

Submitted to: Public Service Commission of Wisconsin
Docket No. 1-AC-231 Draft Chapter 128—Wind Energy Systems

Comments by the Towns of Morrison, Wrightstown and Glenmore
Brown County, Wisconsin
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Public Service Commission of Wisconsin
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The towns of Morrison, Wrightstown, and Glenmore in Brown County respectfully submit our comments and concerns in regard to the May 14, 2010 draft of the Chapter 128 rules for wind energy systems. This submittal reflects many hours of research, participation in county meetings involving wind energy and health experts, consultation with licensed Professional Engineers, seven town meetings for citizens' input including two joint meetings of all three towns and a thorough review process of this submittal.

The overall objectives of the towns are as follows:

1. To help the PSCW develop rules for Wind Energy Systems (WES) so that public safety and health are preserved.
2. To provide credible and reasonable suggestions.
3. To base suggestions on current state law, recent wind turbine and health studies, expert publications, and citizens' input and experiences with existing WES.
4. To ensure citizens' input from the towns of Glenmore, Morrison, and Wrightstown into the rule-making process.

The towns appreciate the efforts of the PSCW and the Wind Siting Council. The comments will follow the order of the draft rules but first some critical points are presented.

First, attention is requested to another submittal of these towns cautioning about the potential danger to human and animal health by rushing the promulgation of these rules. The PSCW with the University of Wisconsin, the Department of Natural Resources (DNR), and the Department of Agriculture, Trade, and Consumer Protection should be involved to be sure that health and safety are not compromised. Wisconsin has existing wind turbine installations which provide the opportunity to measure health effects and also a responsibility to not build more wind projects until health complaints are studied and resolved. If not done, such requirements as setbacks and sound levels must be set very conservatively. It appears that Act 40 has no deadline for promulgating these siting rules. Just this week, a state senator who was one of the leaders in the wind siting legislation agreed that these rules should not be rushed. He supports scientific studies of Wisconsin's existing wind turbine complexes.

Second, the draft rules require the developer to involve the DNR for the usual permitting requirements. The rules must require the DNR to include groundwater impacts in their review and to require construction and operation techniques which will protect water quality. Brown County has experienced how easy and widespread groundwater can become contaminated. The rules need to allow for the DNR to identify geological areas in which wind turbines are not to be constructed because the risk of contamination is too high. If statutory authority is needed, the towns would work to accomplish that.

Third, the rules are only as good as their implementation. Most towns, counties, and state agencies are not able to inspect the whole construction process for wind turbines. The rules should require the use of qualified, third-party engineering/environmental inspectors reporting to the DNR, county land conservation, and local political subdivisions and paid for by the wind developer/owner. It is believed the PSCW has done similar in the past for energy projects.

Comments on specific sections of draft rules: (“D/O” means “developer/owner”)

II. Developer Requirements

.10(1) Notification Requirements and .11 Real Property Provisions

1. Consider pre-qualifying of D/O (or state licensing) for one MW or larger projects to minimize unqualified D/Os who waste time and money of local towns and counties, contact landowners without any accountability and, most importantly, are likely to construct poorer quality facilities.
2. Create a process to assign a temporary franchise area to D/O while contacting landowners but require public announcement before contacting landowners for an easement or lease. This should satisfy developers who do not want confusion by alerting a second developer of their activities. But, since competition is good, PSCW may consider issuing two temporary franchises with full disclosure to landowners who could sign options with each developer. PSCW would then choose the best project to move forward.
3. Require a PSCW-published “Truth-In-Negotiating” brochure to be sent to landowners one month before contact. A few references are available such as www.flaginc.org. One disclosure which should be included is that, it appears, in Wisconsin if the turbine or cable trenches create pathways for manure to contaminate the groundwater, it is still the farmer who is responsible for the contamination unless the easement/lease can transfer that liability to the developer.
4. Require that lease/easement agreements allow for an option to terminate the contract at some point early in the process if landowner wishes.

.12 Existing Property Uses

1. This requirement is helpful but “reasonable” needs some definition or examples.

.13 Siting Criteria

1. With more and more evidence that setbacks which have been used in the past are not adequate, it is disturbing to see the setbacks proposed in the PSCW draft.
2. Determining the correct setback has to be driven by what is necessary to ensure safety and health, not by the fact that someone wants to invest in wind energy.
3. Since human stress causes health problems, the stress of “taking of property (value and use options) without due process” from neighbors of wind turbine installations must be considered. The PSCW understands the value of options when evaluating energy projects. Therefore, it must be understood that since a neighbor to a wind turbine project loses options for future use of their property when setbacks are inadequate, they lose real value. Lost options include not being able to build a residence, sell the property for residential development or even build their own wind turbine. Setbacks should not create “no-build” zones

for future residences on nonparticipating parcels. Such action is, in fact, the “taking of property without due process”.

4. Setbacks should be established to protect safety and health of both participating and nonparticipating residents. The draft rules with different setbacks for different residents suggest a degree of ambiguity as to what setback is needed for health and safety for any person. The draft rules which include setback differences as well as the short setbacks reinforce the need for studies in the field so that science and statistical analysis provide the answers.
5. Setbacks should be determined for each wind structure to meet standards for maximum allowable sound levels and shadow flickering and to provide safe distances from ice shedding and structural failure or turbine blade breakage and throw-off. The draft seems to use some unknown criteria.
6. Since modeling predictions have a degree of error, minimum setbacks are still needed. But when modeling shows greater setbacks, those should be used.
7. Also, the option for residents to waive the setbacks drafted in Table 1 suggests a lack of a sound scientific basis for setting the setbacks in the first place. In addition, when the PSCW cannot determine the right setback for everyone’s safety and health, as it seems, it is not appropriate to allow a waiver process.
8. There is a body of studies and experiences which suggests “1/2 mile from residences” is needed for safety and health reasons. Even older publications suggested “1/4 mile” will solve the majority of issues which means the draft rules are ignoring the trend of evidence suggesting that greater setback distances are needed. From 2007 through 2009, seven experts or expert groups have recommended setbacks of 1.5 to 2.4 kilometers which is 0.93 to 1.5 miles. Again, conducting studies at Wisconsin’s existing wind turbine complexes is the only responsible path before setting setback criteria.
9. A health effect similar to motion sickness which affects some people and not others also needs studying to determine setback criteria.

.14 Noise Criteria

1. The towns are not recommending a specific sound level because the establishment of such standard needs to be based on thorough epidemiological studies. The towns suggest considering different sound levels for daytime and nighttime and the suitability of an ambient plus 5dB standard. Sound levels in the draft rules are set much higher than recommended by many recent studies.

The following references are offer.

Document ETSU-R-97 used as a standard for years in the United Kingdom specifies no greater than 35-40dB L_{A90} or background + 5dB for evening hours and 43dB L_{A90} or background + 5dB for nighttime. A new peer-reviewed report dated April 2010 by Dr. Hanning reviews a number of recent studies and standards. Some experts are now pointing out that ETSU-R-97 has proven inadequate and one suggestion is to lower the nighttime to 33-38dBA.

Stigwood in 2008 states that sound levels established for smaller turbines (less than 330 feet) are not accounting for noise phenomena of larger turbines which

cause excessive amplitude modulation, more low frequency noise and greater disturbance inside buildings.

New Zealand's new standard published March 2010 limits sound levels to the greater of 40dB $L_{A90(10min)}$ or 5dB above background with certain conditions requiring 35dB $L_{A90(10min)}$ or 5dB above background.

As referenced in another filing by our towns, the World Health Organization (WHO) has just published a very significant report entitled "Night Noise Guidelines for Europe". WHO indicated that now governments have justifications to regulate noise exposure during nighttime. The report does not address the specific sound phenomena of wind turbines so Wisconsin needs to do those types of studies. WHO sets the limit for annual average nighttime exposure to not exceed 40dB outside at a residence.

Experts, Thorne and van den Berg (2010), wrote, "We believe annoyance and loss of amenity will be protected when the wind turbine noise limit would be 30dBA L_{95} in conditions of low wind speed at the dwellings and modulation restricted to 3dB.

Dr. Hanning concludes that to protect receptors from annoyance and sleep disturbance, a level of 35dBA is appropriate with the absence of excessive modulation.

2. Based on evolving evidence and the gap between the PSCW's draft rules and updated standards in other jurisdictions with more wind turbine history, scientific field studies on human effects in Wisconsin's existing wind complexes are essential before setting standards. If not done now, the PSCW must error on the safe side to not put people at risk.
3. Sound level limits are needed to protect participating residents as well as non-participating residents. Higher limits for participating residents will set the stage for even more difficulty for those homeowners to sell or even rent their properties and potentially lead to rural blight.
4. Standards need to address low frequency noise and infrasound which are beginning to be better understood and appear to have significant roles in sleep disturbance and negative health impacts. These sound types appear to be even more of an issue in stable air conditions.

A new peer-reviewed study by Cochlear Fluids Research Laboratory at Washington University in St. Louis was announced on June 9, 2010 and will be available soon. The authors indicate that infrasounds which are not audible cause physiological effects on humans. They point out that the A-weighting measurements of wind turbine noise underestimate the influence of this noise on the inner ear. They stress their study does not conclude that infrasound causes people's symptoms but they call for scientific studies because of the likelihood of a causal effect.

5. In January 2010, the UK National Health Services, the world's largest publicly funded health service, stresses the urgent need for studies on wind turbine noise effects which use control groups. They were reacting to a joint report by the American and Canadian Wind Energy Associations and were concerned about the report's deficiencies.

In 2007, a report came out of the New University of Lisbon and the Center for Human Performance which stated, "These results irrefutably demonstrate that wind turbines in the proximity of residential areas produce acoustical environments what can lead to the development of vibro-acoustic disease (VAD) in nearby home dwellers". VAD can be a disabling disease.

6. Multiple wind turbines can synchronize sound waves and create stronger impulses to rattle windows and metal sheds. High levels of infrasound can also cause this. Sound levels of 60dBA at frequencies below 10 HZ have been measured at distances of ½ mile and greater. It appears that modeling tools are not predicting such accurately.
7. It is not known by the towns whether any D/O of an existing wind turbine complex in Wisconsin has done post-construction verification of their sound level models beyond just doing spot comparisons at locations where they have resident complaints. Recent studies suggest some modeling has proven to grossly underestimate sound levels. Again, a need to take the time to conduct field studies is required for credible decision-making for siting standards.
8. Properly set standards for health and safety should not be able to be waived. There may be minors and other occupants in the affected residence who need protection. Evidence shows different people often vary in their sensitivity to the health issues from noise. Also, a layperson is usually not capable to waive a safety standard for future occupants.

.15 Shadow Flicker

1. Landowners don't want any shadow flicker on non-participating residences. Some object to it on their yard because of the amount of time they spend outside.
2. Using existing residences as impact targets for shadow flicker modeling potentially could create large "no-build/no-sell" zones on non-participating parcels.
3. Mitigation after the fact is a necessary provision but still is not a satisfactory solution. Mitigation by providing blinds or planting trees to block the view are not considered satisfactory by those affected. Again, D/O's must be required to field test their models now in existing wind turbine complexes and make the appropriate corrections to the models if they have not done so.

.16 Signal Interference

1. Over-the-air internet services should be included in the siting rules. Such commercial systems using unlicensed (but legal) radio spectrum are in service today.
2. Requirements to mitigate interference are not adequate especially in these days of digital transmissions. The requirement must be to eliminate interference.
3. The towns' farmers want to know what consideration has been given to whether wind turbines will impact global positioning systems used for different farm operations.

.17 Stray Voltage

1. The requirement to “work to rectify” opens the door for dragging out the solving of any problems indefinitely. Language needs to require a timely solution.
2. More technical requirements should be included as a minimum such as filter devices to prevent existing harmonics on the electric distribution or transmission system from transferring to the wind turbines’ cable connector installations. Bare neutrals should not be allowed as part of these cable connector systems.
3. If it is necessary to involve the electric distribution utility, the D/O should reimburse the utility for their time and expenses. Utility ratepayers should not have to pay to accommodate wind developers anymore than they do.

.18 Construction and Operation

1. Under paragraph (3), the turbine foundation design shall be reviewed by a licensed Professional Engineer with certified soil testing results to verify adequacy. This has been an issue with inexperienced or small developers who thought it was adequate to use a “typical foundation” picture in a manufacturer’s marketing brochure.
2. In certain geological areas, consideration and evaluation of risks to groundwater are essential. Not only the foundations but, more importantly, the cable connector trenches can create pathways for contamination from farm operations. Some sites will not be appropriate for turbine structures or connector trenches. The rules must support professional expert decision-making in these cases where risks to health and safety are best known locally. Attempts to write rules for general situations will ignore serious threats.
3. In sensitive areas, such as southern Brown County, trenches will likely intercept karsts, sinkholes and shallow bedrock which will create new no-spreading zones for manure, a process essential for farmers. If D/O’s run trenches across farm fields, the whole trench line could create new pathways to groundwater. There is some discussion that it may be necessary to prohibit manure spreading within 200 feet of cable trenches in geologically sensitive areas which could essentially take much farm land out of production. The state rules must accommodate such complex situations and allow requirements specified by experts. A requirement to route cables along tree lines or fence lines of participating landowners should be permitted. But this would not be a solution if the tree lines or fence lines are adjacent to non-participating properties.
4. Similarly, certain geological situations require knowing the depth and nature of the soil under the bottom of the trench. The rules must allow for requiring soil borings in trench lines as appropriate.
5. The DNR has proposed new restrictions for towns and landowners to reduce non-point pollution and storm water control. The wind siting rules need to allow for protections for methods used to satisfy the DNR requirements. Sometimes, this may be as simple as restoring road ditches and their grasses. Related to this, the rules need to specify procedures for locating and repairing drain tile systems in use by many farmers. D/O’s should be required to pay for any damage to the tile system whenever discovered.

6. If not done, there should be consideration for standards when a turbine foundation will be near or in bedrock. It is anecdotal but it has been indicated that a number of feet of backfill, i.e. 8-11 feet, should separate the foundation from the bedrock to prevent vibrations from transmitting through the bedrock to nearby structures.
7. A minimum amount of general liability insurance should be specified since usually the D/O uses a limited liability company to limit assets at risk.
8. Under paragraph (5), there should be a requirement for the D/O to send an acknowledgement of receipt of a complaint to the complainant.

III. Political Subdivision Procedure

.32 Political Subdivision Review of a Wind Energy System

1. Towns should be able to require compliance to their existing ordinance procedures for construction projects such as road damage bonds, building permits, etc.
2. A cap on town fees or reimbursements could potentially result in an inadequate review process. As drafted, the fee would be only \$50 on a \$50,000 project and \$3,000 on a \$10,000,000 project.
3. It should be clear that a town may require the D/O to pay for an independent third-party engineering/environmental inspector to be on-site for any excavation, blasting, backfilling and sensitive construction procedures. The inspector would report to the town, county, landowners and, if desired, the DNR and PSCW. This is especially necessary in certain geological areas.

.33 Political Subdivision Provisions

1. A question arises with the provision whereby a town may require the D/O to offer agreements to nonparticipating residence owners. If compensation is offered and the residence owners then become participating owners because of the receipt of compensation, would then the reduced setbacks apply to those residences if the final rules still had different setbacks for participating residences and nonparticipating residences?
2. It should be made clear that requiring an escrow in an interest-bearing account is considered to be reasonable for proof of financial responsibility.
3. Post-construction filing requirements in (3) should include maps showing the underground facilities, not just the turbine structures.
4. A political subdivision should be allowed to require the D/O to use an “on-demand” lighting system approved by the Federal Aviation Administration. These new systems eliminate light pollution from aircraft warning lights by turning the lights on only when an aircraft is detected heading towards the wind turbine installations.

IV. Commission Procedure

.40 Detailed Application Requirements

1. There appears to be a typo where “s. PSC 128.30(1)(j)” is referenced in the first paragraph.

.41 Commission Review

1. Under (8), the political subdivision is required to enter a decision within 20 business days. That may be difficult with town notice and quorum requirements and may require a special meeting. Thirty business days would be reasonable.

Submitted for the towns by Glen R. Schwalbach, P.E.