Commercial Wind Farms

Development Regulations Discussion

Spokane County Building and Planning

Planning Process

Potential Comprehensive Plan Goals and Policies

- Protect agricultural businesses and cropland
- Protect civilian and military aviation facilities
- Support the production of renewable energy for local and regional uses
- Provide economic benefits for farmers, ranchers, and county government
- Ensure safety and protection for wildlife, resident birds, and migrating birds

Planning Process

Protect agricultural lands from conflicts and incompatible uses while protecting agribusiness and cropland.

- Policy: Discourage the permanent conversion of farmland out of production to renewable energy development.
- Policy: Do not locate non-agricultural related industries on “GMA Agriculture” designated land as defined in WAC 365-190-050.

Planning Process

Protect the long-term viability of Fairchild AFB by requiring wind turbines to be sited away from FAFB flight routes and patterns.

- Policy: Recognize that commercial wind turbines are an incompatible use near Fairchild AFB

Protect airports in Spokane from encroachment by incompatible uses

- Policy: Commercial wind turbines should be encouraged to be developed away from airports and airport influence areas
- Policy: Protect airports and flightpaths, commercial windfarms by producing development standards that require commercial windfarms to follow FAA standards.

Planning Process

Support the production of renewable energy for local and regional uses.

- Policy: Support the development and growth of renewable energy facilities (i.e., wind power, hydroelectric, solar power, geothermal) that foster economic prosperity (living wage jobs, revenue sources for rural landowners, increased tax base) and increasing the economic diversity of Spokane County.
- The County should ensure that the development regulations related to facilities and utilities where appropriate, that are key to developing sustainable renewable energy generation in Spokane County

Planning Process

Provide economic benefits for farmers, ranchers, and county government.

- Policy: Create development regulations that protect the county's wildlife species, including priority habitat species, raptors, avian species, and bats, from commercial wind farm development.
- Policy: Create development regulations that help protect the county’s open space, wildlife corridors, wildlife refuges, and priority habitat.
- Policy: Enforce a no-net-loss of priority habitat from renewable energy development.

Planning Process

Ensure Safety and protection of wildlife, resident, and migrating birds.

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- Policy: Create development regulations that help protect the county’s open space, wildlife corridors, wildlife refuges, and priority habitat.
- Policy: Protect priority habitat species from incompatible development. Enforce a no-net-loss of priority habitat from renewable energy development.

Permitting Process

Washington is a dual permitting state – RCW 80.50

- Applicant can choose to go through the the local permitting authority or the state Energy Facility Site Evaluation Council. (EFSEC)
- If the applicant chooses to obtain a permit through EFSEC, Spokane County will have a representative on the Board.
- A recommendation would go to the governor, who would approve, modify, or deny EFSEC's recommendation.
- Spokane County Code has insufficient development regulations to consider industrial-scale renewable energy facility development.

COMPARISON OF OPTIONAL PATHWAYS FOR CLEAN ENERGY PROJECTS

Actions and Roles	Ecology's Coordinated Clean Energy Permit Process	Energy Facility Site Evaluation (EFSEC) Council Process	Local Government-Led SEPA and Permitting Process
Applies to new projects or facility modifications	Yes	Yes	Yes
Agency coordinating overall process	Ecology coordinates the environmental review and permitting work with participating state and local agencies	EFSEC coordinates the environmental review and permitting work with participating state and local agencies	No single agency lead
SEPA lead agency	Determined based on project and location	SEPA review is incorporated into the EFSEC process and the EFSEC Director is the responsible official	Determined based on project and location
Permitting	Each of the project's permits has a state or local agency with legal responsibility	EFSEC makes decisions and issues all state and local permits as part of the Site Certification Agreement	Each of the project's permits has a state or local agency with legal responsibility
Decision-maker(s)	• For each permit, the agency responsible makes the decision • All permits needed for a project must be approved	The EFSEC Council makes a recommendation to the governor, who makes the decision on a project	• For each permit, the agency responsible makes the decision • All permits needed for a project must be approved
Responsibility for Tribal engagement and consultation	Ecology is responsible for offering Tribal engagement and consultation for the coordinated permit process	EFSEC is responsible, in coordination with Department of Archaeological and Historic Preservation (DAHP)	• State agencies would offer Tribal consultation for environmental reviews as the SEPA lead agency and/or for their permits • Local governments can offer to engage with Tribes
Engagement with overburdened communities	Ecology verifies engagement has been done in timely manner and comments have been considered	EFSEC leads engagement	Each agency leads their own engagement process
Cost reimbursement required	Yes	Yes	May be required
Pre-application process	Yes	Yes (required for transmission lines)	Yes
Complete application required	Yes, it will be used for development of the work plan and to begin SEPA review	Yes, and if pre-application is done, the SEPA review can begin before the final application is submitted	Yes, it is used to begin SEPA review
Local ordinances	Local ordinances apply	EFSEC can preempt county and local ordinances	Local ordinances apply
Appeals	Permits each have their own requirements for appeals	Appeals are limited to the final decision and are not done for individual permits	Permits each have their own requirements for appeals

Source: Washington State Department of Ecology, State of Washington Energy Facility Site Evaluation Council. Focus on: Pathway options for environmental review and permitting clean energy projects

Commercial Wind Farm metrics and best practices

Public safety

Wind turbine changes over time – height and rotor

Setbacks

- Between towers
- Adjacent to occupied structures
- Municipal or settlement boundaries
- Property lines

Environmental and economic protection

Visual resources, noise, and shadow effects

Aviation safety

Decommissioning

Public Safety, Inquires and Complaints

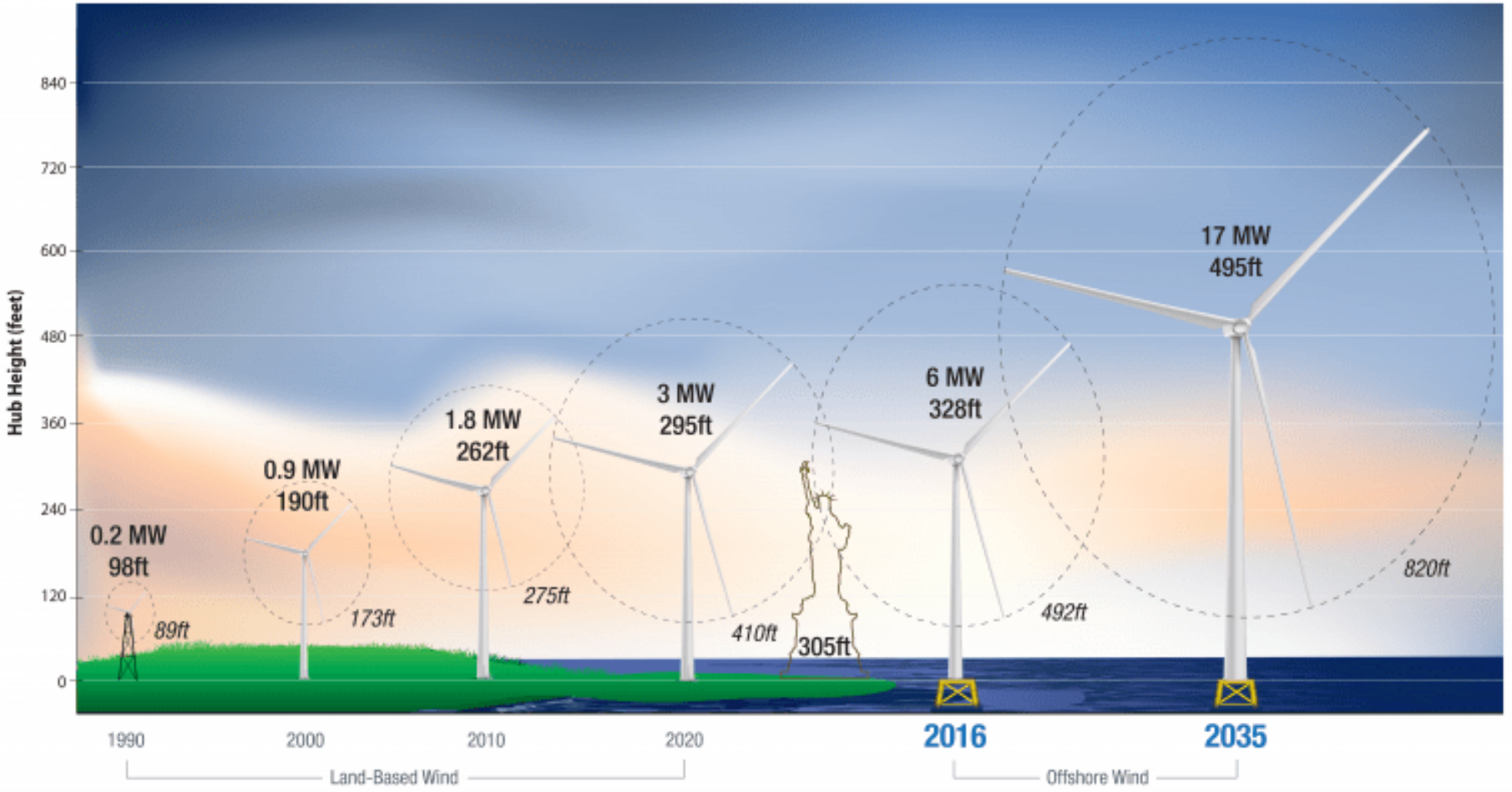
Best Practices

- Require posting of emergency contact information
- Prevent unauthorized climbing
- Post warning signs
- Lock turbine doors
- Physical monitoring of the site
- Fire protection plan
- All wind developers provide safety plans including emergency response and design measures to ensure safety and inform potential responders.

Wind Turbine Height

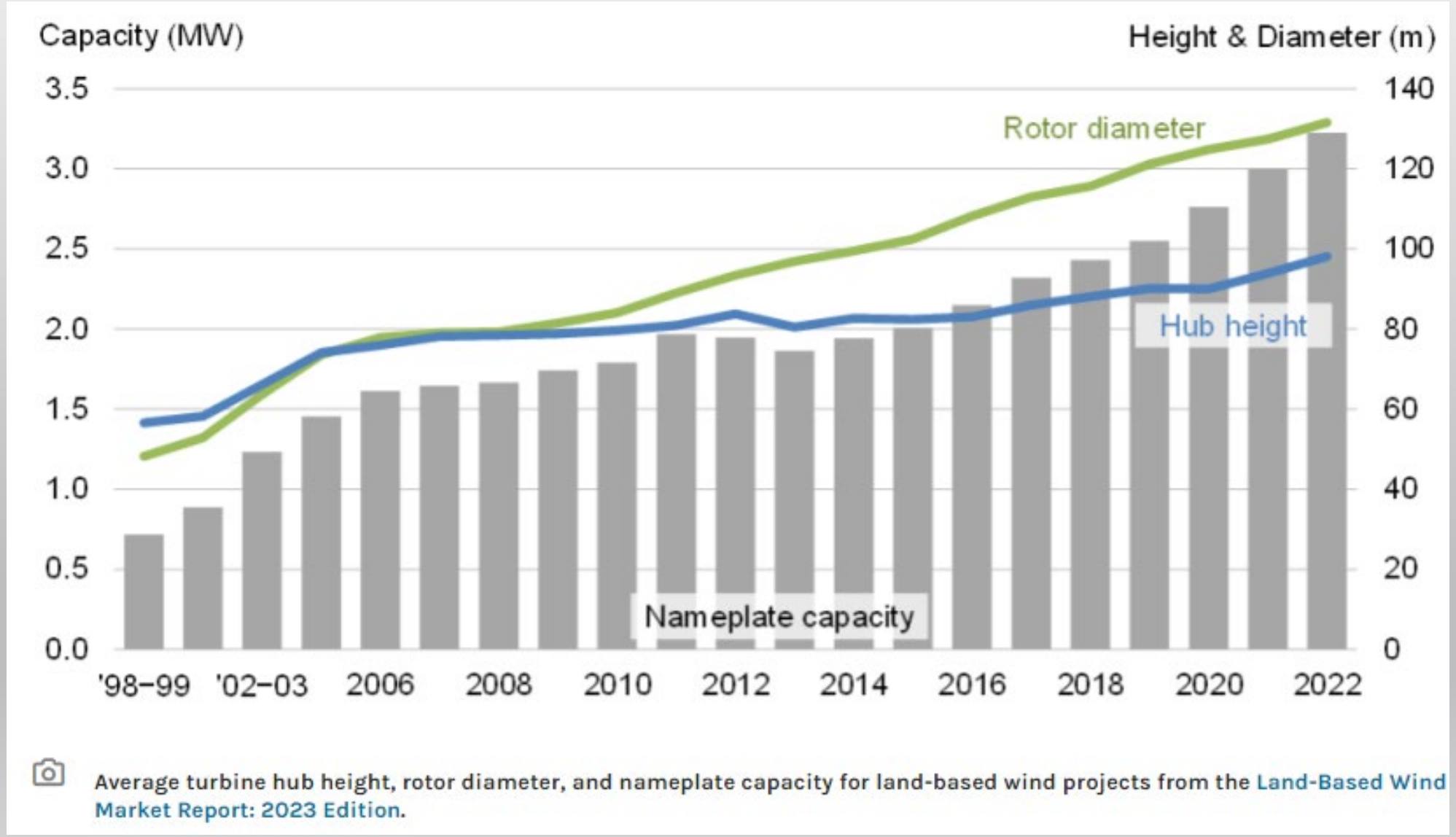
- A wind turbine's hub height is the distance from the ground to the middle of the turbine's rotor
- Turbine height has increased to 322 feet, a 73% increase between 1998-2023
- Higher turbines allow longer rotor blades, which capture more wind energy

Wind Turbine Height Graphics



Source: Office of Energy Efficiency & Renewable Energy (Wind Turbines: the Bigger, the Better | Department of Energy)

Height vs (MW) Capacity

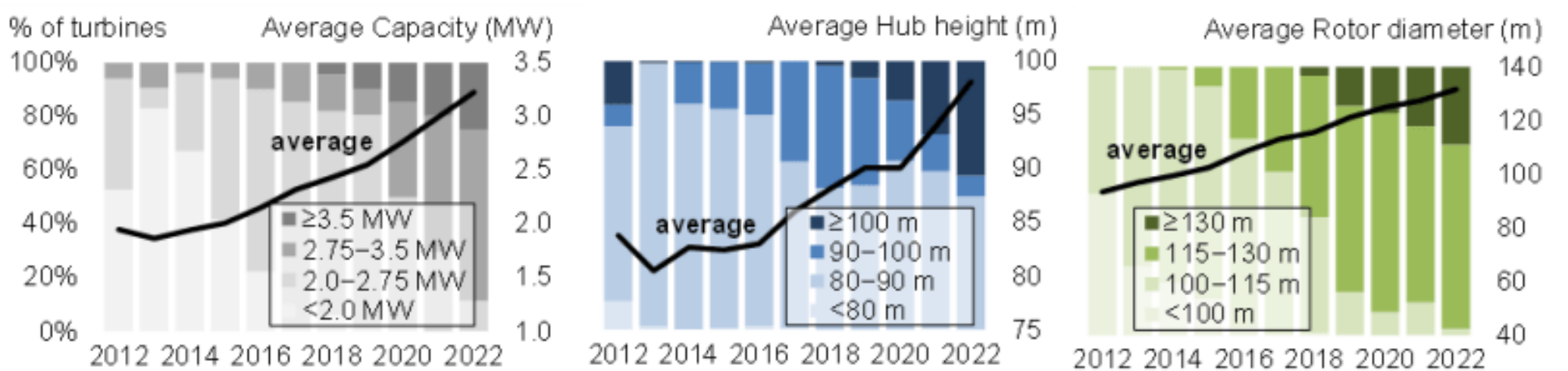


Average turbine hub height, rotor diameter, and nameplate capacity for land-based wind projects from the Land-Based Wind Market Report: 2023 Edition.

Average Rotor Diameter

A turbine's rotor diameter is the width of the circle swept by the rotating blades.

- In 2010 the **largest** turbine rotor was 380 ft.
- In 2022 the **average** turbine rotor was 430 ft.



Trends in turbine nameplate capacity, hub height, and rotor diameter from the Land-Based Wind Market Report: 2023 Edition.

Findings for Turbine Height

- Best Practices does not recommend height standards.
- Tower heights will likely continue to increase for commercial wind farms.
- Wind developers need higher turbine heights to increase their energy capacity.
- Commercial wind turbines shall follow all FAA standards and guidelines.
- The lowest point on all rotor blades must be at least 30 feet above ground level.

Setback Requirements

Proposed code provides four basic setback requirements.

- Minimum, non waivable occupied building setbacks.
- Occupied building visual, shadow flicker, and aesthetic setbacks
- Boundaries of incorporated communities
- Setbacks from nonparticipating adjacent landowners' property lines.

It is important that setback standards protect the local community, but allow for reasonable development

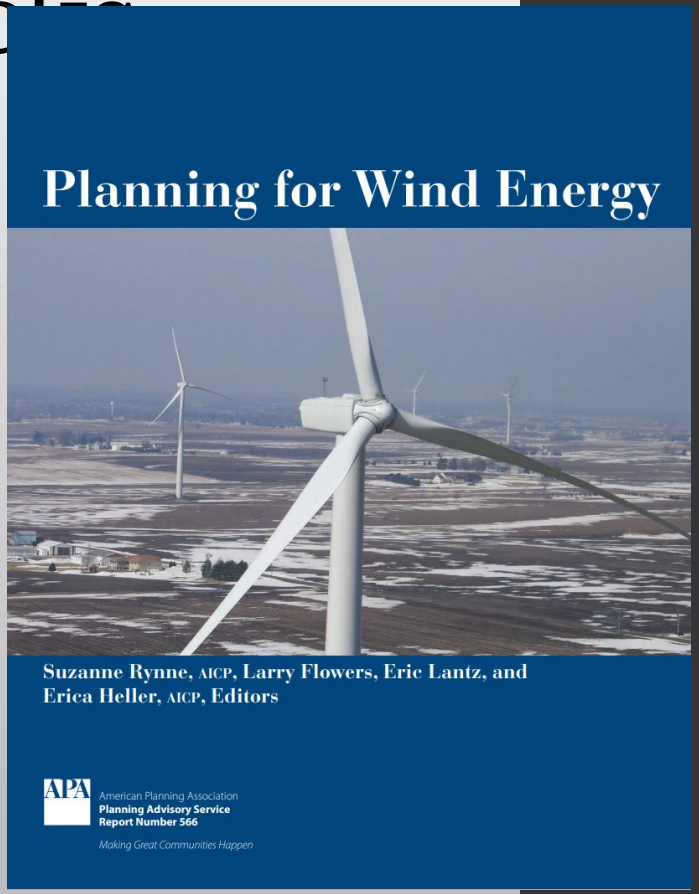
Minimum occupied building setbacks

Best Practices

- The 1,000-foot setback became a standard in part because it created a substantial margin of safety.
- 1-1.5x safety setback protects against blade throw.
- 1.1-1.5x blade height is common industry practice.

Code Examples

- Adams County 1.1x
- Whitman County 1x
- Larger setbacks are possible. EFSEC has created some 2,500-foot setbacks for projects.



Occupied building, visual, & aesthetic setbacks

Code Examples

- Adams County created a 4x setback
- EFSEC Desert CLAIM Project: Created a 2,500-foot setback standard.

Court Cases

- Residents Opposed To Kittitas Turbines v State Energy Facility Site Evaluation Council The Washington Supreme court agreed on a general 4x setback standard.

Boundaries of incorporated communities

Scientific Journal Article

- Best Practices, “1,000–1,200 m from the closest settlement are the most favorable for reaching optimal energy and environmental objectives” That’s about 7x turbine height

Court Cases

- Residents Opposed To Kittitas Turbines v State Energy Facility Site Evaluation Council EFSEC (2008) general 4x turbine height

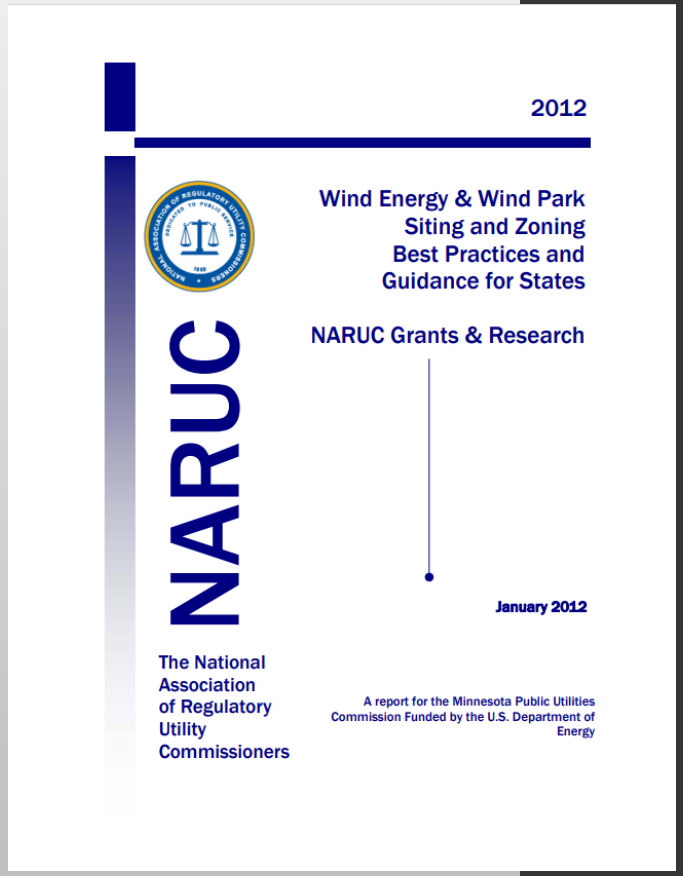
Setbacks from property lines

Best Practices:

- 1.1 to 1.25x the turbine's total height is the common standard
- 1.5x Adams County
- Guidelines or mandatory requirements from a handful of states do converge on 1 to 1.5x the turbine height (that is, tower plus blade length, or more accurately, tower plus rotor and blade radius.)

Residents Opposed To Kittitas Turbines v State Energy Facility Site Evaluation Council EFSEC (2008).

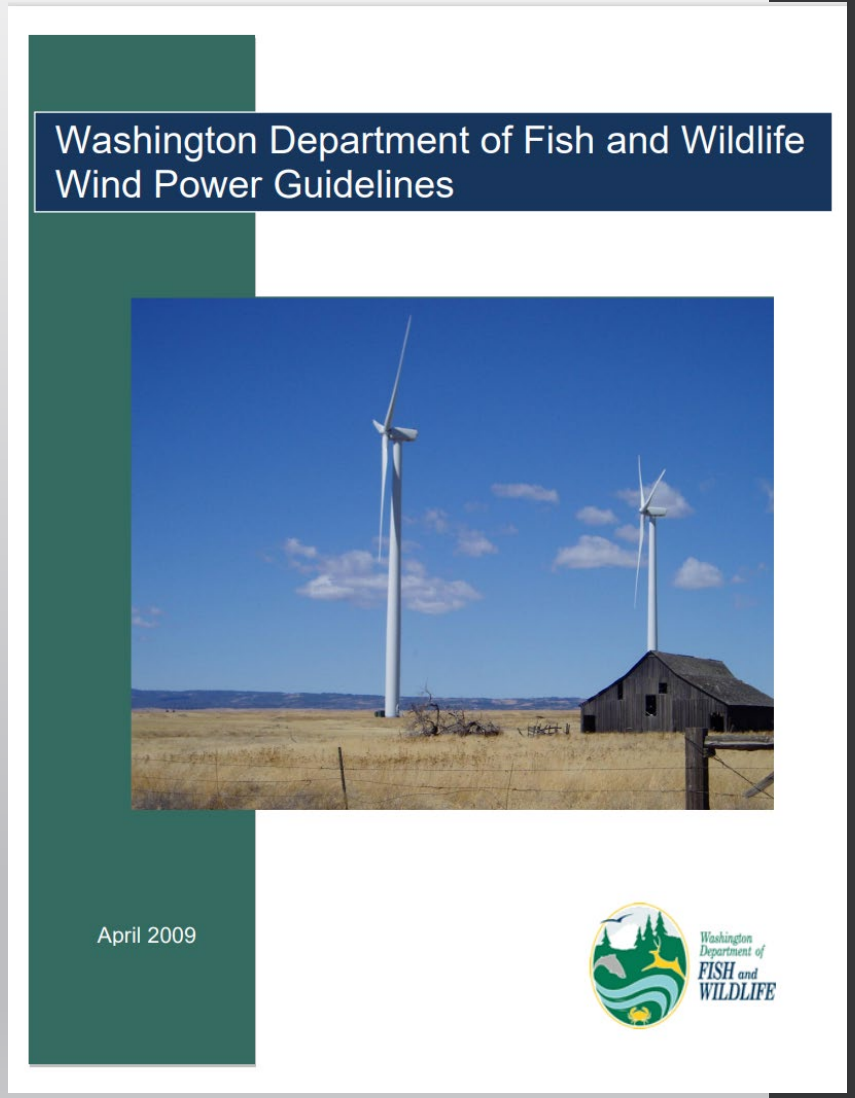
- Created a 4x standard precedent for setbacks



Protecting the Natural Environment

WDFW Wind Power Guidelines

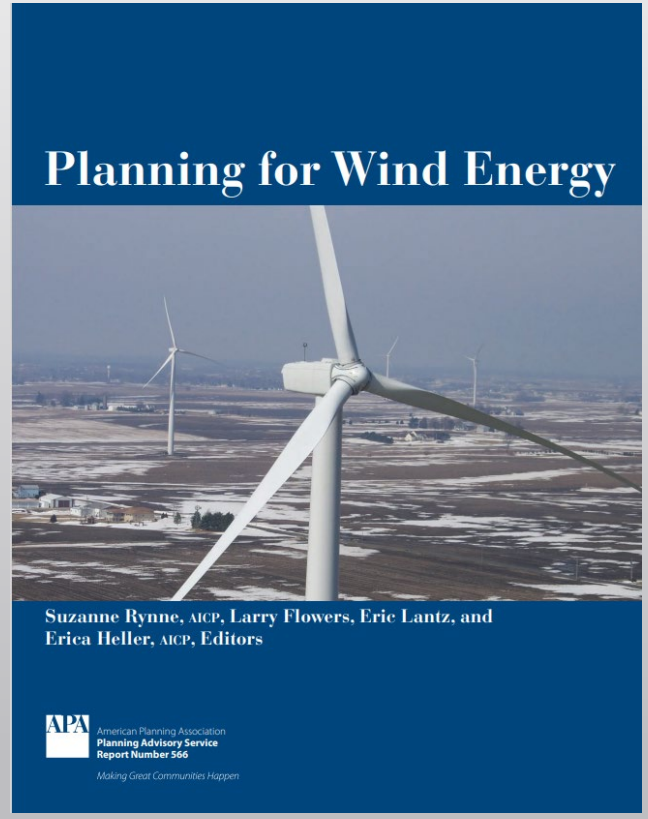
- Provides guidance, studies, and mitigation standards for the effects that commercial wind farms have on the natural environment (Priority Habitat Species and Prime Habitat i.e., scrub steppe)



Visual Resources

APA Guidebook Common Practices

- Neutral color and nonreflective finish.
- Lighted per FAA guidelines with no additional lighting allowed.
- Signage limited to the turbine manufacturer, facility owner or operator, and emergency contact information.



Noise/Sound

- Ordinances typically require audible noise to be below specific sound thresholds at property lines, often 40 dBA to 55 dBA. More detailed noise standards may cast thresholds in terms of ambient noise levels. (American Planning Association)
- For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below 45 dBA. (World Health Organization)
- Can also be mitigated through setbacks. APA recommends 1000-foot setbacks to mitigate noise.
- Washington State noise standard compliance: During construction and operations, the project shall comply with applicable state noise standards as found in WAC 173-60.

Shadow Flicker

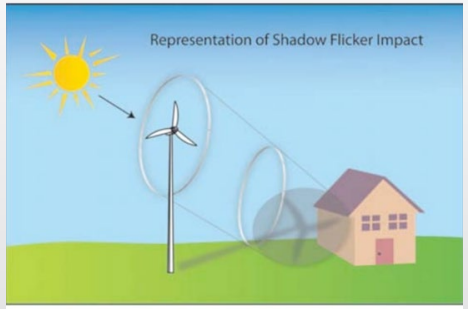


Figure 1: Turbines can cause a flickering shadow on buildings during certain periods of the day. *(American Wind Energy Assoc.)*

Shadow flicker is an effect that can appear on neighboring properties due to the movement of wind turbine blades between the sun and the property.

Court Cases

- Residents Opposed To Kittitas Turbines v. State Energy Facility Site Evaluation Council EFSEC (2008)

Time limits

- 30 hours per annum of flickering, in the worst case.
- 30 minutes maximum on the worst day of the year.
- Real shadow impact is limited to 8 hours per year.

Aviation and Aircraft Safety

The Spokane International Airport and Fairchild AFB are invaluable economic resources to Spokane County.

Wind turbines can be a concern for Aviation and Aircraft Safety.

- The applicant shall consult with the relevant authorities before installation in accordance with air traffic safety regulations.
- To protect Aviation Radar, consultation shall be undertaken with the relevant aviation authorities to determine prevention and control measures.
- The applicant shall avoid siting wind energy facilities close to airports and within known low-flying areas or flight paths.

Aviation and Aircraft Safety

- Requires commercial wind farms to follow specific FAA guidelines when within a specified distance of a commercial airport.
- Requires the applicant to consult and provide the USDOD with the conditional use permit.
- Projects be required to provide evidence to the hearing examiner that the application will not affect military training operations or is no more incompatible than any other outright permitted uses in the applicable zoning district.

11.17.070(t)(6). For wind turbine(s) proposed to be located within four (4) miles of the nearest point of the nearest runway of the nearest airport available for public use, the applicant for a building permit must comply with all the requirements imposed by the Federal Aviation Administration (FAA) and provide a written statement from the FAA that sets forth the FAA's comments and requirements, if any, for the proposal;
11.17.070(t)(7). All wind turbine(s) must comply with the Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, as currently in effect or as hereafter amended, including but not limited to, providing such notices to the FAA as required thereunder and compliance with all requirements or prohibitions imposed by the FAA on the applicant's proposal;
11.17.070(t)(8). Conditional use permit applications for the placement and operation of wind turbines under this section shall be made available for review by the United States Department of Defense (USDOD) in accordance with RCW 36.01.320, as in effect now or hereafter amended. The notice and processing of wind turbine permit applications will be in accordance with Benton County Code chapter 17.10. Pursuant to BCC 11.50.040 (d), the applicant is required to provide sufficient evidence to persuade the Hearings Examiner that the proposed wind turbine is compatible with other uses in the surrounding area, including any military training activities, or is no more incompatible than are any other outright permitted uses in the applicable zoning district, as well as provide all other evidence required by BCC 11.50.040;

Source: Benton County Zoning Code

Decommissioning

Best Practices Recommendation (APA)

- Recommends that counties create a decommissioning plan
- Helps ensure that commercial wind farms are properly disposed of after their current use.
- Ensures that the county is not responsible for decommissioning the commercial wind turbines
- Bond or similar financial instrument
- Based on the net cost of decommissioning
- Required to disassemble and remove after a certain amount of days

Constraint Map

"A site plan with sufficient detail to describe the nature and scope of the proposed project, the attributes of the specific location, as well as any potential issues or questions relating to the site chosen".

a.	Wildlife, vegetation and critical habitat, including wetlands, floodplains and other sensitive and/or protected areas	b.	Surface waters, drinking water supplies
c.	Visual resources	d.	Noise (identified by state and local standards)
e.	Historic, cultural, and archeological resources	f.	Roads, trails and recreational areas
g.	Existing commercial uses of site (e.g. agriculture, commercial fishing, recreational boating, etc.)	h.	Electric transmission lines; oil and gas wells; oil and gas transmission, gathering and service lines; sub-surface mining operations; and other infrastructure/facilities
i.	Aviation and defense radar resources	j.	Marine transportation resources (offshore)
k.	Soil erosion and dust impacts	l.	Safety issues
m.	Community and residential area issues, including schools, hospitals, and churches	n.	Areas of known geotechnical instability
o.	Fire risks (e.g., grassland fires at site)	p.	Other resources/concerns and land use constraints of local importance