Wind Energy Permit Toolkit

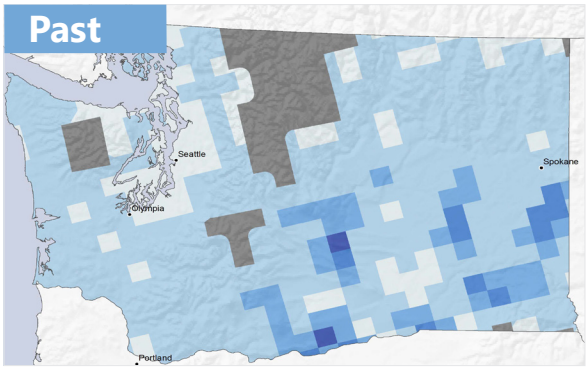
Making Wind Energy Permits Easy

The permitting process for wind energy projects can vary greatly from county to county, and this lack of uniformity often leads to inefficiencies for permitting agencies and their constituents. As interest in wind energy increases, it is beneficial for jurisdictions to be prepared with a fair and transparent permitting process and to gather public input ahead of time on where and in what manner these facilities should be sited. Adopting standard procedures can lead to more consistent, timely, and objective decisions regarding a proposed project.

This toolkit includes information on how jurisdictions can standardize their zoning regulations and permitting processes to ensure safe and cost-effective wind energy development that is appropriate for their community. Strategies are provided for both large-scale wind projects connected to transmission lines and small-scale projects intended for on-site use. Note that some wind energy facilities may be subject to approval by other state or federal agencies, such as the Federal Aviation Administration, U.S. Fish and Wildlife Service, or the local utility. This toolkit focuses on local zoning, planning, and permitting issues at the county or municipality level.

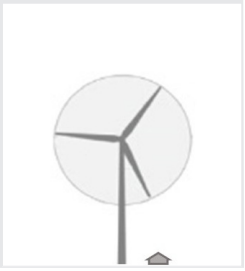
Washington State

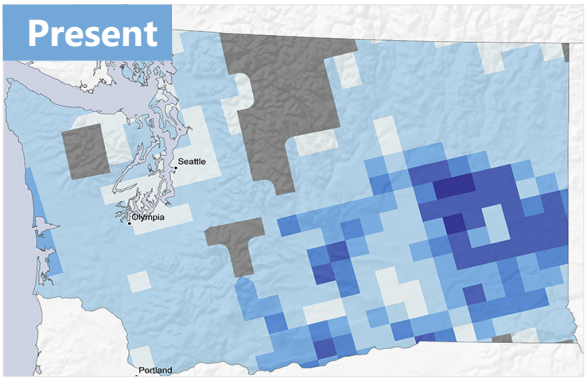
Washington is ranked 7th in installed wind power capacity nationwide at over 3,000 MW.



Past Technology
80-meter (260-foot) tower height

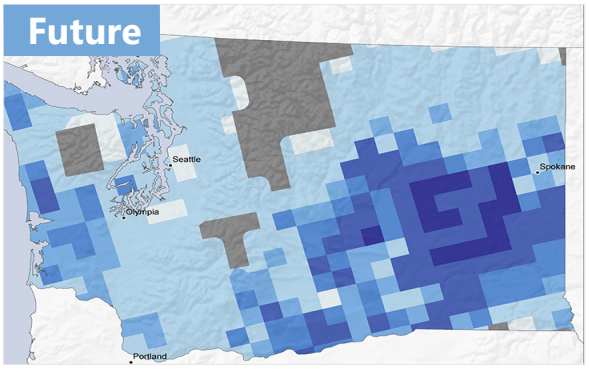
Wind turbines were originally designed for the highest wind speed sites, where a tower height of 80 meters was sufficient to generate utility-scale power.





Present Technology
110-meter (360-foot) tower height

Recently, turbine manufacturers have designed taller towers and longer blades, improving energy output, especially at lower wind speed sites.



Future Technology
140-meter (460-foot) tower height

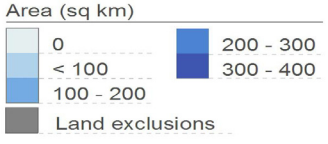
This technology trend is continuing, which will significantly increase potentially viable areas for wind energy development over the next 5-10 years.

In Washington, a wind project developer may choose whether to obtain a siting permit from the local government, usually a county, or the state Energy Facility Site Evaluation Council (EFSEC) regardless of the generating capacity of the project. Small wind projects usually go through local permitting.

For large projects, the EFSEC siting process is typically more lengthy and costly than local siting due to a higher level of involvement and studies requested from multiple state departments. However, EFSEC may offer the developer a more standard and predictable process than local siting. Approval through EFSEC preempts other local regulation of the facility.

Distributed Wind Technology
20-to 50-meter (65- to 160-foot) tower height

Distributed wind turbines are designed for on-site electric use. They typically displace retail electric rates and can be economically viable at a range of wind speed sites.



Note: The maps estimate general areas that could be economically viable for wind energy development based on a minimum gross capacity factor of 35%; however, not all areas shown can be developed due to land use conflicts and other factors. Data sources: AWS Truepower, National Renewable Energy Laboratory

Three Solutions for Wind-Friendly Permitting

❶ Include Wind Energy in Comprehensive Plans

A local jurisdiction's comprehensive plan sets broad land-use objectives that are then implemented through zoning ordinances or other regulations. Community priorities related to renewable energy production should be clearly established in the comprehensive plan in order to provide the rationale for policy decisions.

Example

The City of Olympia includes an energy element in their comprehensive plan.
Goal: To the best of our local ability, take community-level actions which will help our citizens to have a sufficient supply of energy for present and future needs.
Policy: The City should promote the use of renewable and inexhaustible energy sources over non-renewable energy sources, including 1) pursuing renewable energy supply portfolios for the City from the power suppliers and 2) continuing to fund and promote energy education.

❷ Implement a Wind Energy Ordinance

Many jurisdictions require all wind energy projects, regardless of size, to apply for a special use or conditional use permit. This process relies on a case-by-case review of project details and often includes a public hearing. The uncertainty of this process leads to increased costs and project delays and is a significant barrier, particularly for small-scale wind turbine installations intended only for on-site electric use.

As an alternative, a wind energy ordinance can proactively outline the type, location, and characteristics of wind energy development that is suitable for the community. An ordinance may specify that smaller wind turbines designed primarily for on-site use are permitted outright as long as the installation meets certain pre-determined standards. Larger wind farm projects may be subject to a different set of development and permitting criteria. With the right ordinance language, planners can allow and encourage wind energy development that is appropriate for the community, while project developers will have transparency and predictability in the process.

Example

Kittitas County allows minor alternative energy facilities as a permitted use in all zoning districts provided they meet certain criteria regarding height and property line setbacks. The county offers a user-friendly, over-the-counter permit process for building and electrical permits. Applicants must submit a site plan, turbine description, and the equipment manufacturer's engineering drawings to confirm that the system is rated for the county's wind speed, seismic class, and soil class (site-specific engineering is not required).

❸ Adopt an Energy Overlay Zone

A wind energy overlay zone enacted by the county legislative authority can be a useful tool to identify appropriate areas for siting renewable energy projects. Energy overlay zones often target areas with available renewable energy resources, existing infrastructure, and a landscape where projects can be sensitively sited with minimal negative impact. In establishing the energy overlay zone and development guidelines within the zone, potential environmental impacts and mitigation strategies are pre-determined for applicants. By defining these concerns up front, a jurisdiction can greatly reduce or even eliminate these issues when wind energy facilities are proposed. Energy Overlay Zones are typically used to regulate large commercial wind farm facilities, while smaller residential facilities are allowed as a permitted use.

Example

Klickitat County adopted an Energy Overlay Zone in 2005 in order to diversify the local economy by attracting wind energy development. Over three years, the county gathered public input, completed a county-wide wind resource and environmental study, identified pre-approved wind farm locations, and outlined conditions that developers would have to satisfy to mitigate anticipated impacts. The cost of these efforts was recovered in tax revenue after the first wind farm was constructed. One 400 MW wind farm has provided about $3 million per year in rent to local landowners, $2 million per year in county tax revenues, and supports a number of permanent administrative and operational jobs. Overlay zones are encouraged by Washington State land use as a way to pre-plan for development.

Northwest SEED — Sustainable Energy for Economic Development

Northwest Wind Resource & Action Center

WINDExchange — U.S. Department of Energy

The Northwest Wind Resource & Action Center provides timely, accurate information on wind energy issues in the Pacific Northwest. It is supported in part with funding from the U.S. Department of Energy and managed by Renewable Northwest, Oregon Department of Energy, and Northwest Sustainable Energy for Economic Development. Learn more at nwwindcenter.org. Permit toolkit contact: mia@nwseed.org

Wind Energy in Comprehensive Plans

Guidelines for Energy Aware Communities

Local comprehensive plans serve to establish shared community goals, plan for long-term utilization of community resources, and can be used to provide a framework for implementation of local decisions and regulations. The comprehensive plan is a guiding document for the future of an entire community and is a proactive tool that allows a community to anticipate and prepare for potential future opportunities. It establishes goals and priorities and lays out action steps for meeting those goals.

One of the roles of the comprehensive plan is to identify natural resources that can be managed in ways that will benefit the community as a whole. Planners should consider including an energy element in their comprehensive plan or integrating energy issues throughout existing chapters in the plan. The energy element or policies should clearly define the community's priorities related to renewable energy production in order to provide support for related development regulations.

> "The prospects of greater energy efficiency, renewable energy sources, and decentralized energy systems offer local communities opportunities to prepare for change and to shape their own energy futures."
>
> - American Planning Association

Montana

In Montana, the preparation and adoption of a comprehensive plan, or growth policy, is optional. However, if a city or county planning board adopts a growth policy, the policy must meet certain minimum requirements. The Montana Department of Commerce provides resources through their Community Technical Assistance Program (CTAP).

Example: Cascade County, Montana
Goal: To sustain and strengthen the economic well-being of Cascade County's citizens. To protect and maintain Cascade County's rural character and the community's historic relationship with natural resource development. **Policy:** Stimulate the growth of the economy by encouraging the use of alternate methods of energy production, including wind energy. Support the development of natural resources including but not limited to timber, mining, oil and gas production, and renewable energy production.

Washington

Every Washington county and city is required to conduct a periodic update of its comprehensive plan and development regulations. The Washington Department of Commerce Growth Management Services verifies compliance and provides technical assistance to jurisdictions.

Example: Klickitat County, Washington
Goal: To encourage energy development in locations that take advantage of the County's energy resources, existing infrastructure, and also are sited to minimize environmental impacts. **Policy:** Areas particularly suitable for energy development are identified as an "energy overlay zone" which permits preferred energy development outright. Energy development that utilizes wind and solar are preferred and shall be encouraged. These technologies, if sensitively sited, designed, and mitigated can be sited without significant, adverse environmental impacts.

Oregon

In Oregon, the Land Conservation and Development Commission establishes state-wide land use planning goals and maintains a schedule for periodic review of city and county comprehensive plans and land use regulations.

Example: Wasco County, Oregon
Goal: To conserve energy. Land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles. **Policy:** The County will work with appropriate State and Federal agencies to identify and protect, and if feasible, develop potential energy resources, especially renewable energy resources. Use of renewable energy shall be encouraged.

How to incorporate wind energy in planning

❶ Inventory high wind potential areas

Taking inventory of a community's public assets is the first step in creating a plan to manage these assets. Most rural comprehensive plans already identify farm land, forest land, wildlife habitats and water resources as key natural resources. Including areas of wind energy potential will help in guiding local development and management of this resource in coordination with other land use priorities. The U.S. Department of Energy has created national wind resource maps that quantify the wind resource potential across broad areas. Some counties, particularly with complex terrain, may prefer to commission a higher-resolution map based on county-specific wind data.

❷ Analyze compatibility of wind and other land uses

During this step, communities analyze the different advantages and disadvantages of overlapping resources and other land uses. Wind energy facilities are generally compatible with agricultural and livestock grazing land uses, usually with no significant impact. However, wind energy facilities may not be compatible with areas identified for future residential or recreational use because of potential sound, safety, or aesthetic concerns. Some communities may decide that protecting certain scenic vistas, historic sites, or wildlife areas is a higher priority than wind energy development. Identifying these potential competing land uses will set the stage for gathering public input on priorities and needs that best serve the community as a whole.

❸ Set goals and objectives for energy development

The factual information collected during the inventory and analysis steps are combined with public input to set broad community goals and specific objectives for achieving those goals. To gather public opinion, the jurisdiction may want to create a local stakeholder advisory group, with an emphasis on landowner participation. Public input can also be gathered from community surveys and public meetings. Incorporating community expectations and opinions into the comprehensive plan's goals will help ensure community values are addressed and may help to avoid future opposition.

❹ Implement regulations to achieve the goals

Local governments should adopt development regulations with specific requirements for implementing the goals and objectives of the comprehensive plan with respect to wind energy development. Local governments can determine when wind energy facilities may be allowed as an outright permitted use or an accessory use or when a conditional use permit is needed. The comprehensive plan and zoning ordinance can include a map that identifies those areas that offer the greatest wind energy benefit with the lowest potential adverse environmental or other impacts, which will serve as the basis for applying consistent zoning standards.

Resources

Wind map information:

- U.S. Department of Energy WINDExchange (energy.gov/eere/wind/windexchange)
- AWS Truepower (awstruepower.com)
- 3TIER by Vaisala (3tier.com)
- WA Dept of Ecology (ecy.wa.gov/climatechange/greenenergy_maps.htm)

Example

Land Uses to Consider:

- Current & future land uses
- Historic or cultural sites
- Recreational areas
- Scenic vistas
- Wildlife areas
- Urban, residential, and other high-density development
- Airports and utility corridors

Example

Goal: To protect high-priority wind energy sites for wind energy development.
Objective: Revise the zoning ordinance to permit wind energy facilities.

Goal: To preserve the opportunity for development of energy projects that are consistent with the community's values.
Objective: Create a wind ordinance to address the development of future wind projects where appropriate.

Example

Action Strategy:
Develop and adopt an Energy Resources Element that would evaluate the natural energy resources and establish goals and policies for accessing and utilizing these resources. Identify and designate a Wind Energy Overlay for those areas of the County that would be appropriate for wind farms.

Sustainable Energy for Economic Development
Northwest SEED

Northwest Wind Resource & Action Center

WINDExchange
U.S. Department of Energy

Wind Energy Model Zoning Ordinance

This model ordinance is intended to aid local governments in adopting policies for responsible development of wind energy that ensure public safety, promote good land use practice, and provide a fair and predictable permit process.

ORDINANCE FOR WIND ENERGY FACILITIES IN [county or municipality]

1. PURPOSE

The purpose of the Ordinance is to facilitate the safe, effective, and efficient installation of Wind Energy Facilities in *[county]*, subject to reasonable conditions that will protect the environment and the health, safety, and welfare of the public.

In adopting this ordinance, *[county]* recognizes that:

- it is in the regional public interest to produce electricity in a manner that serves the needs of the community while minimizing potentially negative impacts;
- the *[county]* has a responsibility to implement and promote electricity production practices that protect the natural and built environment;
- the *[county]* has existing wind resources and therefore has the responsibility to include wind power possibilities in its vision of energy sources; and
- responsible wind power construction can result in significant cost savings and or revenue to the *[county]* over the life of the project as well as significant benefits to the future health and well-being of our citizens.

2. DEFINITIONS

A. **"Wind Turbine"** is any piece of electric generating equipment that converts the kinetic energy of the wind into electricity and may include rotor blades, generator, tower, electric conversion equipment, controls, wiring, and other related components.

B. **"Wind Energy Facility"** is an electric-generating facility consisting of one or more Wind Turbines under common ownership or operating control and are connected to the electrical grid under a single interconnection agreement. The facility may include substations, meteorological towers, access roads, control building, electrical interconnection equipment, and other ancillary equipment.

C. **"Wind Energy Facility, Size I"** is a Wind Energy Facility that 1) consists of one or more Wind Turbines, 2) has a Rated Capacity of one hundred kilowatts (100 kW) or less, and 3) is designed to supplement other electricity sources as an accessory use to existing facilities, wherein the power generated is used primarily for on-site consumption.

D. **"Wind Energy Facility, Size II"** is a Wind Energy Facility that 1) consists of one or more Wind Turbines, 2) has a Rated Capacity of more than 100 kW up to and including 10 MW and 3) is designed primarily to serve a local load.

E. **"Wind Energy Facility, Size III"** is a Wind Energy Facility that 1) consists of one or more Wind Turbines and 2) has a total facility Rated Capacity of greater than 10 MW.

Commentary

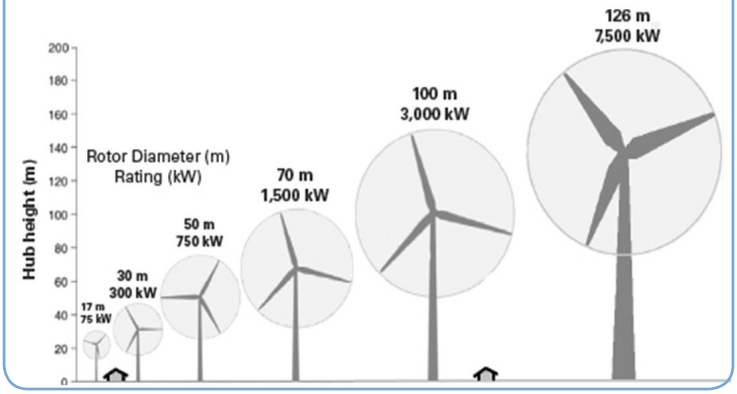
This example ordinance is based on national industry best practices and wind energy ordinances adopted around the country. The commentary section provides an explanation of each provision, policy justifications, and suggestions for tailoring specific provisions to a particular jurisdiction.

Section 1 Purpose: This section states the rationale for establishing a wind ordinance, local benefits of wind energy facilities, and why development should be regulated through the use of an ordinance.

Section 2 Definitions: It is important that the definitions in the wind ordinance do not conflict with those found in other code sections. Technical terms that commonly cause confusion or misunderstanding are explained below.

Wind Energy Facility: Three sizes of Wind Energy Facilities are defined to recognize that different size and applications of wind turbines should have different permitting requirements. Regulations suitable for large utility-scale wind farms are often unnecessarily onerous for small wind turbines designed for residential use only.

- **Size I Wind Energy Facilities** typically consist of a single wind turbine that produces electricity for on-site consumption or net-metering where excess electricity produced may be credited to the property's utility bill. Some jurisdictions include Size I facilities in their definition of allowed "accessory use" for a home, farm, or business. Jurisdictions may choose to modify the upper limit of this size category to align with utility net metering definitions.
- **Size II Wind Energy Facilities** typically consist of one to several medium- or large-scale wind turbines installed to provide electricity directly to a large business or industrial load. Jurisdictions may choose to modify the upper limit of this size category to align with local PURPA qualifying facility definitions.
- **Size III Wind Energy Facilities** typically consist of large wind farms with hundreds of individual wind turbines designed to export electricity via transmission lines.



F. **"Rated Capacity"** is the rated electric power output of a Wind Energy Facility based on the sum total of each Wind Turbine's nameplate capacity as specified by the Wind Turbine manufacturer.

G. **"Wind Turbine Height"** is the distance measured from grade at the center of the tower to the highest point of the Wind Turbine, including the tip of the rotor when it reaches its highest elevation.

H. **"Non-Participating Property"** is any property that may be affected by a Wind Energy Facility and is not under lease or other property agreement with the owner or operator of the Wind Energy Facility.

I. **"Occupied Building"** is a structure designed for human occupancy, for either habitation or public gathering, that is occupied or in regular use during at least six of the twelve prior months when the permit application is submitted.

J. **"Participating Property"** is a property under lease or other property agreements with the facility owner or operator pertaining to the Wind Energy Facility.

K. **"Meteorological Tower",** also known as a "met tower," is a tower equipped with weather measurement instrumentation to provide data collection and recording for the purpose of assessing the wind resource at a site.

3. INSTALLATION AND DESIGN

A. **Design:** All electrical and mechanical components of the Wind Energy Facility shall comply with applicable local, state and national codes, regulations, and notification requirements.

B. **Safety:** The Wind Energy Facility shall satisfy the following:
   a. To prevent unauthorized climbing, all climbing apparatus shall be removed from the lower ten (10) feet of the tower, or ladder access shall be restricted.
   b. Appropriate warning signage (e.g., "Danger, High Voltage") shall be placed where it is clearly visible by persons standing near the tower base or other ground-mounted electrical equipment.
   c. All electrical and control equipment shall be safely and appropriately enclosed from unintentional access by means such as lockable equipment cabinetry, enclosed tower with lockable access door, or similar.
   d. All wiring between the wind turbines and substation or point of interconnection shall be underground.

C. **Height**: The Wind Energy Facility shall satisfy the following:
   a. There is no limitation on maximum Wind Turbine Height or met tower height, except as imposed by Federal Aviation Administration regulations or local airport protection zones designated by the [*county*].
   b. The rotor blade tip shall, at its lowest point, have ground clearance of no less than thirty (30) feet, as measured at the lowest point of the arc of the rotor blades.

Commentary

Rated Capacity: Manufacturers describe their wind turbines using a nominal or nameplate power output measured at a certain wind speed.

Section 3 Installation and Design

Design: Adoption of a local wind ordinance will not preclude a wind energy facility from the requirements of applicable state and federal codes and regulations, including general building codes, electrical codes, fire codes, and mechanical codes. In addition, local utilities require notification of the intent to interconnect a Wind Energy Facility.

Safety: For Size II and Size III wind turbines, the climbing ladder is typically enclosed inside the tower and secured with a locked door. Size I wind turbines may be installed on lattice or monopole towers with external climbing pegs; removal of pegs up to 10-feet above ground level is sufficient to inhibit unauthorized climbing. Installation of fences shall not be required as they deny critical access to the tower base in case of emergency.

Height Restrictions: Wind turbine rotors must be placed higher than surrounding obstructions in order for the rotor blades to access the smooth, steady wind flow required to function properly. Not only do obstructions block the air flow, but they also cause turbulence that reduces the quality of the wind and can cause accelerated wear and tear on the equipment.

Industry best practice is to install the wind turbine on a tall enough tower that the entire rotor is located a minimum of 30 feet higher than any obstacle within 500 feet of the tower. Obstacles include the mature height of surrounding trees and, in the case of building-mounted wind turbines, the building itself. **Even in ideal locations with flat, wide open terrain, the minimum recommended tower height is 60 feet.**

Height limits in an ordinance can constrain the productivity and economic viability of a wind energy facility and discourage wind development. Height restrictions, if any, should only reflect safety concerns. Jurisdictions may consider exempting wind turbines from zoning district height limitations, similar to church spires, silos, and cell towers.

D. **Setbacks**. Each Wind Turbine in a Wind Energy Facility must satisfy the minimum setback requirements in the table below, unless an agreement with the adjoining property owner is in place.

	Minimum Setback Requirement (multiple of Wind Turbine Height)	
Wind Energy Facility	Occupied Buildings on Participating Property	Property Lines
Size I	0	1
Size II	0	1
Size III	1	1
Met Tower	1	1

a. Setbacks are measured from the center of the wind turbine base to the property line or nearest point on the foundation of an occupied building. Setbacks are calculated by multiplying the required setback number by the Wind Turbine Height.
b. Guy cables and other accessory support structures may be located within the setback areas, as long as no part of the structure extends closer than ten (10) feet to the property line or occupied building. Guy cables must be marked and clearly visible to a height of six (6) feet above the guy cable anchors.
c. There is no minimum lot size required provided that the setback requirements are met.

E. **Sound**: The Wind Energy Facility shall satisfy the following:
a. During normal operation, the Wind Energy Facility shall comply with the sound requirements of the zoning district in which the Wind Energy Facility is located.
b. The maximum sound level may be exceeded during short-term events, such as utility outages and storms.

Comparison of Common Sounds (in decibels) to Wind Turbine
(assumes a Size III wind turbine at a distance of 100 meters or 330 feet)

Sound: Sources of sound from a wind turbine include the mechanical rotating machinery, airflow over the blades, and, to a lesser extent, the wind passing through the lattice tower and guy wires. Modern wind turbines have been designed with features that minimize the sound they emit. Perception of sound varies based on atmospheric conditions, topography, and distance. Sound diminishes with the square of the distance from the source, which means that doubling the distance between the source and the listener reduces the sound heard by a factor of four. The recommended setback distances included in this ordinance are intended to minimize sound impacts on neighboring property.

Commentary

Setbacks: Many concerns associated with safety, sound, and aesthetics can be addressed by locating wind turbines a certain distance from sensitive areas. Setback distances are typically defined in terms of a multiple of the total turbine height, including the rotor blades. When establishing setback distances, the intended protective effect must be balanced with economic considerations for wind projects so that accommodating a setback does not unduly threaten the feasibility of the project. The following provides an explanation of the setbacks specified in this model ordinance.

For Wind Energy Facilities, there are safety concerns regarding tower collapse and ice shedding. In the rare event that a wind turbine tower collapses, experience has shown that the tower will tend to buckle or crumple rather than getting blown over like a tree; the result is that all falling components land within a small radius around the tower base. Similarly, ice that sheds off of wind turbine components tends to fall directly below the wind turbine rather getting blown or thrown any significant distance. As ice accumulates on the turbine blades it will cause aerodynamic stall that results in the blade rotor slowing down or stopping, thus eliminating the possibility that ice will get thrown off of a rotating blade. In the case of ice build-up, individuals should avoid standing directly beneath a wind turbine similar to any other overhead structure that may shed ice.

For Size I and Size II wind energy facilities, there is no minimum setback requirement from occupied buildings on the property because 1) in many cases these wind turbines are supplying electricity to the building and must be located close enough to minimize wire runs and electrical losses, and 2) the property owner bears their own liability and is not affecting others by locating their wind turbine in close proximity to their own building.

For Size III wind energy facilities, greater setback distances are recommended to mitigate public safety concerns. As described above, a setback distance of one times the wind turbine height from property lines and occupied buildings is adequate to minimize the impact to the public of potential tower collapse or ice shedding.

Although the ordinance defines minimum setback distances for safety purposes, developers can be encouraged to offer a "good neighbor agreement" to compensate or accommodate adjacent landowners who will have turbines located near their property.

F. **Appearance:** The visual appearance of Wind Energy Facilities shall at a minimum:
   a. Maintain a non-reflective finish and be a non-obtrusive color such as white, off-white, gray, or the manufacturer's default color, except as required by the Federal Aviation Administration;
   b. Not be artificially lighted, except to the extent required by the Federal Aviation Administration; and
   c. Not display advertising (including flags, streamers or decorative items), except for identification of the turbine manufacturer, facility owner, and/or operator.

4. PERMIT REQUIREMENTS

A. A Wind Energy Facility shall not be constructed unless a permit has been issued approving construction of the facility under this Ordinance. Any physical modification to an existing and permitted Wind Energy Facility that alters the size, type, or number of Wind Turbines shall require a permit modification under this Ordinance.

B. **Permit Type:** The table below defines the type of permit required for each zoning district subject to the conditions set forth in this ordinance.

	Permit Type by Zone			
Wind Energy Facility	Agricultural / Residential	Urban	Commercial	Industrial
Size I	P	P	P	P
Size II	P	C	P	P
Size III	C	N	C	C
Met tower	P	P	P	P

P – Permitted use
C – Conditional use
N - Not an allowed use

C. **Engineering Design Requirements:** The permit application shall be accompanied by documentation that the design of the Wind Energy Facility complies with applicable building and electrical codes.
   a. For Size I Wind Energy Facilities and meteorological towers wet-stamped engineering drawings shall not be required. The exception is for roof-mounted applications or non-standard soil conditions (gravel, sand, or muck).
   b. For Size II and Size III Wind Energy Facilities wet-stamped engineering drawings by a licensed professional engineer are required.

D. For Size II and Size III Wind Energy Facilities, prior to issuance of a permit, the applicant shall provide proof of a level of insurance adequate to cover damage or injury that might result from the failure of any part or parts of the Wind Energy Facility.

E. Size II and Size III Wind Energy Facilities require a pre-submission consultation with planning staff.

F. Met tower permits are valid for a period for thirty-six (36) months and is renewable for an additional twenty-four (24) months.

Commentary

Appearance: The language in this ordinance is intended to minimize the visual impact of Wind Energy Facilities on the landscape. Many communities already accept water towers, silos, cell phone towers, and utility poles as part of the landscape, and wind turbines should not be subject to more stringent aesthetic requirements. However, if a local jurisdiction identifies areas of significant scenic value in their comprehensive plan, installation of Wind Energy Facilities within these sensitive areas may be restricted similar to other structures within these areas.

The FAA does not require lights on structures less than 200 feet tall unless in close proximity to a commercial runway.

Section 4. Permit Requirements
Permit Type:
Allowed or Permitted Use: This ordinance allows Size I Wind Energy Facilities and meteorological towers as a permitted use by right in all zoning classifications subject to the requirements set forth in the ordinance. Size II facilities are a permitted use in all zones except residential. Designation as a permitted use provides applicants with a predictable process and also reduces time and cost for the permitting authority as a public hearing is not required. Permit applications can be approved administratively by the zoning administrator or staff. For systems that do not meet all ordinance requirements, approval can be obtained through the conditional or special use process.

Conditional Use (or Special Use): Ordinances often require conditional or special use approvals for Size III Wind Energy Facilities and often limit this use to rural and industrial districts. As these projects have a potentially greater impact on neighboring properties or the public, a public hearing and case-by-case review by the appropriate local authority may be required, and approval is conditioned upon the applicant complying with specific requirements intended to address or mitigate anticipated impacts.

Communities looking to encourage Size III Wind Energy Facilities may make this use a by-right principal or accessory use in certain rural and industrial districts; some jurisdictions have created wind energy overlay zones to encourage the location of these facilities in certain areas.

5. DECOMMISSIONING

A. The Wind Energy Facility shall be removed within six (6) months after it has reached the end of its useful life, which is determined if no electricity is generated for a continuous period of 12 months. Time extensions are allowed when good faith efforts to repair the Wind Energy Facility can be demonstrated.
B. Decommissioning shall include removal of wind turbines, tower, and above-ground cabling and electrical components.
    a. For Size I Wind Energy Facilities, foundations and underground cabling need not be removed.
    b. For Size II and Size III Wind Energy Facilities, decommissioning shall also include removal of all below-ground project elements to a depth of 36 inches, access roads, and any other associated facilities, unless the property owner requests in writing that the access roads or other facilities be retained. Disturbed earth shall be graded and re-seeded and subject to state and local regulations regarding erosion and sedimentation control.

Wind Turbine Certification

This model zoning ordinance does not require that a wind turbine model be certified in order to obtain a permit for installation. However, independent, accredited turbine certification provides a simple and reliable way for consumers to find a model that meets safety, performance and durability standards. Size I wind turbines are typically certified to the American Wind Energy Association standards. Size II and III wind turbines are typically certified to the International Electrotechnical Commission standards.

Resources

Planning for Wind Energy.
American Planning Association, November 2011.
www.planning.org/research/wind

County Strategies for Successfully Managing and Promoting Wind Power: Implementing Wind Ordinances in America's Counties.
National Association of Counties. www.naco.org

Permitting Small Wind Turbines: A Handbook.
American Wind Energy Association. September 2003.
www.consumerenergycenter.org/erprebate/forms

Commentary

Engineering Design Requirements: For Size I Wind Energy Facilities and meteorological towers, the manufacturers of the wind turbine and associated tower have pre-engineered the system taking into account the interaction between the turbine, tower, foundation, and wind speeds. The manufacturers provide tower engineering and drawings that are completed in accordance with existing international standards, such as the Unified Building Code, similar to other engineered structures such as flag poles and cell towers. When installed according to the manufacturer's instructions for the local wind loads and soil conditions, the turbine and tower will be capable of withstanding anticipated design loads. Therefore, additional site-specific engineering, soil tests, or a wet-stamp should not be required.

It is recommended that the jurisdiction inspect the tower foundation as they would for other permitted structures. The jurisdiction may require an inspection as the forms are installed and again after the concrete has been poured to assure that the foundation has been constructed as specified by the manufacturer.

For roof-mounted applications, the existing building typically has not been designed to accommodate the additional loads imposed by an operating wind turbine. Therefore, a structural analysis and engineering report is recommended to demonstrate that the existing building and roof can safely withstand the loading or has been adequately strengthened to do so.

For Size II and Size III Wind Energy Facilities, each Wind Turbine tower and foundation should be designed by a professional engineer based on the local soil type and wind speeds. Stamped engineering drawings for these facilities are to be submitted to the building department or relevant agency for review and approval.

Section 5. Decommissioning
For Size I Wind Energy Facilities, the removal requirement and procedures should parallel those for similar abandoned structures or uses, such as billboards. In some cases, jurisdictions require a bond or escrow holding to be posted a certain number of years after commercial operation date to cover decommissioning expenses for Class II and Class III facilities. Removal costs for Class I facilities are typically not great enough to warrant such measures.

Other Notes
Fee Structure: The local jurisdiction should set a fee structure that is sufficient to cover administrative costs of issuing the permit without discouraging potential wind turbine buyers.

Northwest SEED — Sustainable Energy for Economic Development
Northwest Wind Resource & Action Center
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