines to minimize the visual contrast from any public access.”²³¹ Or, they may require that “no individual tower facility shall be installed at any location that would substantially detract from or block the view of the major portion of a recognized scenic vista, as viewed from any public road right-of-way or publicly-accessible parkland or open space within the Town.”²³² To minimize the impact on scenic river valleys, the Minnesota model ordinance recommends setbacks of 500, 1,000, or 1,320 feet from major river bluffs.²³³ In a footnote, the drafters emphasize that “care should be taken to avoid excessive setbacks, particularly from bluffs overlooking smaller tributaries.”²³⁴ As discussed above, Maine’s siting process protects impacts on formally

²³¹ WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.).

²³² WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.).

The Michigan sample ordinance takes a similar approach, requiring that “The applicant shall avoid state or federal scenic areas and significant visual resources listed in the local unit of government’s Plan.” SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.H.1 (Mich. Dep’t of Labor & Econ. Growth 2008).

²³³ MODEL WIND ORDINANCE 8 (Clean Energy Resource Teams, et al. 2005).

²³⁴ MODEL WIND ORDINANCE 8 fn. 5 (Clean Energy Resource Teams, et al. 2005).

Table 3: Model Ordinances

In any state where local regulations are not completely preempted, states can guide local government decision making with model ordinances or other guidance documents. State bodies have written or commissioned model local ordinances for siting commercial-scale wind facilities in:

Maine

<http://www.maine.gov/spo/landuse/docs/ModelWindEnergyFacilityOrdinance.pdf>.

Massachusetts

<http://www.mass.gov/Eoca/docs/doer/renew/model-allow-wind-by-permit.pdf> (allowing wind facilities by special permit)

<http://www.mass.gov/Eoeea/docs/doer/renewables/wind/model-wind-by-law-0810.pdf> (allowing conditional use of wind facilities)

Michigan

http://www.michigan.gov/documents/dleg/WindEnergySampleZoning_236105_7.pdf.

New York

http://www.powernaturally.org/programs/wind/toolkit/2_windenergymodel.pdf.

Oregon

<http://www.oregon.gov/ENERGY/SITING/docs/ModelEnergyOrdinance.pdf?ga=t>.

Pennsylvania

http://www.pawindenergynow.org/pa/Model_Wind_Ordinance_Final_3_21_06.pdf.

South Dakota

<http://puc.sd.gov/commission/twg/WindEnergyOrdinance.pdf>.

Utah

http://utahcleanenergy.org/files/u1/FINAL_Utah_model_wind_ordinance_2010.pdf.

Wisconsin

<http://www.windaction.org/documents/13190> (draft predating the 2009 revisions to wind facility siting law)

Kansas

The Kansas Energy Council produced a *Wind Energy Siting Handbook* that covers local land use regulation, considerations in wind facility siting, and the ways in which four Kansas county wind ordinances handle those considerations.

http://kec.kansas.gov/reports/wind_siting_handbook.pdf

Independent groups have produced model ordinances in:

Illinois

<http://www.illinoiswind.org/resources/pdf/WindOrdinance.pdf>. (Chicago Environmental Law Clinic and Baker & McKenzie)

Minnesota

http://www.cleanenergyresourceteams.org/files/2005_model_wind_ordinance.pdf. (Clean Energy Resource Teams, the Minnesota Project, Southwest Regional Development Commission, Minnesota Association of County Planning and Zoning Administrators)

North Carolina

http://www.ncsc.ncsu.edu/wind/wwg/publications/NC_Model_Wind_Ordinance_June_2008_FINAL.pdf. (North Carolina Wind Working Group)

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catalogued scenic resources. Scenic impacts may also be addressed through informational requirements. For example, Vermont regulations require that petitions to construct wind energy generation facilities “must include a view-shed analysis that includes an analysis of aesthetic impacts for a ten-mile radius from the proposed project site.”²³⁵

Design Characteristics. Most model ordinances address the visual impact of wind energy facilities by setting requirements for various aspects of the turbine design. The most commonly addressed characteristics are *color*, *uniformity*, *lighting*, and *advertising*.

Most model ordinances include color requirements aimed at making the facilities less conspicuous. For instance, the Michigan Sample Zoning for Wind Energy Systems suggests the requirement that “all Utility Grid wind energy systems in a project shall be finished in a single, non-reflective matte finished color.”²³⁶ The Utah model ordinance provides that “the small wind energy system shall be a neutral color that blends with the environment and complies with FAA standards. Gray, beige, and white are recommended.”²³⁷ The Pennsylvania model ordinance requires that “wind Turbines shall be a non-obtrusive color such as white, off-white or gray.”²³⁸

Model ordinances take various measures to ensure that the turbines will have a uniform appearance. The Oregon model ordinance requires “Using turbine towers of uniform design, color and height.”²³⁹ The draft South Dakota ordinance stipulates that “All towers shall be singular tubular design, unless approved

by the Board.”²⁴⁰ As noted above, the Michigan model ordinance requires that all turbines be painted a single color.

Limits on lighting also make wind energy facilities less obtrusive. In general, these requirements restrict lighting to whatever is necessary to comply with FAA regulations. Massachusetts’ model ordinances state that “Wind turbines shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the wind facility, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties.”²⁴¹ Oregon imposes similar lighting restrictions on projects within its exclusive siting authority.

Another common tactic for reducing visual impact is to prohibit any advertising or other signage. There is generally an exception for display of the manufacturer or owner’s name on the turbine. New York’s Wind Energy Model Ordinance asks local governments to choose between “Brand names or advertising associated with any installation shall not be visible from any public access” or “Wind turbines shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the wind energy facility.”²⁴² The latter is similar to the state requirements imposed by Wyoming²⁴³ and Oregon (for developers that opt into Oregon’s state siting process).²⁴⁴

Underground Cables. Model ordinances often demand that, when practical, electrical cables must be placed underground. The Pennsylvania model ordinance states that “On-site

²³⁵ VT. CODE R. 5.403(B)(3) (effective October 15, 2006). This requirement does not apply to facilities subject to net metering. VT. CODE R. 5.403(C).

²³⁶ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.H.1 (Mich. Dep’t of Labor & Econ. Growth 2008).

²³⁷ UTAH MODEL WIND ORDINANCE § 4.1.5 (Utah State Energy Program 2010).

²³⁸ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 6.E.1 (Pa. Dep’t of Env’tl. Prot. 2006).

²³⁹ A MODEL ORDINANCE FOR ENERGY PROJECTS 25 (Or. Dep’t of Energy 2005).

²⁴⁰ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.10.b (S.D. Pub. Util. Comm’n 2008).

²⁴¹ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.8.2 (Mass. Dep’t of Energy Res. 2008); MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 5.2.1 (Mass. Dep’t of Energy Res. 2008).

²⁴² WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.).

²⁴³ WYO. STAT. § 18-5-503(a).

²⁴⁴ OR. ADMIN. R. 345-024-0015(1).

transmission and power lines between Wind Turbines shall, to the maximum extent practicable, be placed underground.”²⁴⁵ Similarly, the Massachusetts model ordinances require that “Reasonable efforts shall be made to locate utility connections from the wind energy facility underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.”²⁴⁶

Safety Requirements

Controlling Access to the Site. The most common safety requirement is control of physical access. The Utah model ordinance requires that “All access doors, climbing apparatuses, or access ways to towers and electrical equipment shall remain locked and inaccessible by the public.”²⁴⁷ Some access provisions also address climb prevention. In Massachusetts, the model ordinance for conditional use permitting requires that “the tower shall be designed and installed so as to not provide step bolts or other climbing means readily accessible to the public for a minimum height of 8 feet above the ground.”²⁴⁸

Warning Signs. In a typical provision, the Maine model ordinance provides that “A clearly visible warning sign concerning voltage must be

placed at the base of all pad-mounted transformers and substations.”²⁴⁹ Michigan is the only state to require warnings regarding ice and the posting of emergency contact information.²⁵⁰ Some model ordinances also require measures to make above-ground wires clearly visible. For instance, the Illinois model ordinance requires that “Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of 15 feet from the ground.”²⁵¹

Design Requirements. Almost every model ordinance imposes safety requirements on the design and dimensions of the turbines. The most common types of provisions require design certifications, blade clearance of a certain distance, and braking systems. Pennsylvania’s model ordinance contains a typical design certification provision, requiring that “The design of the Wind Energy Facility shall conform to applicable industry standards, including those of the American National Standards Institute. The Applicant shall submit certificates of design compliance obtained by the equipment manufacturers from Underwriters Laboratories, Det Norske Veritas, Germanischer Lloyd Wind Energies, or other similar certifying organizations.”²⁵²

Model ordinances require clearances of various lengths between the ground and the facilities’ rotating blades. New York’s model ordinance is strictest, requiring that “The minimum distance between the ground and any part of the rotor blade system shall be thirty (30)

²⁴⁵ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 6.E.4 (Pa. Dep’t of Env’tl. Prot. 2006).

²⁴⁶ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.8.5; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 5.2.4.

²⁴⁷ UTAH MODEL WIND ORDINANCE § 4.1.8 (Utah State Energy Program 2010).

²⁴⁸ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.9.2. The Pennsylvania model ordinance and the draft Wisconsin model ordinance require that towers are not climbable for at least 15 feet. MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 7.G.1 (Pa. Dep’t of Env’tl. Prot. 2006); WIS. MODEL WIND ORDINANCE FOR TOWNS/COUNTIES § 5.6.2 (Wis. Pub. Serv. Comm. Draft 2007).

²⁴⁹ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.3 (2009).

²⁵⁰ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.C (Mich. Dep’t of Labor & Econ. Growth 2008). “A sign shall be posted near the tower or Operations and Maintenance Office building that will contain emergency contact information. Signage placed at the road access shall be used to warn visitors about the potential danger of falling ice.”

²⁵¹ MODEL ORDINANCE REGULATING THE SITING OF WIND ENERGY CONVERSION SYS. IN ILL. § VI.F.2 (Chicago Legal Clinic 2003).

²⁵² MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 6.B (Pa. Dep’t of Env’tl. Prot. 2006).

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feet.”²⁵³ South Dakota’s model ordinance requires 25 feet of clearance.²⁵⁴ Model ordinances for Michigan and Oregon both require at least 20 feet.²⁵⁵ Minnesota’s 2005 model ordinance requires just 12 feet of clearance.²⁵⁶

Some model ordinances ensure safety by requiring redundant braking systems that prevent uncontrolled spinning. New York’s model language requires that “All wind turbines shall have an automatic braking, governing or feathering system to prevent uncontrolled rotation, overspeeding and excessive pressure on the tower structure, rotor blades and turbine components.”²⁵⁷ The model ordinance for Pennsylvania requires that facilities “shall be equipped with a redundant braking system. This includes both aerodynamic overspeed controls (including variable pitch, tip, and other similar systems) and mechanical brakes. Mechanical brakes shall be operated in a fail-safe mode. Stall regulation shall not be considered a sufficient braking system for overspeed protection.”²⁵⁸

Emergency Response Plans. Ordinances may require applicants to cooperate with local agencies to develop and implement emergency response plans. For example, the Maine model ordinance states: “The Applicant shall provide a copy of the project summary and site plan to local emergency service providers, including paid or volunteer fire department(s). Upon request, the Applicant shall cooperate with emergency service providers to develop and coordinate implementation of an emergency response plan for a Wind Energy Facility. A

Wind Turbine shall be equipped with an appropriate fire suppression system to address fires within the Nacelle portion of the turbine or shall otherwise address the issue of fire safety to the satisfaction of the [municipal reviewing authority].”²⁵⁹

Setbacks from Property Lines and Structures

Almost all model ordinances and many state regulations include provisions on setbacks. The key differences among the models stem from the places from which setbacks are measured, the expression of setback distances, and whether waivers are available.

Setbacks from Various Points. Setback requirements depend significantly on which objectives the regulators seek to protect. Setbacks are most often measured from property lines, structures, other towers, roads, and sensitive habitats. The most common type of setback requirement prohibits turbines from being built within a specified distance from property lines of adjacent parcels.

In most cases, setback requirements restrict how close turbines may be to property lines. Michigan’s sample ordinance requires a setback from adjacent property at a distance equal to the height of the tower with the blade fully extended.²⁶⁰ (In general, ordinances define tower height as including the highest point of the rotor plane, or “total extended height”). Ohio and Wyoming law – as well as the model ordinances in Pennsylvania, Illinois, and Utah – require a setback equal to 110% of the height of the

²⁵³ WIND ENERGY MODEL ORDINANCE OPTIONS 8 (N.Y. State Energy & Research Dev. Auth.).

²⁵⁴ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.9 (S.D. Pub. Util. Comm’n 2008).

²⁵⁵ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1074.F (Mich. Dep’t of Labor & Econ. Growth 2008); A MODEL ORDINANCE FOR ENERGY PROJECTS 26 (Or. Dep’t of Energy 2005).

²⁵⁶ MODEL WIND ORDINANCE 9 (Clean Energy Resource Teams, et al. 2005).

²⁵⁷ WIND ENERGY MODEL ORDINANCE OPTIONS 8 (N.Y. State Energy & Research Dev. Auth.).

²⁵⁸ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 7.C (Pa. Dep’t of Env’tl. Prot. 2006).

²⁵⁹ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.8 (2009).

²⁶⁰ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.A.2 (Mich. Dep’t of Labor & Econ. Growth 2008) (allowing greater setbacks when required by the zoning district). The ordinance’s commentary notes: “The property set-back requirement is designed to protect neighbors in the unlikely event of a tower failure. A setback equal to the tower’s height should be adequate, but some communities require 1½ times the tower height as the setback.”

tower.²⁶¹ South Dakota requires 110% of tower height or 500 feet, whichever is greater.²⁶² The Minnesota model suggests choosing a requirement of either 110% or 125% of tower height.²⁶³ Model ordinances for North Carolina and Oregon suggest property line setbacks of 150% of tower height.²⁶⁴

Setbacks from public rights of way are also common, and these setbacks are usually equal to the property-line setbacks.²⁶⁵ However, Minnesota's model ordinance allows the setback requirement to be reduced for roads with average daily traffic counts of less than 10.²⁶⁶ Some model ordinances, including those for Illinois and New York, impose the same setback requirements for distances from property lines, roads, and utility infrastructure.²⁶⁷

Most model ordinances do not regulate the distance between turbines in the same project, leaving that determination to the project developer. However, for wind projects under 25 MW, the Minnesota PUC requires spacing distances equal to five rotor diameters in the downwind spacing between towers and three rotor diameters in crosswind spacing, with a narrow exception to accommodate topographic

conditions.²⁶⁸ This requirement is meant to ensure that facilities are “designed and sited in a manner that ensures efficient use of the wind resources, long term energy production, and reliability.”²⁶⁹ Ottawa County, Michigan, has developed a model ordinance for its municipalities that requires that “Turbine/tower separation shall be based on industry standards and manufacturer recommendation.”²⁷⁰

Several model ordinances require setbacks from occupied buildings that are greater than the property line setbacks. These are often more stringent for occupied buildings on non-participating property. Ohio prohibits turbines within 750 feet of habitable residential structures.²⁷¹ The South Dakota model ordinance requires that “Distance from currently occupied off-site residences, [non-agricultural] business and public buildings shall be not less than [1,000] feet. Distance from the residence of the landowner on whose property the tower(s) are erected shall be not less than [500] feet or [100%] the system height, whichever is greater.”²⁷² The North Carolina model ordinance includes setbacks of 110% and 250% of turbine height from occupied buildings on participating and non-participating property, respectively.²⁷³ The Minnesota model ordinance calls for a setback of 750 feet from neighboring dwellings.²⁷⁴ The Pennsylvania model ordinance requires a setback from occupied buildings on non-participating property equal to five times

²⁶¹ WYO. STAT. § 18-5-504(a)(ii); OHIO REV. CODE ANN. § 4906.20(B)(2); MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 7.B (Pa. Dep’t of Env’tl. Prot. 2006) (noting there may be a more stringent requirement for the zoning classification where the turbine is located); MODEL ORDINANCE REGULATING THE SITING OF WIND ENERGY CONVERSION SYS. IN ILL. § VI.H.3 (Chicago Legal Clinic 2003); UTAH MODEL WIND ORDINANCE § 4.1.2 (Utah State Energy Program 2010).

²⁶² S.D. CODIFIED LAWS § 43-13-24.

²⁶³ MODEL WIND ORDINANCE 7 (Clean Energy Resource Teams, et al. 2005).

²⁶⁴ WIND ENERGY MODEL ORDINANCE OPTIONS 9 (N.Y. State Energy & Research Dev. Auth.); MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 7 (N.C. Wind Working Group 2008); A MODEL ORDINANCE FOR ENERGY PROJECTS 27 (Or. Dep’t of Energy 2005).

²⁶⁵ See e.g. WYO. STAT. § 18-5-504(a)(iii); MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 7. (Pa. Dep’t of Env’tl. Prot. 2006).

²⁶⁶ MODEL WIND ORDINANCE 7 (Clean Energy Resource Teams, et al. 2005).

²⁶⁷ MODEL ORDINANCE REGULATING THE SITING OF WIND ENERGY CONVERSION SYS. IN ILL. § VI.H.2 (Chicago Legal Clinic 2003); WIND ENERGY MODEL ORDINANCE OPTIONS 9-10 (N.Y. State Energy & Research Dev. Auth.).

²⁶⁸ Minnesota Public Utilities Commission, *In the Matter of Establishment of General Permit Standards for the Siting of Wind Generation Projects Less than 25 Megawatts*, ORDER ESTABLISHING GENERAL WIND PERMIT STANDARDS 8, Docket No.E,G-999/M-07-1102 (January 11, 2008).

²⁶⁹ *Id.* at 5.

²⁷⁰ OTTAWA COUNTY MODEL WIND ENERGY ORDINANCE § 6(A)(9)(d)(vi) (Ottawa County Planning Department 2009). http://www.co.ottawa.mi.us/CoGov/Depts/Planning/pdf/Wind_Energy_Ordinance.pdf

²⁷¹ OHIO REV. CODE ANN. § 4906.20(B)(2); OHIO ADMIN. CODE § 4906-17-08(C)(1)(c)(ii).

²⁷² DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.2.a (S.D. Pub. Util. Comm’n 2008).

²⁷³ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 7 (N.C. Wind Working Group 2008).

²⁷⁴ MODEL WIND ORDINANCE 7 (Clean Energy Resource Teams, et al. 2005).

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the height of the turbine hub.²⁷⁵ Wyoming law protects both existing and planned residences by prohibiting the construction of turbines within 550% tower height or 1000 feet from either platted subdivisions, residential buildings, or occupied structures.²⁷⁶ Wyoming also prohibits wind tower siting within half a mile of any city or town.²⁷⁷

A few model ordinances require setbacks from certain habitats or ecosystems. The model ordinance for Minnesota requires 600 foot setbacks from wetlands and public conservation lands managed as grasslands.²⁷⁸ The New York model ordinance options includes the following language: “Wind turbines shall be set back at least 2,500 feet from Important Bird Areas as identified by New York Audubon and at least 1,500 feet from State-identified wetlands. These distances may be adjusted to be greater or lesser at the discretion of the reviewing body, based on topography, land cover, land uses and other factors that influence the flight patterns of resident birds.”²⁷⁹

Defining Setbacks. There are numerous ways to define a setback. The most common is to express the setback requirement as a multiple of total tower height, which includes the blades. Relating the setback requirement to tower height assures that a fallen tower of any size will not interfere with neighboring property uses. Others require setbacks of a certain number of feet. For maximum impact control, these two strategies can be combined. For example, the South Dakota model ordinance imposes a setback for turbines from the participating landowner’s residence equal to the greater of 500 feet or 100% of tower height.²⁸⁰ It is also possible to define setback requirements through performance standards. For instance, the

Minnesota PUC’s regulations for projects under 25 MW require setbacks from homes that are at least 500 feet and sufficient to meet the state’s noise requirements.²⁸¹ Maine law requires the primary siting authority to make findings regarding whether setbacks are “adequate to protect public safety” considering “the recommendation of a professional, licensed civil engineer as well as any applicable setback recommended by a manufacturer of the generating facilities.”²⁸²

Waiver. Ohio regulations provide that “Minimum setbacks may be waived in the event that all owners of property adjacent to the turbine agree to such waiver,” and upon a showing of good cause.²⁸³ About half of the statewide model ordinances have provisions for waiver of setback requirements. The Utah model ordinance directs the permitting authority to consider an exception if there is “(a) a signed agreement of consent from abutting property owner(s), and (b) the public right-of-ways and power lines are not impacted by the location.”²⁸⁴ The North Carolina model ordinance also allows adjacent property owners to waive the setback requirement, but demands that the waiver meet certain conditions; “The written waiver shall notify applicable property owner(s) of the setback required by this Ordinance, describe how the Wind Energy Facility is not in compliance, and state that consent is granted for the Wind Energy Facility to waive the setback as required by this Ordinance.”²⁸⁵ The Pennsylvania model ordinance allows waivers where “literal enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question and provided that such waiver will not be contrary to the public interest”; in applying this standard, the

²⁷⁵ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 7.A.2 (Pa. Dep’t of Env’t. Prot. 2006).

²⁷⁶ WYO. STAT. § 18-5-504(a)(iv)-(v).

²⁷⁷ WYO. STAT. § 18-5-504(a)(vi).

²⁷⁸ MODEL WIND ORDINANCE 7 (Clean Energy Resource Teams, et al. 2005).

²⁷⁹ WIND ENERGY MODEL ORDINANCE OPTIONS 11-12 (N.Y. State Energy & Research Dev. Auth.).

²⁸⁰ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.2.a (S.D. Pub. Util. Comm’n 2008).

²⁸¹ Minnesota Public Utilities Commission, *In the Matter of Establishment of General Permit Standards for the Siting of Wind Generation Projects Less than 25 Megawatts*, ORDER ESTABLISHING GENERAL WIND PERMIT STANDARDS 8, Docket No.E,G-999/M-07-1102 (January 11, 2008).

²⁸² ME. REV. STAT. ANN. tit. 35-A, § 3455.

²⁸³ OHIO ADMIN. CODE § 4906-17-08(C)(1)(c)(iii).

²⁸⁴ UTAH MODEL WIND ORDINANCE § 4.1.3 (Utah State Energy Program 2010).

²⁸⁵ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 7.1.A (N.C. Wind Working Group 2008).

governing body may consider the opinions of adjacent property owners.²⁸⁶ Legislatures may choose specifically to make some of the setbacks, but not others, waivable.²⁸⁷

Wildlife and Habitat Protection

Numerous state agencies and the U.S. Fish & Wildlife Service (USFWS) have developed voluntary guidelines for reducing wildlife impacts from commercial wind energy generation.²⁸⁸ These guidance documents provide options for protective measures that may be encouraged through voluntary schemes or enforced through mandatory regulations.

The most recent advice on the issue comes from the USFWS's Draft Land-Based Wind Energy Guidelines, released for public review and comment in February 2011. These guidelines modified the results of the consensus proposal developed by the Interior Department's

Wind Turbine Guidelines Advisory Committee, mostly by adding prescriptive requirements. In its March 2010 report the Committee, established under the Federal Advisory Committee Act in October 2007, advised use of a "tiered" or sequential approach to wind facility siting in the context of habitat protection.²⁸⁹ In its draft, the USFWS revised the Committee's sequence, and proposed to require USFWS concurrence in the conclusion of each step:

- Tier 1 – Preliminary evaluation or screening of potential sites (landscape-level screening of possible project sites)
- Tier 2 – Site characterization (broad characterization of one or more potential project sites)
- Tier 3 – Pre-construction monitoring and assessments (site-specific assessments at the proposed project site)
- Tier 4 – Post-construction monitoring of effects (to evaluate fatalities and other effects)
- Tier 5 – Research (to further evaluate direct and indirect effects, and assess how they may be addressed).²⁹⁰

While the sequence itself makes sense, some aspects of the draft are controversial, because although "voluntary" like the 2003 USFWS "interim guidance," it will heavily influence the regulatory posture of the USFWS on wind proposals, and may lengthen the project review timeline.

Site Selection. The U.S. Fish and Wildlife Service's previous Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines specifically recommended avoiding the following types of habitat for wind development: 1) "documented locations of any species of wildlife, fish, or plant protected under

²⁸⁶ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 8 (Pa. Dep't of Envtl. Prot. 2006).

²⁸⁷ Under the Illinois model ordinance, the permit authority may waive setbacks from roads and property lines, but in no case may the setback from occupied structures be less than 110% of tower height. P 5.

²⁸⁸ See e.g., DRAFT LAND-BASED WIND ENERGY GUIDELINES (U.S. Fish & Wildlife 2011), 76 Fed. Reg. 9590 (Feb. 18, 2011), available at http://www.fws.gov/windenergy/docs/Wind_Energy_Guide_lines_2_15_2011FINAL.pdf; INTERIM GUIDELINES TO AVOID AND MINIMIZE WILDLIFE IMPACTS FROM WIND TURBINES (U.S. Fish & Wildlife 2003), available at <http://www.fws.gov/habitatconservation/wind.pdf>; GUIDELINES FOR REDUCING IMPACTS TO WILDLIFE FROM WIND ENERGY DEV. IN AZ. (Ariz. Game & Fish Dep't 2009), available at www.azgfd.gov/hgis/pdfs/WindEnergyGuidelines.pdf; CA. GUIDELINES FOR REDUCING IMPACTS TO BIRDS AND BATS FROM WIND ENERGY DEV. (Ca. Energy Comm. 2007), available at http://www.energy.ca.gov/2007publications/CEC-700-2007-008/CEC-700-2007-008-CMF_MINUS_AP-E.PDF; WIND ENERGY AND WILDLIFE RESOURCE MANAGEMENT IN IOWA: AVOIDING POTENTIAL CONFLICTS (Iowa Dep't of Nat. Res. 2007), available at www.iowadnr.gov/wildlife/diversity/files/wind_wildliferec_s.pdf; SITING GUIDELINES FOR WIND POWER PROJECTS IN S.D. (S.D. Dep't of Game, Fish & Parks), available at <http://gfp.sd.gov/wildlife/docs/wind-power-siting-guidelines.pdf>; WIND POWER GUIDELINES (Wash. Dep't of Fish and Wildlife 2009), available at <http://wdfw.wa.gov/publications/pub.php?id=00294>.

²⁸⁹ Wind Turbine Guidelines Advisory Committee, Recommendations To Secretary of the Interior (March 4, 2010), available at http://www.fws.gov/habitatconservation/windpower/Wind_Turbine_Guidelines_Advisory_Committee_Recommendations_Secretary.pdf

²⁹⁰ DRAFT LAND-BASED WIND ENERGY GUIDELINES (U.S. Fish & Wildlife 2011), 76 Fed. Reg. 9590 (Feb. 18, 2011), available at http://www.fws.gov/windenergy/docs/Wind_Energy_Guide_lines_2_15_2011FINAL.pdf.

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the Federal Endangered Species Act” 2) “known local bird migration pathways or in areas where birds are highly concentrated, unless mortality risk is low” and “known daily movement flyways (e.g., between roosting and feeding areas) and areas with a high incidence of fog, mist, low cloud ceilings, and low visibility” 3) “near known bat hibernation, breeding, and maternity/nursery colonies, in migration corridors, or in flight paths between colonies and feeding areas” and 4) “in habitat known to be occupied by prairie grouse or other species that exhibit extreme avoidance of vertical features and/or structural habitat fragmentation.” Developers should also avoid fragmenting large, contiguous tracts of habitat.²⁹¹ The 2011 draft guidelines replace this approach with a series of Questions for Tiers 1 & 2, that should be answered “no” in order to proceed to the next phase; the USFWS advises that a “yes” answer should lead to considering either discontinuing the project at the site or identifying means by which the project can be modified to “avoid, minimize, and/or compensate for adverse effects.”²⁹²

Once a project site is selected, the 2003 interim guidance has several recommendations on how to design and operate the facilities. For example, developers should avoid the landscape features known to attract raptors, such as cliffs and prairie dog colonies. Proper configuration of the turbines can also reduce mortality.²⁹³ Where feasible, tower height should be adjusted to reduce strikes on wildlife and power lines should be designed to avoid electrocution. Also, where feasible, operators should shut down turbines when birds are highly concentrated on site.²⁹⁴

The needs of particular species at a project site may require tailored regulation. For instance, the 2010 Virginia permit-by-rule

requires wind facility developers to avoid construction in sea turtle nesting habitat during nesting and hatching season, and places several restrictions on any construction that does take place during those times.²⁹⁵

Survey and Mitigation. State regulations and model ordinances impose informational requirements aimed at minimizing and mitigating wildlife impacts. The Wind Turbine Guidelines Advisory Committee’s 2010 recommendations to the Department of Interior rely heavily on this approach; and the USFWS took this further in its 2011 Draft Guidelines by adding requirements for a certain number of years of pre-construction and post-construction monitoring.

Under the Virginia permit-by-rule, all applicants must perform desktop studies using maps from the Virginia Fish and Wildlife Information Service, raptor migration surveys, and acoustic bat surveys, the results of which may trigger additional study requirements. A project in a Coastal Avian Protection Zone must include a special analysis of impacts on the species of concern in that particular zone.²⁹⁶ A simple model is employed by the Michigan sample ordinance, which requires permit applicants to submit:

A copy of an Avian and Wildlife Impact Analysis by a third party qualified professional to identify and assess any potential impacts on wildlife and endangered species. The applicant shall take appropriate measures to minimize, eliminate or mitigate adverse impacts identified in the analysis, and shall show those measures on the site plan. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.²⁹⁷

In some cases, survey activities must be done in consultation with state or federal wildlife agencies. As discussed above, developers of commercial-scale wind facilities

²⁹¹ INTERIM GUIDELINES TO AVOID AND MINIMIZE WILDLIFE IMPACTS FROM WIND TURBINES 3-4 (U.S. Fish & Wildlife 2003), available at

<http://www.fws.gov/habitatconservation/wind.pdf>.

²⁹² DRAFT LAND-BASED WIND ENERGY GUIDELINES (U.S. Fish & Wildlife 2011), 25-30.

²⁹³ INTERIM GUIDELINES at 3.

²⁹⁴ *Id.* at 4.

²⁹⁵ 9 VA. ADMIN. CODE 15-40-60(B)(2).

²⁹⁶ 9 VA. ADMIN. CODE 15-40-40(A).

²⁹⁷ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 9407.J.4 (Mich. Dep’t of Labor & Econ. Growth 2008).

in Colorado must provide site-specific surveys to the state Division of Wildlife and consult with the DOW and USFWS as appropriate.²⁹⁸ Similarly, the Minnesota PUC order affecting projects under 25 MW includes the following requirement:

The permittee, in consultation with DNR and other interested parties, shall request a DNR Natural Heritage Information Service Database search for the project site, conduct a pre-construction inventory of existing wildlife management areas, scientific and natural areas, recreation areas, native prairies and forests, wetlands, and any other biologically sensitive areas within the site and assess the presence of state- or federally-listed or threatened species. The results of the survey shall be submitted to the permitting authority (PUC or county) and DNR prior to the commencement of construction.²⁹⁹

Monitoring. According to the USFWS, “Post-development mortality studies should be a part of any site development plan in order to determine if or to what extent mortality occurs.” These studies should be designed in coordination with agency biologists, and their extensiveness may depend on the risks involved at a particular site.³⁰⁰ Under the 2011 Draft Guidelines, the USFWS would make post-construction studies of mortality and other habitat effects, a key part of Tier 4 review (specifying 2-5 years).³⁰¹ As discussed above, the Virginia permit by rule requires both monitoring and the revision of mitigation plans, based on the proven efficacy of mitigation measures.³⁰² The California Energy Commission

and the Arizona Game and Fish Department have developed detailed monitoring protocols.³⁰³

Prohibition on Artificial Habitat. Model ordinances for Maine, New York, and Oregon prohibit the creation of artificial bird habitat.³⁰⁴ The New York model provides: “Avoid, to the extent practicable, the creation of artificial habitat for raptors or raptor prey, such as a) electrical equipment boxes on or near the ground that can provide shelter and warmth, b) horizontal perching opportunities on the towers or related structures or c) soil where weeds can accumulate.”³⁰⁵

Noise

All model ordinances place some limit on noise from commercial-scale wind facilities. Some simply incorporate generally applicable noise standards. For instance, the Oregon model ordinance provides that “The proposed energy project complies with the noise regulations in OAR Chapter 340, Division 35 [Noise Control Regulations]. The applicant must submit a qualified expert’s analysis and written report.”³⁰⁶ Where statewide noise regulations apply, any state permitting process will offer a forum for enforcing these standards.³⁰⁷

²⁹⁸ 4 COLO. CODE REGS. 723-3656(b)-(c).

²⁹⁹ Minnesota Public Utilities Commission, *In the Matter of Establishment of General Permit Standards for the Siting of Wind Generation Projects Less than 25 Megawatts*, ORDER ESTABLISHING GENERAL WIND PERMIT STANDARDS 13, Docket No.E,G-999/M-07-1102 (January 11, 2008).

³⁰⁰ INTERIM GUIDELINES TO AVOID AND MINIMIZE WILDLIFE IMPACTS FROM WIND TURBINES 3 (U.S. Fish & Wildlife 2003), available at

<http://www.fws.gov/habitatconservation/wind.pdf>.

³⁰¹ DRAFT LAND-BASED WIND ENERGY GUIDELINES 46 (U.S. Fish & Wildlife 2011).

³⁰² 9 VA. ADMIN. CODE 15-40-60(A).

³⁰³ GUIDELINES FOR REDUCING IMPACTS TO WILDLIFE FROM WIND ENERGY DEV. IN AZ. (Ariz. Game & Fish Dep’t 2009), available at

www.azgfd.gov/hgis/pdfs/WindEnergyGuidelines.pdf; CA.

GUIDELINES FOR REDUCING IMPACTS TO BIRDS AND BATS FROM WIND ENERGY DEV. (Ca. Energy Comm. 2007), available at

http://www.energy.ca.gov/2007publications/CEC-700-2007-008/CEC-700-2007-008-CMF_MINUS_AP-E.PDF.

³⁰⁴ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.4 (2009); WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.); A MODEL ORDINANCE FOR ENERGY PROJECTS 26 (Or. Dep’t of Energy 2005).

³⁰⁵ WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.).

³⁰⁶ A MODEL ORDINANCE FOR ENERGY PROJECTS 17 (Or. Dep’t of Energy 2005).

³⁰⁷ For example, the Maine Department of Environmental Quality will not issue a permit to wind facilities that will exceed state noise limits. 2 C.M.R. 06 096 375-7 § 10(C)(1)(a)(v) (2001).

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Other model wind ordinances include specific standards, generally comprised of a decibel limit (which may vary according to the time of day) and the place of measurement. Michigan's sample ordinance requires that:

The sound pressure level shall not exceed 55 dB(A) measured at the property lines or the lease unit boundary, whichever is farther from the source of the noise. This sound pressure level shall not be exceeded for more than three minutes in any hour of the day. If the ambient sound pressure level exceeds 55 dB(A), the standard shall be ambient dB(A) plus 5 dB(A).³⁰⁸

The Wisconsin PSC allows even stricter noise standards; local ordinances may set a daytime standard of 50 dBA and a nighttime standard of 45 dBA, as measured from the outside of non-participating occupied buildings.³⁰⁹ Accounting for preexisting noise conditions, the Massachusetts model ordinances prohibit wind facilities from increasing the noise level 10 dBA above the ambient level.³¹⁰ The Massachusetts models also restrict the production of "pure tones" to less than three dBA.³¹¹ Ordinances may specify the methodology for measuring sound, as in the Pennsylvania model ordinance's requirement that measurements conform to certain AWEA standards.³¹²

³⁰⁸ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.B (Mich. Dep't of Labor & Econ. Growth 2008).

³⁰⁹ WIS. ADMIN. CODE PSC § 128.14(3).

³¹⁰ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.9.4; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 6.3. The Massachusetts models allow local governments to choose whether "violations shall be measured at the property line or at the nearest inhabited residence."

³¹¹ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.9.4; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 6.3.

³¹² MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 11.A (Pa. Dep't of Env'tl. Prot. 2006). "Methods for measuring and reporting acoustic emissions from Wind Turbines and the Wind Energy Facility shall be equal to or exceed the minimum standards for precision described in AWEA Standard 2.1 - 1989 titled *Procedures for the Measurement and Reporting of Acoustic Emissions from Wind Turbine Generation Systems Volume I: First Tier.*"

Some model ordinances provide for the waiver of noise requirements. Under the North Carolina model ordinance, for instance:

- i. Property owners may waive the noise provisions of this Ordinance by signing a waiver of their rights.
- ii. The written waiver shall notify applicable property owner(s) of the noise limits required by this Ordinance, describe how the Wind Energy Facility is not in compliance, and state that consent is granted for the Wind Energy Facility to waive noise limits as required by this Ordinance.
- iii. Any such waiver shall be signed by the applicant and the Non- Participating Landowner(s), and recorded in the Deeds Office where the property is located.³¹³

Shadow Flicker

Although large commercial wind turbines tend to have less severe shadow flicker impacts than smaller turbines (whose blades rotate at a higher frequency), state regulations and model ordinances often strive to minimize shadow flicker.³¹⁴ Protective measures are generally focused on occupied buildings on non-participating land.

Analysis and Impact Minimization. In Ohio's state siting system and some of the model ordinances, shadow flicker is addressed through site-specific analysis and a requirement to minimize any adverse impacts. The Michigan model ordinance applicants to submit:

a shadow flicker analysis at occupied structures to identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The

³¹³ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 8.C (N.C. Wind Working Group 2008).

³¹⁴ As explained in the commentary to the Massachusetts model ordinances, shadow flicker generally occurs only when turbine blades sweep past at a frequency of 2.5-3 times per second. Commercial wind turbines generally do not cause changes in light intensity more frequently than 1.75 times per second.

site plan shall identify problem areas where shadow flicker may affect the occupants of the structures and show measures that shall be taken to eliminate or mitigate the problems.³¹⁵

Legislators or ordinance drafters may place specific requirements on the methodology to be used in the analysis, such as the requirement in Maine’s model ordinance that “analysis [be] based on WindPro or other modeling software approved by the Department of Environmental Protection.”³¹⁶

Performance Standards. These analysis requirements may be paired with broad performance standards. For instance, Maine’s model ordinance requires that commercial wind facilities “be designed to avoid unreasonable adverse shadow flicker effect at any Occupied building located on a Non-Participating Landowner’s property.”³¹⁷ Or performance standards may be specifically expressed, such as an “hour-per-year standard.” Under North Carolina’s model ordinance, “Shadow flicker at any Occupied Building on a Non-Participating Landowner’s property caused by a Large Wind Energy Facility located within 2,500 ft of the Occupied Building shall not exceed thirty (30) hours per year.”³¹⁸ In Wisconsin, the PSC allows local governments to impose the 30-hour per year limit, but also allows the requirement of mitigation measures when there is an expectation of more than 20 hours of shadow flicker per year.³¹⁹

Waiver. The model ordinances for North Carolina and Pennsylvania apply the same waiver requirements for noise and shadow flicker standards.

Electromagnetic Interference

The majority of model ordinances regulate wind facilities’ impacts on the many communications technologies that rely on electromagnetic waves – radio, telephone, television, and microwave transmissions. The Oregon model ordinance includes typical language:

Operation of the energy project would not create conditions that unduly reduce or interfere with public or private television, radio, telemetry or other electromagnetic communication signals. If undue reduction or interference occurs, the applicant must restore reception to the level present before operation of the energy project.³²⁰

Because emergency responders often use microwave communications, those systems often receive special treatment. For instance, Michigan’s sample ordinance requires that:

No Utility Grid wind energy system shall be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception unless the applicant provides a replacement signal to the affected party that will restore reception to at least the level present before operation of the wind energy system. No Utility Grid wind energy system shall be installed in any location within the line of sight of an existing microwave communications link where operation of the wind energy system is likely to produce electromagnetic interference in the link’s operation unless the interference is insignificant.³²¹

The model ordinance for Illinois requires pre-construction coordination with local emergency service providers to assure that

³¹⁵ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 9407.J.5 (Mich. Dep’t of Labor & Econ. Growth 2008).

³¹⁶ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 10.2.8 (2009).

³¹⁷ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.6 (2009).

³¹⁸ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 8.B (N.C. Wind Working Group 2008).

³¹⁹ WIS. ADMIN. CODE PSC § 128.15.

³²⁰ A MODEL ORDINANCE FOR ENERGY PROJECTS 16-17 (Or. Dep’t of Energy 2005).

³²¹ SAMPLE ZONING FOR WIND ENERGY SYSTEMS § 1609.H.6 (Mich. Dep’t of Labor & Econ. Growth 2008).

projects will not unduly interfere with microwave transmissions.³²²

Decommissioning

Almost every model ordinance and many state regulations impose decommissioning obligations on wind facilities. Decommissioning is a complex subject, particularly in the context of local land use regulation which has not traditionally focused on the end-of-life disposition of structures.

Requirement to Decommission. Some model ordinances explicitly designate the facility's owner as the party responsible for decommissioning. The South Dakota model ordinance provides that "The owner or operator...is responsible for decommissioning that facility and for all costs associated with decommissioning that facility and associated facilities. The decommissioning plan shall clearly identify the responsible party."³²³

Regulations should establish a trigger for decommissioning (a point at which the facilities are deemed closed or abandoned) and a timeline for decommissioning of such facilities. For instance, the North Carolina model ordinance provides that "The Wind Energy Facility Owner shall have 6 months to complete decommissioning of the Facility if no electricity is generated for a continuous period of 12 months."³²⁴

In the North Carolina, Minnesota, Massachusetts, Maine, South Dakota and Pennsylvania model ordinances, 12 months of non-use trigger the decommissioning requirement.³²⁵ The Utah model ordinance, by

contrast, considers a project "abandoned when it fails to operate for 24 consecutive months."³²⁶ Some model ordinances provide exceptions for owners who can demonstrate that the non-use was due to a natural disaster or that there is a plan for returning the facility to operation.³²⁷

There is significant variation in the time allotted for decommissioning, once the decommissioning requirement is triggered. The Pennsylvania model grants 12 months for the owner to complete the process.³²⁸ The model ordinances for Massachusetts allow 150 days for decommissioning after a facility is deemed abandoned.³²⁹ The Minnesota model allows just 80 days.³³⁰ The South Dakota model sets deadlines for both beginning and completing decommissioning; the process must begin within

WIND ORDINANCE 10 (Clean Energy Resource Teams, et al. 2005); MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.11.2; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 8.2; ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE Appendix C (2009); MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 14.A (Pa. Dep't of Env'tl. Prot. 2006); DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.14.b. (S.D. Pub. Util. Comm'n 2008).³²⁶ UTAH MODEL WIND ORDINANCE § 4.2.3 (Utah State Energy Program 2010).

³²⁷ The Minnesota model ordinance does not deem a facility in "discontinued use" if "a plan is developed and submitted to the ____ County Zoning Administrator outlining the steps and schedule for returning the [facility] to service." The Utah model ordinance provides a window of 60 days in which the owner may "provide sufficient evidence that the system has not been abandoned." The Maine model ordinance creates an assumption that a facility is abandoned after 12 months of non-use, but "The Applicant may rebut the presumption by providing evidence, such as a force majeure event that interrupts the generation of electricity."

³²⁸ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 14.A (Pa. Dep't of Env'tl. Prot. 2006).

³²⁹ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.11.1; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 8.1.

³³⁰ MODEL WIND ORDINANCE 10 (Clean Energy Resource Teams, et al. 2005).

³²² MODEL ORDINANCE REGULATING THE SITING OF WIND ENERGY CONVERSION SYS. IN ILL. § VII.B.1 (Chicago Legal Clinic 2003).

³²³ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.14.a (S.D. Pub. Util. Comm'n 2008).

³²⁴ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 10.A (N.C. Wind Working Group 2008).

³²⁵ MODEL WIND ORDINANCE FOR WIND ENERGY FACILITIES IN N.C. § 10.A (N.C. Wind Working Group 2008); MODEL

8 months of the end of the facility's useful life and end within 18 months of that time.³³¹

Standards. A decommissioning requirement should also establish standards for restoration of the site. The Pennsylvania model ordinance requires the "removal of Wind Turbines, buildings, cabling, electrical components, roads, and any other associated facilities down to 36 inches below grade. . . Disturbed earth shall be graded and re-seeded, unless the landowner requests in writing that the access roads or other land surface areas not be restored."³³² The Maine and South Dakota model ordinance requirements are similar, except that turbines and associated facilities must be removed to 24 inches below grade in Maine and to 42 inches below grade in South Dakota.³³³ The Massachusetts ordinances require the removal of solid and hazardous wastes in addition to the removal of the facility structures.³³⁴ They also provide for "Stabilization or re-vegetation of the site as necessary to minimize erosion. The permit granting authority may allow the owner to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation."³³⁵

Decommissioning Plan. Model ordinances and state regulators generally require applicants to submit a plan for how the facility's decommissioning will be accomplished and funded. The plan typically includes a cost

estimate, which may be the responsibility of a third-party professional.³³⁶

Financial Assurance. The final important element of decommissioning regulations is the financial assurance that the party responsible for decommissioning will be able to complete it. Nebraska requires that wind developers must provide financial assurance in favor of the landowner to ensure decommissioning where the wind farm is on land owned by another landowner.³³⁷ Oklahoma state law requires the filing, after the fifteenth year of operation, of proof of financial assurance sufficient to cover the anticipated costs of decommissioning.³³⁸ South Dakota law authorizes, but does not require, the PUC to require a "bond, guarantee, insurance, or other requirement" for decommissioning and removal of a wind energy facility. The law provides that the PUC must consider the size, location and financial condition of the applicant when determining what, if any, financial assurance to require.³³⁹

The Maine model ordinance requires:

Demonstration in the form of a performance bond, surety bond, letter of credit, parental guarantee or other form of financial assurance as may be acceptable to the [Municipal Reviewing Authority] that upon the end of the useful life of the Wind Energy Facility the Applicant will have the necessary financial assurance in place for 100% of the total cost of decommissioning, less salvage value. The Applicant may propose securing the necessary financial assurance in phases, as long as the total required financial assurance is in place a minimum of 5 years prior to the expected end of the useful life of the Wind Energy Facility.³⁴⁰

In an alternative scheme set out by the Pennsylvania model ordinance:

³³¹ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.14.c (S.D. Pub. Util. Comm'n 2008).

³³² MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 14.B-C (Pa. Dep't of Env'tl. Prot. 2006).

³³³ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE Appendix C (2009); DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.14.d (S.D. Pub. Util. Comm'n 2008).

³³⁴ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.11.1(b); MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 8.1(b).

³³⁵ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.11.1(c); MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 8.1(c).

³³⁶ See e.g. MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 14.D (Pa. Dep't of Env'tl. Prot. 2006).

³³⁷ NEB. REV. STAT. § 76-3001.

³³⁸ 2010 OKLA. SESS. LAWS 319 (to be codified at OKLA. STAT. tit. 17, § 160.17).

³³⁹ S.D. ADMIN. R. 20:10;22:33.01.

³⁴⁰ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE Appendix C (2009).

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The Facility Owner or Operator shall post and maintain Decommissioning Funds in an amount equal to Net Decommissioning Costs; provided that at no point shall Decommissioning Funds be less than twenty five percent (25%) of Decommissioning Costs. The Decommissioning Funds shall be posted and maintained with a bonding company or Federal or Commonwealth chartered lending institution chosen by the Facility Owner or Operator and participating landowner posting the financial security, provided that the bonding company or lending institution is authorized to conduct such business within the Commonwealth and is approved by the [municipality]. . . Decommissioning Funds may be in the form of a performance bond, surety bond, letter of credit, corporate guarantee or other form of financial assurance as may be acceptable to the [municipality].³⁴¹

Prior to issuance of a building permit, the applicant shall provide the town proof of a level of insurance to be determined by the Town Board in consultation with the Town's insurer, to cover damage or injury that might result from the failure of a tower or towers or any other part or parts of the generation and transmission facility.³⁴³

An alternate strategy is to impose a specific coverage requirement. The Pennsylvania model ordinance requires that "There shall be maintained a current general liability policy covering bodily injury and property damage with limits of at least \$1 million per occurrence and \$1 million in the aggregate. Certificates shall be made available to the [municipality] upon request."³⁴⁴

Other Requirements

In addition to the main categories of wind facility siting regulation identified above, several other areas have been the frequent target of regulation. The following non-exhaustive set of issues merit consideration.

Incorporation of Other Standards. Most model ordinances explicitly require applicants to comply with other prevailing laws. General language, such as that found in the Utah model ordinance, demonstrates that there is no intention to displace other applicable laws: "Construction and operation of all such proposed large wind energy systems shall be consistent with all applicable local, state, and federal requirements, including all applicable safety, construction, environmental, electrical, communications, and FAA requirements."³⁴²

Liability insurance. Some model ordinances require liability insurance coverage. Most often, there is a flexible standard for mandatory coverage. The New York model, for example, requires that:

Good Neighbor Payments. Wisconsin's suspended PSC rules would have allowed local governments to require wind developers to make payments to nonparticipating neighboring residential owners. "For one turbine located within 0.5 mile of a nonparticipating residence, the initial annual monetary compensation may not exceed \$600" (rising to \$800 for two and to \$1,000 for three or more turbines within the same distance). The provision also had an escalator for the initial amount for agreements starting in future years.³⁴⁵ The rules also would have allowed local governments to require developers to offer financial compensation to nonparticipating farmers within 0.5 miles of a turbine for reductions in productivity based on limitations on their ability to conduct aerial spraying.³⁴⁶

Impacts on Public Roads. Many model ordinances demand that applicants take measures to avoid impacts on public roads and

³⁴¹ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 14.E (Pa. Dep't of Env'tl. Prot. 2006).

³⁴² UTAH MODEL WIND ORDINANCE § 4.4 (Utah State Energy Program 2010).

³⁴³ WIND ENERGY MODEL ORDINANCE OPTIONS 11 (N.Y. State Energy & Research Dev. Auth.).

See also ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.9 (2009); MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 3.3.

³⁴⁴ MODEL ORDINANCE FOR WIND ENERGY FACILITIES IN PA. § 13 (Pa. Dep't of Env'tl. Prot. 2006).

³⁴⁵ WIS. ADMIN. CODE PSC § 128.33(3) (suspended).

³⁴⁶ WIS. ADMIN. CODE PSC § 128.33(3m) (suspended).

repair any damage caused by constructing the wind energy facility. Very heavy large wind turbines and towers transported on rural and secondary roads can produce damage or excessive wear to those roads. For instance, the Maine model ordinance includes the following detailed requirements:

1. The Applicant shall identify all state and local public roads to be used within [name of municipality] to transport equipment and parts for construction, operation or maintenance of a [Type 2 or Type 3] Wind Energy Facility.
2. The Town Engineer, Road Commissioner or a qualified third-party engineer reasonably acceptable to both the [Municipal Reviewing Authority] and the Applicant and paid for by the Applicant... shall document road conditions prior to construction. The Town Engineer, Road Commissioner or third-party engineer shall document road conditions again thirty (30) days after construction is complete or as weather permits.
3. The Applicant shall demonstrate, to the satisfaction of the [Municipal Reviewing Authority], that it has financial resources sufficient to comply with subsection 4, below, and the [Municipal Reviewing Authority] may require the Applicant to post a bond or other security in order to ensure such compliance.
4. Any road damage caused by the Applicant or its contractors shall be promptly repaired at the Applicant's expense.³⁴⁷

The appropriate provisions for a particular jurisdiction will depend on the state and locally applicable regulations regarding the use of public roads.

Minimize New Road Construction. Some model ordinances require applicants to avoid building new roads, when possible, in order to minimize habitat fragmentation, water quality impacts, and other environmental problems. For instance, the Oregon model requires "Using existing roads to provide access to the site, or if new roads are needed, minimizing the amount of

land used for new roads and locating roads to reduce visual impact and other adverse environmental impacts such as erosion."³⁴⁸

Soil Erosion/Water Quality. Some model ordinances include provisions to protect soil and water quality. Such requirements are likely to apply under state erosion and sediment control laws and under state and federal construction stormwater permits. However, some ordinances specifically address wind facilities' requirements. For instance, the Massachusetts models require that "Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the wind facility and is otherwise prescribed by applicable laws, regulations, and ordinances."³⁴⁹ The South Dakota model requires a detailed plan for erosion control:

The permittees shall develop a Soil Erosion and Sediment Control Plan prior to construction and submit the plan to the County Zoning Office. The Soil Erosion and Sediment Control Plan shall address the erosion control measures for each project phase, and shall at a minimum identify plans for grading, construction and drainage of roads and turbine pads; necessary

³⁴⁸ A MODEL ORDINANCE FOR ENERGY PROJECTS 25 (Or. Dep't of Energy 2005). Similarly, the New York model requires applicants to "Use existing roads to provide access to the facility site, or if new roads are needed, minimize the amount of land used for new roads and locate them so as to minimize adverse environmental impacts." WIND ENERGY MODEL ORDINANCE OPTIONS 9 (N.Y. State Energy & Research Dev. Auth.). The draft South Dakota model ordinance requires that "Construction of turbine access roads shall be minimized. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class 5 gravel or similar material. Access roads shall avoid crossing streams and drainage ways wherever possible. If access roads must be constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed." DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.1.f.2 (S.D. Pub. Util. Comm'n 2008).

³⁴⁹ MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 3.9.5; MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING WIND FACILITIES BY SPECIAL PERMIT § 6.4.

³⁴⁷ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.2 (2009).

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soil information; detailed design features to maintain downstream water quality; a comprehensive re-vegetation plan that uses native plant species to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary project activities; and measures to minimize the area of surface disturbance. Other practices shall include containing excavated material, protecting exposed soil, stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The plan shall identify methods for disposal or storage of excavated material.³⁵⁰

Maintenance. Some model ordinances include requirements regarding maintenance and repair, primarily to ensure safety and reduce the likelihood of abandonment and disuse. For instance, the Utah model ordinance requires that “The applicant shall maintain the large wind energy system and project in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security measures.”³⁵¹ The New York model requires that “Any wind energy system found to be unsafe by the local enforcement officer shall be repaired by the owner to meet federal, state and local safety standards or removed within six months.”³⁵²

Public inquiries and complaints. Wisconsin’s state PSC rules for local governments provided procedures for receiving public complaints and resolution of issues of non-compliance.³⁵³ A few model ordinances create procedures for resolving inquiries and complaints from the public. In addition to creating a means of mediating community disputes, these procedures can ease the enforcement burden for public officials. For example, the Maine model ordinance provides that:

The Applicant or its designee shall maintain a phone number and identify a responsible Person for the public to contact with inquiries and complaints throughout the life of the Wind Energy Facility. . . The Applicant or its designee shall make reasonable efforts to respond to the public’s inquiries and complaints and shall provide written copies of all complaints and the company’s resolution or response to the Codes Enforcement [Officer] upon request.³⁵⁴

³⁵⁰ DRAFT MODEL ORDINANCE FOR SITING OF WIND ENERGY SYSTEMS (WES) § 6.1.g (S.D. Pub. Util. Comm’n 2008).

³⁵¹ UTAH MODEL WIND ORDINANCE § 4.2.2 (Utah State Energy Program 2010).

³⁵² WIND ENERGY MODEL ORDINANCE OPTIONS 8 (N.Y. State Energy & Research Dev. Auth.).

³⁵³ WIS. ADMIN. CODE PSC § 128.40 (suspended).

³⁵⁴ ME. STATE PLANNING OFFICE MODEL WIND ENERGY FACILITY ORDINANCE § 14.1 (2009).

VI. STATE MODEL LEGISLATIVE PROVISIONS

Many state legislatures are considering new or amended laws. This Chapter identifies language that state legislatures can use to address specific concerns related to jurisdiction over wind power siting, as well as specific issues such as setbacks and decommissioning that may deserve attention at the state level. Relevant language is offered for the following topics:

- Preemption of local government siting
- State siting approval accommodating more stringent local requirements
- State siting approval preserving local land use regulation
- Delegation of siting authority to local governments
- Encouragement of local wind siting
- Siting standards development by state body
- Required conformity of local regulation to state standards
- Setbacks
- Decommissioning
- Wildlife protection
- Local public review procedures

The language in this section is based on enacted statutes, but the models have been edited and adapted for ease of use.

Preemption of local government siting

State legislatures may decide to preempt local governments from regulating the siting of any energy facility that is under the jurisdiction of a state siting body, such as wind facilities rated at 5 MW or greater:

As used in this chapter, "economically significant wind farm" means wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of [five] or

more megawatts. No public agency or political subdivision of this state may require any approval, consent, permit, certificate, or other condition for the construction or initial operation of an economically significant wind farm authorized by a certificate issued pursuant to this chapter. Nothing herein shall prevent the application of state laws for the protection of employees engaged in the construction of such facility or wind farm nor of municipal regulations that do not pertain to the location or design of, or pollution control and abatement standards for an economically significant wind farm for which a certificate has been granted under this chapter.

Based on OHIO REV. CODE ANN. § 4906.13.

The state hereby preempts the regulation and certification of the location, construction, and operational conditions of certification of the wind energy facilities [included under code section defining threshold] as now or hereafter amended. If any provision of this chapter is in conflict with any other provision, limitation, or restriction which is now in effect under any other law of this state, or any rule or regulation promulgated thereunder, this chapter shall govern and control and such other law or rule or regulation promulgated thereunder shall be deemed superseded for the purposes of this chapter.

Based on REV. CODE WASH. § 80.50.110(2), (1).

A permit under this chapter is the only site approval required for the location of a large wind energy facility. The site permit supersedes and preempts all zoning, building, or land use rules, regulations, or ordinances adopted by regional, county, local, and special purpose governments.

Based on MINN. STAT. § 216F.07

State siting approval accommodating more stringent local regulation

A county may adopt by ordinance standards for large wind energy facilities that are more stringent than standards in state commission rules. The commission, in considering a permit application for large wind energy facilities in a county that has adopted more stringent standards, shall consider and apply those more

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stringent standards, unless the commission finds good cause not to apply the standards.

Based on MINN. STAT. § 216F.081.

State siting approval preserving local land use regulation

The issuance of a certificate of site compatibility shall, subject to the requirements of this chapter, be the sole site approval required to be obtained by the utility. A certificate of site compatibility for [the defined wind] facility shall not supersede or preempt any local land use, zoning, or building rules, regulations, or ordinances and no site shall be designated which violates local land use, zoning, or building rules, regulations, or ordinances.

Based on N.D. CENT. CODE § 49-22-16.

Delegation of siting authority to local governments

An explicit delegation of siting authority may encourage the adoption of ordinances focused on wind energy facilities, and may define the content of such ordinances.

Any municipality or county may regulate wind energy facilities within its zoning jurisdiction.

Based on 65 ILL. COMP. STAT. 5/11-13-26.

A county or municipality may establish standards for wind farms and electric-generating wind devices. The standards may include, without limitation, the height of the devices and the number of devices that may be located within a geographic area.

Based on 55 ILL. COMP. STAT. 5/5-12020.

A county or municipality may establish standards for wind facilities, which shall include setback requirements and decommissioning requirements, and may include visual appearance, lighting, electrical connections to the power grid, setback distances, maximum audible sound levels, shadow flicker, noise, and other matters.

Based on topics from WIS. STAT. § 196.378(4G)

Encouragement of local wind siting

State legislation may provide language authorizing and encouraging local planning and zoning to promote wind siting, or provide for overlays or priority areas.

All restrictions on platted land that prevent or unduly restrict the siting, construction, and operation of a wind energy system as defined by [section_] are void.

Based on WIS. STAT. § 236.292(2)

Local governments are authorized to provide in all applicable zoning regulations, ordinances, and comprehensive plans for the encouragement of wind energy systems and the protection of access to wind energy. Such actions may include providing for the type and location of wind energy systems or their components, and the use of districts to encourage the use of wind energy systems and protect access to wind energy. Comprehensive development plans may contain an element for protection and development of wind energy access.

Based on NEB. REV. STAT. § 66-913.

“Energy overlay zone” means a formal plan enacted by the county legislative authority that establishes suitable areas for siting renewable resource projects based on currently available resources and existing infrastructure with sensitivity to adverse environmental impact. Land use decisions made by a local jurisdiction concerning renewable resource projects within a county energy overlay zone are presumed to be reasonable if they are in compliance with the requirements and standards established by local ordinance for that zone.

Based on REV. CODE WASH. §§ 36.70C.020, 36.70C.130

Siting standards development by state body

States may grant permissive authority or mandate that expert agencies adopt state standards for any issues related to wind facility siting.

The board shall adopt rules governing the certificating of economically significant wind farms under this section. Initial rules shall be adopted within one hundred twenty days after this section's effective date. (1) The rules shall provide for an application process for certificating economically significant wind farms and shall prescribe a reasonable schedule of application filing fees structured in the manner of the schedule of filing fees required for major utility facilities. (2) Additionally, the rules shall prescribe reasonable regulations regarding any wind turbines and associated facilities of an economically significant wind farm, including, but not limited to, their location, erection, construction, reconstruction, change, alteration, maintenance, removal, use, or enlargement and including erosion control, aesthetics, recreational land use, wildlife protection, interconnection with power lines and with regional transmission organizations, independent transmission system operators, or similar organizations, ice throw, sound and noise levels, blade shear, shadow flicker, decommissioning, and necessary cooperation for site visits and enforcement investigations. The rules also shall prescribe a minimum setback for a wind turbine of an economically significant wind farm. That minimum shall be equal to a horizontal distance, from the turbine's base to the property line of the wind farm property, equal to one and one-tenth times the total height of the turbine structure as measured from its base to the tip of its highest blade and be at least seven hundred fifty feet in horizontal distance from the tip of the turbine's nearest blade at ninety degrees to the exterior of the nearest, habitable, residential structure, if any, located on adjacent property at the time of the certification application. The setback shall apply in all cases except those in which all owners of property adjacent to the wind farm property waive application of the setback to that property pursuant to a procedure the board shall establish by rule and except in which, in a particular case, the board determines that a setback greater than the minimum is necessary.

Based on OHIO REV. CODE ANN. § 4906.20.

Required conformity of local regulation to state standards

State-defined standards may be prescribed by statute or by rule and implemented through local permitting:

County regulation of wind energy projects. It is unlawful to locate, erect, construct, reconstruct or enlarge a wind energy facility without first obtaining a permit from the board of county commissioners in the county in which the facility is located.

Application. To obtain the permit required by [this chapter], the owner or developer of a wind energy facility shall submit an application to the board of county commissioners. The application shall: [comply with state notice requirements, certify that there will be no advertising on turbines, and include an emergency response plan, a waste management plan, and a decommissioning plan.]

Minimum standards. No board of county commissioners shall issue a permit for a wind energy facility if that facility does not comply with standards properly adopted by the board of county commissioners for the construction of wind energy facilities, which standards shall not be less stringent than the standards required by this article.

Based on WYO. STAT. §§ 18-5-502 through 18-5-504.

Authority to restrict systems limited. No political subdivision may place any restriction, either directly or in effect, on the installation or use of a wind energy system that is more restrictive than the rules promulgated by the Public Utilities Commission pursuant to this chapter.

Promulgation of rules. The commission shall, with the advice of the wind siting council, promulgate rules that specify the restrictions a political subdivision may impose on the installation or use of a wind energy system. The subject matter of these rules shall include setback requirements that provide reasonable protection from any health effects, including health effects from noise and shadow flicker, associated with wind energy systems. The subject matter of these rules shall also include decommissioning and

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may include visual appearance, lighting, electrical connections to the power grid, setback distances, maximum audible sound levels, shadow flicker, proper means of measuring noise, interference with radio, telephone, or television signals, or other matters. A political subdivision may not place a restriction on the installation or use of a wind energy system that is more restrictive than these rules. In addition, the commission shall, with the advice of the wind siting council, promulgate rules that do all of the following:

1. Specify the information and documentation to be provided in an application for approval to demonstrate that a proposed wind energy system complies with rules promulgated under this chapter.
2. Specify the information and documentation to be included in a political subdivisions record of decision under this chapter.
3. Specify the procedure a political subdivision shall follow in reviewing an application for approval under this chapter.
4. Specify the requirements and procedures for a political subdivision to enforce the restrictions allowed under this chapter.

Based on WIS. STAT. §§ 66.0401(1m), 196.378.

Setbacks

States may place both upper and lower limits on wind turbine setbacks.

- A. A municipality or county may not require a wind tower to be setback more than 1.1 times the maximum blade tip height from a nonparticipating property line, a participating residence, or a public road right-of-way.
- B. A municipality or county may not require a wind tower to be setback more than 3.1 times the maximum blade tip height from a nonparticipating residence, school, church or similar place of worship, daycare facility, or public library. The siting authority may allow the owner of the nonparticipating building to waive the applicable wind turbine setback distance to a minimum setback distance of 1.1 times the maximum blade tip height. The siting authority may allow the owner of a nonparticipating

property to waive the wind turbine setback distance from a nonparticipating property line.

- C. A municipality or county may not require a wind turbine setback from a participating property line.

Based on WIS. ADMIN. CODE PSC § 128.13(1)(suspended).

A simplified model focuses entirely on setbacks from property lines, leaving setbacks within the property to be worked out by agreement:

Each wind turbine tower of a large wind energy system shall be set back at least five hundred feet or 1.1 times the height of the tower, whichever distance is greater, from any surrounding property line. However, if the owner of the wind turbine tower has a written agreement with an adjacent land owner allowing the placement of the tower closer to the property line, the tower may be placed closer to the property line shared with that adjacent land owner.

Based on S.D. CODIFIED LAWS § 43-13-24

Another model provides acceptable setbacks from various points:

No board of county commissioners shall issue a permit for a wind energy facility if that facility:

- Would locate the base of any tower at a distance of less than 110% of the maximum height of the tower from any property line contiguous or adjacent to the facility, unless waived in writing by the owner of every property which would be located closer than the minimum distance.
- Would locate the base of any tower at a distance of less 110% of the maximum height of the tower from any public road right-of-way;
- Would locate the base of any tower at a distance of less than 3.1 [5.5] times the maximum height of the tower, but in no event less than 750 [1000] feet from a residential dwelling or occupied structure, unless waived in writing by the person holding title to the residential dwelling or occupied structure;

Based on WYO. STAT. § 18-5-504. (Unbracketed numbers in last paragraph are from Wisconsin and Ohio rules, respectively).

Because local governments may prescribe excessive setbacks not warranted by state policy preferences encouraging wind power, a state statute could prescribe a maximum limit as well:

No political subdivision may place any restriction, either directly or in effect, on the installation or use of a wind energy system that is more restrictive than the rules promulgated by the commission.

Based on WIS. STAT. § 66.0401(1m)

Decommissioning

The legislature may delegate responsibility for developing regulations for decommissioning and/or financial assurance to an expert body:

The commission shall promulgate rules requiring the owner of a wind energy system to maintain proof of financial responsibility ensuring the availability of funds for decommissioning the wind energy system upon discontinuance of use of the wind energy system. The rules may require that the proof can be established by a bond, deposit, escrow account, irrevocable letter of credit, or other financial commitment specified by the commission.

Based on WIS. STAT. § 196.378.

The Commission may adopt rules to require bonds, guarantees, insurance, or other requirements to provide funding for the decommissioning and removal of a wind energy facility.

Based on S.D. CODIFIED LAWS § 49-41B-35(3).

Direct decommissioning requirements may be imposed through state statute.

- A. The owner of a wind energy facility shall be responsible, at its expense, for the proper decommissioning of the facility upon abandonment or the end of the useful life of

the commercial wind energy equipment in the wind energy facility.

- B. Proper decommissioning of a wind energy facility shall include:
 1. Removal of wind turbines, towers, buildings, cabling, electrical components, foundations and any other associated facilities, to a depth of thirty (30) inches below grade; and
 2. Disturbed earth being graded and reseeded or otherwise restored to substantially the same physical condition as existed prior to the construction of the wind energy facility by the owner, excluding roads, unless the landowner specifically requests in writing that the roads or other land surface areas be restored.
- C. The decommissioning of the wind energy facility, or individual pieces of commercial wind energy equipment, shall be completed as follows:
 1. By the owner of the wind energy facility within twelve (12) months after abandonment or the end of the useful life of the commercial wind energy equipment in the wind energy facility; and
 2. If the owner of the wind energy facility fails to complete the decommissioning within the period prescribed in paragraph 1 of this subsection, the [designated state body] shall take such measures as are necessary to complete the decommissioning.
- D. A lease or other agreement between a landowner and an owner of a wind energy facility may contain provisions for decommissioning that are more restrictive than provided for in this section.

Based on OKLA. STAT. ANN. § 160.15

State laws may specify the required timing for posting financial assurance and the amount of financial assurance for decommissioning.

- A. After the fifteenth year of operation of a wind energy facility, the owner shall file with the [designated state body] evidence of financial security to cover the anticipated costs of decommissioning the wind energy facility. Evidence of financial security may

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be in the form of a surety bond, collateral bond, parent guaranty, or letter of credit.

- B. The evidence of financial security shall be accompanied by an estimate of the total cost of decommissioning, minus the salvage value of the equipment, prepared by a professional engineer licensed in the State. The amount of the evidence of financial security shall be either:
 - 1. The estimate of the total cost of decommissioning minus the salvage value of the equipment, which shall be filed with the Commission in the fifteenth year of the project and every tenth year thereafter for the life of the wind energy facility; or
 - 2. One hundred twenty-five percent (125%) of the estimate of the total cost of decommissioning which shall be filed with the Commission in the fifteenth year of the project.
- C. If the owner of a wind energy facility fails to file the information with the Commission as is required by this section, the owner shall be subject to an administrative penalty not to exceed [\$1,500.00] per day.
- D. In the event of a transfer of ownership of a wind energy facility, the evidence of financial security posted by the transferor shall remain in place and shall not be released until such time as evidence of financial security meeting the requirements of this section is posted by the new owner of the wind energy facility and deemed acceptable by the Commission.

Based on OKLA. STAT. ANN. § 160.17

Wildlife Protection

Requirements for wildlife surveys and consultation with wildlife agencies can ensure that the state regulators with expertise in and responsibility for wildlife protection are involved early in a siting process. Additional requirements can provide for mitigation and monitoring to avoid adverse impacts. Even states that leave most permitting and siting to local governments may want to require direct involvement of state wildlife agencies to address these important issues of statewide concern.

- A. Applicants shall conduct on-site wildlife surveys.
 - 1. The results of pre-construction wildlife surveys shall be shared with the state department of wildlife prior to construction.
 - 2. Applications shall include written documentation that consultation occurred with appropriate governmental agencies (for example, the state department of wildlife or the U.S. Fish and Wildlife Service) responsible for reviewing potential project development impacts to state and federally listed wildlife species, as well as species, habitats, and ecosystems of concern.
- B. Applicants shall use the results of the surveys and available monitoring in developing the design, construction plans, and management plans of the facilities to avoid, minimize, and/or mitigate any adverse environmental impacts to state and federally listed species, to species of special concern, to sites shown to be local bird migration pathways, to critical habitat, to important ecosystems, and to areas where birds or other wildlife are highly concentrated and are considered at risk. A summary report of these results shall be shared with the [state department of wildlife] at the time the project achieves commercial operation.

Based on 4 COLO. CODE REGS. 723-3656.

The regulatory conditions for wind facilities shall require:

- 1) An analysis of the beneficial and adverse impacts of the proposed project on natural resources. For wildlife, that analysis shall be based on information on the presence, activity, and migratory behavior of wildlife to be collected at the site for a period of time dictated by the site conditions and biology of the wildlife being studied, not exceeding [12] months;
- 2) If the Department determines that the information collected indicates that significant adverse impacts to wildlife or historic resources are likely, the submission of a mitigation plan detailing reasonable actions to be taken by the owner or operator

to avoid, minimize, or otherwise mitigate such impacts, and to measure the efficacy of those actions;

Based on VA Code § 10.1-1197.6(B)(7)-(8)

Local public review procedures

State land use planning enabling laws will typically govern local review procedures; however, some states have chosen to specify procedures where they have specifically granted authority over wind siting to local governments.

Any board of county commissioners receiving an application to permit a wind energy facility shall hold a public hearing to consider public comment on the application no less than forty-five (45) days and not more than sixty (60) days after determining that the application is complete. Written comment on the application shall be accepted by the board of county commissioners for not less than forty-five (45) days after determining that the application is complete.

Within forty-five (45) days from the date of completion of the hearing required by this section, the board shall make complete findings, issue an opinion, render a decision upon the record either granting or denying the application and state whether or not the applicant has met the standards required by this article. The board shall grant a permit if it determines that the proposed wind energy facility complies with all standards properly adopted by the board of county commissioners and the standards required by this article.

Based on WYO. STAT. §§ 18-5-506, 18-5-507.

There shall be at least one public hearing not more than 30 days prior to a siting decision by a municipal or county authority. Notice of the hearing shall be published in a newspaper of general circulation in the municipality or county.

Based on 65 ILL. COMP. STAT. 5/11-13-26.

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