

**BEFORE
THE OHIO POWER SITING BOARD**

IN THE MATTER OF THE OHIO POWER)	
SITING BOARD'S CONSIDERATION OF)	
OHIO ADMINISTRATIVE CODE)	CASE NO. 19-778-GE-BRO
CHAPTER 4906-4)	

INITIAL COMMENTS SUBMITTED
BY JULIA F. JOHNSON

Thank you for the opportunity to provide comment on the Proposed Rules to establish a consistent and comprehensive protocol for reporting incidents involving wind farm facilities. The rules proposed for comment are welcome additions to the regulatory oversight of industrial wind facilities but further consideration should be given to areas where the rules could be strengthened to give area residents and local governments greater confidence in their effectiveness.

4906-4-10 Notice and reports of incidents involving wind farm facilities,

All Certificates of Approval should articulate the protocol for providing telephone notice and written of incidents and that protocol should be made a Condition of the Certificate.

During a hearing before the Senate Energy and Public Utilities Committee on June 19, 2019, Van Wert County resident Brenda DeLong testified concerning an incident at Blue Creek. Ms. DeLong resides within the footprint of the wind facility and was an eyewitness to blade failure. The area was under a tornado watch on Memorial Day and local law enforcement was called upon to serve as spotters. Residents had understood that under such conditions, turbines would be automatically shut off by sensors in the turbines or manually from a remote operations center. Notwithstanding, during the tornado watch, the turbines continued to rotate.

The protocol for reporting incidents should be expanded to include protocols to prevent blade shear during tornadic events and watches. Such protocol could require that all turbines in an affected area be stopped until the weather condition is cancelled.

In the summer of 2018, a turbine near the DeLong home was struck by lightning between 9:00 and 10:00 a.m. Damage was caused to one of the blades. The turbine continued to rotate until fragments began being thrown from the damaged blade between 2:00 and 3:00 p.m. This would indicate failure of both systems designed to shut the turbine down. A report of investigation may or may not have been subsequently made to the OPSB but a reason why neither safety systems functioned would be important to include in a report not simply that the cause of the incident was a lightning strike.

The Blue Creek damaged turbine spun for 4 hours before it was shut down. Ms. DeLong testified that local emergency personnel and law enforcement were notified by local citizens and were informed they had no authority in the matter and offered no assistance. During this time, the blade began to come apart. Area citizens responded by photographing the area and the debris field with the use of a drone. The Rules should provide a means by which local eyewitness accounts can be considered in the notice provisions with notice provided to an independent third party such as law enforcement and not the developer. Eyewitness

accounts, in the case of Blue Creek, were the only means by which timely evidence was collected and documented. The rules should articulate a process by which this important information can be collected, made a part of the record and archived.

It would also be valuable for OPSB Staff to publicize the date, time and place of their on-site inspection for the purpose of accommodating interviews with eyewitnesses. Leaseholders or persons who have signed easement agreements should not be prohibited by the developer from participating in eyewitness interviews with OPSB staff. This additional input would help OPSB staff in evaluating the developer/operator written report. In addition, public comment on written incident reports filed with the OPSB should be invited and taken into consideration.

While telephone notice at the time of an incident is important, written reports are likewise important to the community. In addition to the required components of the written reports set forth in the proposed rule, a description of the blade fragments should be included. To the extent possible, all fragments should be collected and their weight and position in the debris field should be documented. There should be no arbitrary limit on the size of fragments collected such as was done at Timber Road in 2012 where nothing weighing less than 6.6 lbs was recovered or reported.

CONCLUSION

The proposed rules should be adopted but should be strengthened by the addition of avenues for citizen participation, the public availability of Incident Reports and protocols which are made a condition of Certificates of Approval. In addition, the Rule should incorporate, where appropriate, a protocol for the prevention of blade shear during extreme weather events such as a tornado watch.

Submitted by:

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From: [Cheryl Mira](#)
To: [Puco Docketing](#)
Subject: 19-778-GE-BRO: Wind Turbine: Comments on Wind Setback & Rules
Date: Thursday, July 11, 2019 5:02:12 PM
Attachments: [ME Wind Ordinance Setback Debate 01 23 12.pdf](#)

Dear OPSB Board,

First, I am **opposed to installment** of any industrial-size wind turbines going into this area because we are a high-density rural population sitting on the state's biggest and fragile karst bedrock in the Erie, Huron, Seneca and Sandusky counties.

Second, Communication. The State of Ohio and/or OPSB has created this chaos between wind developers, leaseholders and non-participating residents by keeping the placement and announcement of these projects top secret for twelve years. Any project where the entire community cannot come together and be informed together is all **wrong**. Then they wonder why the non-participating residents are concerned/frustrated/angry about what other unknown obstacles the OPSB and the wind developers are still hiding from us – aka, transmission towers.

Frustrated because the general public is now aware of what is going on, wind lobbyists and Ohio's Chamber of Commerce publicly stated that the opponents of wind turbines are "poisonous pills" trying to stop business development by not agreeing with the wind lobbyists and developers who would prefer to place our personal health, wildlife and environment in danger. Something is wrong! The general public is saying "NO" to using both Federal and Ohio subsidies (our tax dollars) to create a small ROI. State of Ohio and OPSB need to demand open communication with the public from the beginning of each project through every phase. **Adopt the Reineke Referendum as part of HB6 or as a stand- alone initiative that allows the general public's opinion to be heard.**

Third, the OPSB was created to be the regulatory entity governing the wind and solar projects, not the mouth piece of the Farm Bureau and wind lobbyists. Please hold the wind companies accountable and protect your citizens. Ask yourself, would you live next to a 650+ (63 story) industrial-size wind turbine that makes noise, shadow flicker, impedes life flights paths, impact your health with all of the infra sounds emitting , weakens your heart, sleep deprived, and noise. No, you probably would not because it's going to negatively impact your home value. Be nice to your neighbors. Please hold the wind companies to local zoning regulations just as any homeowner in the county is required.

Fourth, regulations:

- **Place a truly independent on-site project manager to hold the installment of these turbines to the developer's specifications.** For example, for a 650+ foot turbine (or a 63-story small moving factory) that is approximately 3 to 4 tons above the ground cannot be supported by pouring 10 feet of cement/rebar into the ground. These are the wind developer's specifications for turbine foundation given directly to me per the young

engineer at the VFW Hall in Bellevue OH. Funny, I saw pictures of 450 foot turbines that had 30 feet deep and 80 feet wide of cement/rebar foundations. I don't believe Apex or anybody else can pour a 10 foot deep foundation that can support a 3 to 4 ton turbine. It was just another big wind story that needed to be stated to check the box. So the minute that they dig deeper than the 10 feet, the on-site manager can stop them. The Erie Huron Counties' karst cannot support the weight of 71 turbines.

- **Incorporate actual reporting requirements** on all aspects of the project installment, operating performance, maintenance issues, and immediate reporting/elevation of any turbine that is damaged (flying pieces, fire, etc.). Publish these reports to both the OPSB and each county's Township, who can summarize and communicate to the residents. Reporting any "turbine incident" within 30 days is too long. They need a well-documented reporting procedure that acknowledges the incident happened, such as the FAA plane down incident of reporting and notifying independent investigator to come in immediately.
- **State all measurements in both metrics and feet**
- **Increase Setback requirements; not shorten!**
 - In general, the setback requirements need to clearly be established to protect both human health and wildlife. See the attached article titled ***"Wind Ordinance Debate: The 1,000 foot Set-Back Standard (Are environmentalist underregulating themselves?)"*** that talks about the "buffer zone"; setback as four times the turbine total height (page 1) and the Ohio "Public" Utility Siting Board reduced the setback from the standard 1,000 to 750 feet because the Farm Bureau was sitting in the first row (see pages 13 -15).
 - The minimum setback requirement needs to be four times (4x) the height of the total turbine , i.e. 650 feet turbine x 4 = 2, 640 feet from a non-participating resident unless the current living residents agree to closer placement.
 - Schools, historical landmarks and churches should have setback requirements of at least two miles; ideally five miles.
 - Any turbine being placed closed to any major road (highly traveled road such as State Route 4) should be at the minimum setback requirements plus a buffer of 200 feet, aka the General Electric turbines had a manufacturer safety specification of 1600 feet that turbine would have to sit back 1800 feet.
- **Compensating abutters for property-value losses need to be adopted just as they have done in Denmark.** (see same article as above; page 1). Establish a compensation plan that acknowledges that a non-participating resident would receive some monetary amount based upon value of existing structure, distance from turbine and how many turbines fall within the one mile, two mile through ten mile diameter.

Thank You for reading my email,

Cheryl Mira
11110 State Route 269
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C A T E G O R I E S

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A R C H I V E S ([HTTP://WWW.MASTERRESOURCE.ORG/2014/01/](http://www.masterresource.org/2014/01/))

Wind Ordinance Debate: The 1,000-foot Set-Back Standard (Are environmentalists underregulating themselves?)

By Tony Fleming -- January 23, 2012

***Editor Note:** Environmentalists like regulation except when it comes to 'green' energy. This post asks: what is the growing acceptance of the thousand-foot voluntary ordinance based on?*

In Indiana and elsewhere, many counties are falling all over themselves to adopt the so-called “1,000-foot voluntary industry setback” between large wind turbines and residences.¹ In some states, it has become part of “model” wind ordinances created by wind developers and energy agencies.

This buffer zone (who said these structures were *environmental*?) is starkly smaller than those mandated in several countries widely touted by industry proponents as wind “success” stories. In **Denmark**, for example, the setback is four times total turbine height (or about 2,000 feet for a large turbine), along with a built-in mechanism for compensating abutters for property-value losses.

In **Holland**, it is 1 km (3,280 ft). **Germany’s** noise-based setback ranges up to a full mile (1.6 km).

Dozens of jurisdictions scattered around the U.S. and Canada have also adopted larger setbacks, often in the ½- to 2-mile range from abutting residences. All of these larger setbacks are in line with what is recommended by many independent scientific bodies, medical authorities, and acoustical engineers.²

With so many localities adopting the much smaller 1,000-foot distance as a *de facto* setback, however—seemingly with little public discussion—a reasonable person would expect to find reams of scientific and legal information to back it up.

Conflicting Evidence

But despite a concerted and sustained research effort by myself and others, finding a straightforward explanation published by any government agency (or the wind industry) documenting the origin and technical rationale for such a small setback has proven *extraordinarily elusive*.

Instead, what one finds is a remarkably opaque policy-making process wherein any scientific studies reviewed or substantive deliberations that may have occurred are not readily evident from the sparse number of documents publicly available. This post is a progress report, summarizing my attempts to uncover the origin and basis of this setback.

Midwestern States

The first place I turned for an explanation is the Indiana Office of Energy Development (OED), the clearinghouse for state energy policy. The OED wind energy website contained no documents (<http://www.in.gov/oed/2615.htm>) of the state's own making even mentioning things like "model wind ordinance" or "setbacks," but it did turn up copies of wind ordinances from fifteen Indiana counties.³

Nearly every one of these counties has adopted a 1,000-foot setback from occupied structures, but none provides any discussion, or even a hint of accompanying regulatory language, of why this distance was chosen. A further search turned up several in-state news reports that mentioned the term "voluntary industry setback," but they offered nothing about its origin.

Visits to the websites of energy-related agencies in other Midwestern states also shed no light on the origin of "1,000 feet," though it did appear in both the 2003 and 2007 versions of the **Wisconsin** Draft Model Wind Ordinance (<http://betterplan.squarespace.com/wind-siting-ordinances/>),⁴ which was subsequently taken down from the Wisconsin Public Service Commission website.

One 2009 news article from Wisconsin offered some interesting insight, however: when questioned by wind farm neighbors affected by noise and shadow flicker about the 1,000-foot setback in use at that time, a spokeswoman from the Wisconsin Public Service Commission was quoted

(<http://betterplan.squarespace.com/todays-special/2009/10/13/101409-almost-two-years-later-wisconsin-wind-farm-residents.html>) as saying: “We didn’t come up with that number. It is not a PSC requirement.”

That left local residents wondering, “if the PSC didn’t come up with it, who did? And who decided it was safe?”

California

Since my efforts to find a state agency in the Midwest who could speak to the source of the 1,000-foot setback were not bearing fruit, I next looked to the state that is widely viewed as being the epicenter of all things renewable—**California**—which has had some three decades of experience with large wind turbines.

There, the wind industry’s preferred setback had for years been 1.1 to 1.5 times the height of the turbine including the blade, measured to the nearest property line and based on the fall zone of the tower.⁵ Variations on this theme persisted over the years, with setbacks ranging up to three-to-four times turbine height.

A study (<http://www.energy.ca.gov/2005publications/CEC-500-2005-184/CEC-500-2005-184.PDF>) published in 2006 for the California Energy Commission summarized the history of setback requirements in the state and attempted to quantify setback distances for debris throw (that is, the radius measured from the turbine base which could potentially be impacted by fragments of blades and other debris resulting from the breakup of a turbine in high winds).

This study looked solely at public safety resulting from debris throw, and did not attempt to examine noise or other setback issues. The authors came up with a setback distance somewhat less than 1,000 feet, while acknowledging that the result is contingent upon the assumptions made.

Using a slightly different set of assumptions, for example, physicist Terry Matilsky of Rutgers University presents (<http://xray.rutgers.edu/~matilsky/windmills/throw.html>) a convincing mechanical analysis indicating that a 1,700-foot setback is needed to protect abutters from both debris and ice throw, a number mirrored by real-world debris-throw experience.

Interestingly, the California study reported (p. 13) that, of the several counties which had existing fixed setbacks of 1,000 feet or less, none set forth any technical explanation for the setbacks. The report also observed that the authors of these setbacks were, in most cases, “wind industry people”

or “ad-hoc public/industry groups” and generally noted the difficulty of both obtaining published rationales for the setbacks, and of relating the statutory setbacks to known or calculated debris-throw distances for the specific turbine models involved.

Like its Midwestern counterparts, the information from the State of California ultimately didn’t answer the question at hand, nor was any official government entity evidently willing to publicly justify the “1,000 foot setback” based on empirical evidence—an unsatisfactory result from the perspective of science, which deals in hard numbers and measurable, repeatable outcomes, and certainly not commensurate with the apparent zeal with which this and similarly small setback distances have been adopted by so many local and state governments.

Further, the anecdotal evidence from both Wisconsin (“we didn’t come up with that number”) and California (“wind industry people”) pointed towards the wind industry as the likely source. And who better to speak to this question than the manufacturers of large wind turbines! Yet, what I found there scarcely brought clarity, and left me even more skeptical.

Wind Company Recommendations

Vestas, for example, the Danish company and world leader in wind turbine manufacturing, had this to say to its own staff in the 2007 Mechanical Operating and Maintenance Manual (<http://www.windaction.org/documents/16496>) for its V90 turbine: “Do not stay within a radius of 400 meters (1,300 feet) from the turbine unless it is necessary.”

It also went on to say “Make sure that children do not stay by or play near the turbine” (contrary to the setbacks in question, which may place households with children well within that range).

General Electric, the largest domestic turbine manufacturer, has refused to site towers that do not meet their own minimum published standards (<http://www.windaction.org/documents/13913>) (1.5 times hub height + rotor diameter) for ice throw, or about 1,300 feet for a 350-foot turbine with a 300-foot rotor.

Finally, the large German turbine manufacturer **RETEXO** recommends (<http://www.retexo.de/english/wind/seite5a.htm>) setbacks of 2 km (6,562 feet) from its turbine hub, citing both safety and noise considerations.

Wind Trade Group Recommendations

Industry trade groups mostly lack such specificity when it comes to setbacks. the **National Wind Coordinating Committee** 's 1998 Permitting and Siting Guide,⁶ for example, suggests that setbacks of 1,000 feet to one-half mile may be needed for noise mitigation; however, the 2002 version of the guide, as well as several newer NWCC publications on siting issues, are silent on setback distances, nor do they discuss the underlying technical basis for specific setback distances, instead relying on malleable terms like "appropriate setbacks" without defining what they are.

The current siting handbook (<http://www.awea.org/sitinghandbook/>) published by the **American Wind Energy Association** (AWEA), the principal U.S. industry trade group and lobbying organization, provides no specific guidance on setbacks, only that developers need to ascertain if local setback ordinances exist.

Wind Powering America's "Wind Energy Guide for County Commissioners (<http://www.nrel.gov/wind/pdfs/40403.pdf>)" also does not mention any specific setback distance. Statements previously attributed to the AWEA website,⁷ have suggested setbacks of 1,600 to 2,467 feet (mainly related to noise), a range that implicitly suggests that local considerations should be taken into account and that one size setback does not fit all situations.

Visits to the websites of several domestic wind developers also failed to find any mention of a "voluntary 1,000 foot setback." More typical are misleading statements like "An operating wind farm at a distance of 1,000 ft. is no noisier than a kitchen refrigerator" and "Regulatory agencies agree that 50 decibels at approximately 1,000 ft. present no sound issues for residents (<http://www.windcapitalgroup.com/WindEnergy/FrequentlyAskedQuestions.aspx>)."⁸ Based on my research, it seems rather disingenuous to say regulatory agencies "agree" when they are essentially silent on the merits of the issue.

My inability to find a clear, scientific explanation for the "1000-foot setback" at any of the above sources finally led me to start looking at local wind ordinances from around the country and world, with the idea that someone, somewhere had already done the work of ferreting out the origins of "1,000 feet." But like the Indiana county ordinances, most local ordinances are just that, an ordinance, without any underlying technical background to accompany it, or at least not that is posted on a readily available webpage. And most county officials in Indiana typically will tell you that they simply followed another county's ordinance with little modification.

But a few localities did compile background information in support of their ordinances, and conveniently made it available in the form of online reports and outlines. Of these, the 2008 Setback Recommendations Report for the Town of Union⁹ (Rock County, Wisconsin) is one of the most comprehensive in regards to presenting a wide range of setback distances from around the world, and discussing their underlying technical basis (see pp. 97-105).

In this process, the town's Large Wind Turbine Citizen's Committee made a concerted effort to determine the basis for the 1000-foot setback used in Wisconsin's 2003 and 2007 model wind ordinances, culminating in the filing of two freedom of information requests to the state agencies that created the ordinance (see pp. 125-199).

No direct answer was given by the agency to support the technical basis of the setback, only incomplete minutes of meetings from 1995-2001, from which it can be inferred that lawyers representing Florida Power & Light (aka, "Nextera," a major wind developer in Wisconsin and elsewhere, including California, around the time all these "1,000-foot" setback ordinances were developed) may have written that part of the Wisconsin model ordinance.

No direct answer was given by the responding agency to support the technical basis of the setback, only what appear to be incomplete minutes¹⁰ of meetings from 1995-2001, from which it can be inferred that lawyers representing utility companies with pending wind projects were actively involved in the process and may have written that part of the Wisconsin model ordinance. This inference was confirmed in a letter (<http://betterplan.squarespace.com/todays-special/2009/3/12/31209-senator-plales-goliath-turbine-siting-reform-bill-and.html>) from the Chair of the Town of Union Planning and Zoning Committee, describing this process to his state senator, and from which the following is excerpted:

The Committee sought to learn the basis for the PSC recommendation and required a Freedom of Information request to learn that there was no rationale for the 1,000 foot setback—that the distance had been provided by a Florida utility.

Some Observations ... and Many Unanswered Questions

The results of my efforts to date can thus be summarized by the following observations.

First, it is extremely difficult to find any publicly available information from state agencies or the wind energy industry that directly addresses the scientific basis for adopting "1000 feet" or similarly small distances as the de facto setback between wind turbines and residences (or any other kind of occupied premise, including public open space).

The vast majority of county ordinances posted on the Internet, and particularly those that mandate such small setbacks, lack any published rationale explaining why a particular setback was established. This seems to be a major regulatory disconnect in view of the apparent zeal with which a considerable number of counties, and some state model wind ordinances, are adopting a 1,000-foot setback.

Second, the relatively frequent use of a 1,000-foot setback appears to result not from a confluence of independent studies or literature reviews, but rather from the common (and readily admitted) practice of one jurisdiction simply “cloning” another’s ordinance with little deliberation or modification. Indeed, other than the California debris-throw study, I found no scientific studies, or recommendations from independent authorities or wind turbine manufacturers, that supported a setback as small as 1,000 feet—and the California study pointed out that 1,000-foot setbacks were in use years before the study itself was commissioned, and could find no technical basis for them.

Simply adopting a setback ordinance because someone else did too does not constitute a scientific basis for that setback, but it does tend to result in a frequent repetition of that distance, both among zoning officials and the media, leading to a perception that it is some kind of “standard” based on empirical evidence.

Third, if there is a consensus among independent authorities, it is towards much greater setbacks, measured in miles or kilometers, not feet. The same pattern seems to be the case with jurisdictions that have taken the time to research the topic and reach their own independent conclusions.

Setback distances of 2,500 feet or more are increasingly common among such jurisdictions, with some recently adopted ordinances specifying as much as 2 km (3 Australian provinces) to 2 miles (an Oregon County). Thus, there is quite a sharp contrast between the “voluntary 1000-foot industry setback” and the kinds of distances these other entities are adopting or recommending.

These contradictions present a number of troubling questions.

Does the 1,000-foot setback have any basis in science? Or is it simply an artifact of wind industry expedience? The anecdotal evidence certainly suggests the latter is the case, as there is little doubt from either the Wisconsin or California experiences that industry representatives and lobbyists, including those with projects in the pipeline, played the major role in formulating those ordinances.

The quote from the Town of Union letter indicates that 1000 feet was simply pulled out of a hat. And, if 1,000 feet does have a justifiable basis in science and legal theory, why aren't government agencies and wind proponents extolling it? Where are the studies and the independent peer review process showing that a setback of 1,000 feet adequately removes the human health and safety issues associated with ice and debris throw, noise, shadow flicker, and other well documented side effects of large wind turbines?

The thousands of reports of such issues from around the world from people who live in such proximity to wind plants can't all be psychosomatic machinations of people ideologically opposed to wind installations: more than a few are from people who are hosting turbines and receiving significant lease payments. Perhaps most importantly, why are the small setbacks promoted by many U.S. wind developers so at odds with the much larger setbacks recommended by various independent bodies and experts who have no stake in this debate?

Conclusion: Are Renewable Energy Advocates Underregulating Themselves?

I can think of one explanation: the production tax credit, the primary Federal incentive to the wind industry, which has existed for decades, and whose value as a tax-avoidance vehicle is exquisitely dependent on producing the maximum number of kWh from any given wind project. It is not hard to imagine the structure of this tax-avoidance vehicle creating an intense need in this heavily subsidy-dependent industry to maximize the density of turbines in a given wind project, a goal that is greatly impeded by more protective setback regulations.

And, it is clearly much easier to achieve this goal when the developer can begin the local siting discussion with a lax setback requirement as the baseline. Along with terms like "voluntary industry setback," this helps create the illusion for local officials and the public that 1,000 feet is an authoritative, widely accepted standard that is protective of the community, when in fact, there is little hard evidence standing behind it.

ENDNOTES

1. Although it is the most common distance in Indiana, 1,000 feet is just one of several arbitrary and unreasonably low setback distances in use in the Midwest, such as Wisconsin's current 1,250 feet and Ohio's vanishingly small 750 feet. "Voluntary industry setback" or similar descriptors, typically offered up by wind developers and compliant extension agents in an attempt to pacify the natives, appear regularly in various media accounts and pro-wind presentations. Here is one of

many examples: "Let Science be the Guide for Whitley Wind-farm Law (http://nl.newsbank.com/nl-search/we/Archives?p_action=list&p_topdoc=11)," *The Fort Wayne Journal Gazette*, Jan. 26, 2011, page 6A.

2. The National Research Council (1/2 mile or more (<http://dels.nas.edu/Report/Environmental-Impacts-Wind-Energy-Projects/11935>)), French National Academy of Medicine (1.5 km (<http://www.academie-medecine.fr/detailPublication.cfm?idRub=26&idLigne=294>)), and the UK Noise Association (1 mile (<http://www.countryguardian.net/Location.pdf>)) are just a small sampling of many such recommendations.

3. Wind ordinances from 15 Indiana counties can be found here. They are virtual clones of one another, suggesting that little or no independent research or critical thinking was involved in their creation.

4. None of these early setbacks take noise or ice/debris throw into account. Most of the early California wind farms were constructed in remote, largely uninhabited areas like Altamont Pass, and the main concern with setbacks was preventing turbines from falling on or interfering with adjacent turbines via the so-called "wake effect"⁶

5. Wind Turbine Breaks Up in Storm, Throws Debris 500 meters (1,650 feet)] <http://www.wind-watch.org/video-turbinecollapses.php> (<http://www.wind-watch.org/video-turbinecollapses.php>)

6. The 1998 guide was superceded by the 2002 edition and is no longer available at the NWCC website. The list of currently available NWCC siting documents is available here (<http://www.nationalwind.org/publications/siting.aspx?>).

7. The refrigerator analogy is an oft-cited claim by wind developers¹⁷, but like "1,000 feet", pinning down its origin and scientific basis is an extremely slippery business. Try Googling the statement. Or save yourself a lot of time and see what someone else discovered who did just that, here (<http://betterplan.squarespace.com/todays-special/2008/5/30/53008-who-said-an-industrial-wind-turbine-is-no-louder-than.html>). References to this or similar statements (with widely varying distances) can be found at literally hundreds of Internet sites, one of the most instructive being this video (http://www.youtube.com/watch?v=KWyNfN9HJZk&feature=player_embedded).

8. *"Wind Capital Group claims its turbines don't make any more noise than a home refrigerator, but KQ2 returned three different times over the span of a week, and we heard a much different story. The sound was the roar of the turbines filling the air, making Charlie's property sound more like an airport than a horse farm".*

– Channel KQ2 in St. Joe, Missouri reports on a wind farm operating adjacent to Charlie Porter’s horse farm, February 17, 2009 <http://stjoechannel.com/index.php> (<http://stjoechannel.com/index.php>).

9. The Town of Union’s final wind siting committee report and large wind ordinance can both be downloaded here (<http://betterplan.squarespace.com/wind-siting-ordinances/>).

10. In addition to demonstrating the ubiquitous presence of FP&L attorneys as participants in the Wisconsin Wind Power Siting Collaborative—the committee charged with developing the model ordinance and its attendant guidelines—a careful reading of the meeting minutes reveals a number of other irregularities and discrepancies. Among them are an overwhelmingly industry-dominated composition (at times there were no representatives outside of industry, utilities, and pro-wind agencies), failure to incorporate substantive changes into drafts, at least one discussion of a “FP&L project” outside of official meeting minutes, and a strong tendency to quickly squelch counties that were going off the pro-wind reservation while the model ordinance was being developed.

Tony Fleming is a professional geologist from Indiana and long-time student of the energy industry. His primary areas of professional interest include glacial geology, geophysics, ground water, and the geo-ecology of wetlands and natural areas. He received graduate degrees in Geology & Geophysics and in Water Resources Management from the University of Wisconsin, and a BS in Geology from Beloit College.

18 Comments

Mike Giberson (<http://www.knowledgeproblem.com>) • January 23, 2012 at 8:35 am
(<https://www.masterresource.org/wind-offset-distance/wind-ordinance-offset-debate/#comments>)

It is quite useful to demonstrate the somewhat arbitrary nature of the 1000-foot setback, but I disagree with the implied view of science in public policy. Scientific analysis can’t tell us what the public policy answers should be, only what the relevant facts and trade-offs are.

Practically speaking, however, if 1000 feet was inadequate, wouldn’t there be more news reports of injury or property destruction from ice throws or related hazards?

Reply

rbradley () • January 23, 2012 at 9:28 am

The subjectivity of the 'right' environmental setbacks pits environmentalist against environmentalist. Should the beloved 'precautionary principle' be applied in this case to reject the thousand-foot rule as insufficient?

Environmentalists, please stand up.

Another question is whether a government-created situation—wind park development—allows free-market advocates open-season to use the delay-and-destruct tactics that anti-market environmentalists use elsewhere.

Reply

Jon Boone () • January 23, 2012 at 10:13 am

This is a good cursory review of the situation regarding wind noise. As one of the first to document this phenomenon in the US (see http://www.stopillwind.org/lowerlevel.php?content=Downloads_Video (http://www.stopillwind.org/lowerlevel.php?content=Downloads_Video)), at a time when the 1000 foot setback was not even considered) I realized that wind turbine noise had many faces. The audible noise is heard differentially and depends upon many factors (see:

http://www.stopillwind.org/lowerlevel.php?content=topten_8

(http://www.stopillwind.org/lowerlevel.php?content=topten_8), which was excerpted from my PSC testimony). However, for some people, the real problem is with low frequency noise, for those sensitive to this may encounter significant health consequences resulting from recurring headaches and lack of sleep. As is the case for wind-induced bird and bat mortality, the hypocrisy shown by federal and state regulators in giving wind a pass on the noise its industry makes is palpable. And disgusting at so many levels of consideration, not least because wind LLCs whine that noise regulations inhibit their free marketing "rights."

All one has to do to see the lunacy of the situation is to substitute fossil fueled plants for wind—to see how quickly substantial noise setback regulations would be in force.

Reply

Tony Fleming () • January 23, 2012 at 4:03 pm

Mike, you raise a good point about the tension that frequently exists at the intersection of science and policy, a place where I have spent my fair share of time. I agree that science cannot (in most cases) “tell us” the policy answers, however, it certainly ought to inform them! Here, I amplify on Jon’s analogy that, if anecdotal reports were disclosing a collection of new impacts on residents living proximal to fossil fuel plants or some other politically unfavored activity, you can be sure that the relevant agencies would be on it with all sorts of studies and data collection.

It may be instructive to compare the current wind situation to the complex analyses and extraordinary amount of effort that have been put into assessing cancer risk from trace amounts of industrial chemicals in ground water, where even tenuous evidence of a few-in-a-million risk can trigger fairly strong regulation. Surely the incidence of issues that has emerged around at least some wind projects far exceeds that threshold. But unlike trichloroethylene, wind is “green”, so those incidences can’t be real.

As shown both in endnote 5 of my post and Matilsky’s paper, there is little doubt that ice- and debris throw can extend well beyond a 1,000-foot radius of a turbine. That we haven’t seen many reports of property damage and injury from such events probably reflects the relatively short historical record, as until recently, such facilities were mostly located far from inhabited areas. Turbine accidents also tend to be underreported. Lisa Linowes has a good rundown on these topics

(<http://www.windaction.org/faqs/33093> (<http://www.windaction.org/faqs/33093>)).

Rob, the precautionary principle is surely a subjective thing. It tends to be invoked in a scientific context when there is substantial uncertainty over the interpretation of data, or an absence of meaningful data. In the case of wind turbines, it is hard to argue that either of these is the case. There is nothing subjective about wind turbine noise to those who are sensitive to infrasound. What does seem to be the case is an absence of science bearing the imprimatur of those promoting wind, reflecting a longstanding unwillingness to acknowledge the reality of one’s own ears and eyes, as manifested through many videos like Jon’s. I believe this is a prime example what Jon has aptly called “cognitive dissonance”.

As one observer wryly commented, “science is the act of proving one’s own assumptions wrong”. That’s a tough act for anyone, but a trendy green industry and the agencies enabling it seem particularly impervious to such self inspection. Of course, we wouldn’t be having this discussion if our energy policies focused on capacity and reliability...

Reply

Jon Boone () • January 23, 2012 at 8:11 pm

Nice response. We might yet be having this discussion, Tony, even if our policy focused upon capacity and reliability, since electricity production of every stripe has its share of perceived nuisances. But at least we would then be involved in making meaningful trade-offs between functional production and the degree and extent to which any nuisances would be permitted in civil society. What is particularly galling about wind technology and the noise it makes is that the issue is so akin to how tall we should sanction ladders used by thieves as they commit second story burglaries.

Reply

julie johnson () • January 24, 2012 at 5:13 pm

In Ohio, the first wind developers established relationships with the Farm Bureau. For several years they traveled the state together under the radar screen. Whether it was the developer or the Farm Bureau, I do not know for certain but they had prepared a grid that showed how many turbines were possible in a township at 1,000 foot setbacks, at 1,500 feet; 2,000 feet and 2,500 feet. The reduction in potentially eligible sites from 1,000 to 1,500 feet was significant. The Farm Bureau went around to all the township trustees and county commissioners telling them that if setbacks were greater than 1,000 feet, wind development was not possible. When a group of citizens pushed back, the State pre-empted local control over siting while the Farm Bureau looked on grinning like the Cheshire Cat. They wanted to make sure their members could farm wind subsidies along with their beans and corn. The deal was struck in Governor Strickland's Office and they knew exactly what they were doing. That is how Ohio wound up with approximately 1,000 foot setbacks. I applaud the Ontario Federation of Agriculture on stepping forward to call the wind industry to account. It is way past time for the Farm Bureau to do likewise.

Reply

tfleming () • January 24, 2012 at 6:08 pm

Good catch, Julie. I clearly overlooked the role of the farm bureau in this travesty. In my experience, the farm bureau never met a subsidy they didn't like, no matter how bad the idea is for the greater community or the country. They have alot to account for in the ethanol boondoggle, so your story about the stealth wind campaign doesn't surprise me.

It is my understanding that when the unelected bureaucrats of the Ohio "Public" Utility Siting Board usurped wind project siting authority, they actually reduced the setback even further, to 750 feet, an absolutely indefensible number even smaller than the industry's "voluntary" 1000-foot setback. Any idea how that came about? And whether large turbines are being sited that close to homes and schools?

Reply

julie johnson () • January 24, 2012 at 9:46 pm

The Farm Bureau was instrumental in gaining pre-emption for siting. Everpower was the first developer to surface and they hired two Farm Bureau employees. When we challenged their application, the Farm Bureau filed as an intervener and testified against us. When we appealed the Ohio Power Siting Board's certification of the project to the Ohio Supreme Court, the Farm Bureau sat at the front table in the court with the OPSB's atty. They may have filed a brief in support of the OPSB. They need to be held to account. The minimum standard was a closed door deal done without public input. When it was over, a Senator who participated in the talks wrote to the OPSB about the minimums which are based on a formula. The memo is as follows:

"I am enclosing a number of documents for your consideration in the Power Siting Board rules process established by the wind siting amendment. I continue to get emails and calls from disgruntled citizens in Logan and Champaign Counties, who feel the minimum setback established in the statutory provision is not sufficient. Of course, I was somewhat between a rock and a hard place, as Jen [Gov. Strickland aide] did not wish to be any more expansive than what the legislation provides. I keep telling these folks that the legislation specifically empowers the Power Siting Board to make reasonable additional setback requirements.

We are obviously placing a lot of trust in the executive branch and the Power Siting Board to do the right thing and to use science-based credible evidence in determining the correct criteria for where these wind turbines should go. My files are now quite full of manufacturer standards, wind working group recommendations, etc. – most all of which point to a minimum setback standard that is in excess of what we put into the statute. The citizens' concern is that the minimum standard would default to the maximum standard. I hope this is not the case, but perhaps it would be a good idea for us to meet as a small working group in advance of the rules process to get some better handle around how OPSB intends to address this issue in rules. I don't want to make it too hard to develop wind power in Ohio, and I am sure you don't either, but the quicker we could get the executive branch and agency "powers that be" to issue some sort of statement that they intend to take the rules process seriously and to base the rules on a reasoned and scientific approach consistent with best practices and industry standards, the better off we would all be. What do you think?"

That was written in May, 2008. In January, 2011, the Senator wrote again saying:

"In light of the continued correspondence, I would respectfully request that the PSB seriously consider the wind turbine manufacturers' standards for setbacks when determining setbacks for wind turbines in Ohio. As we learned while writing this language and as we continue to be reminded, many of the manufacturers call for setbacks that are more stringent than those provided for in the statute. When scientifically based studies exist that demonstrate a minimum setback that is greater than what is provided for in statute, I do not believe that those studies should be disregarded."

I think the OPSB is a little bit less cavalier in defaulting to the minimums and as a practice, the developers are placing turbines around 1,000 to 1,200 feet from homes. In doing doing, they boast of “exceeding the statutory minimums” even though 1,000 feet is wholly inadequate.

Reply

Urban Hirschey (<http://townofcapevincent.nnymail.com>) • January 30, 2012 at 8:04 am

I have been lead to understand that the World Health Organization has set a standart of two kilometers.

True or False?

Reply

Urban Hirschey (<http://townofcapevincent.nnymail.com>) • January 30, 2012 at 8:06 am

What is the World Health organization’s recommendtd set back standard on Wind Turbines? Is it from homes or property lines?

Urban

Reply

tfleming () • February 8, 2012 at 11:48 pm

Urban, I have not seen where WHO recommends a fixed distance for turbine setbacks, though I could be wrong. As I understand it, WHO has noise-based guidelines (30 or 40 dbA nighttime level, depending on which version of the guidance). Ergo, that results in a de facto physical setback in the range of 2 km in order to meet the noise guidance.

Reply

News Blast from John Droz! « Save Our SeaShore (<http://saveourseashore.org/?p=1886>) • February 8, 2012 at 9:49 pm

[...] Superior article about the origins of turbine setbacks

<<<http://www.masterresource.org/2012/01/wind-ordinance-offset-debate/>>>

(<http://www.masterresource.org/2012/01/wind-ordinance-offset-debate/>>>); [...]

Reply

Recent Energy and Environmental News – Febuary 2012 « PA Pundits – International (<http://papundits.wordpress.com/2012/02/10/recent-energy-and-environmental-news-february-2012/>) • February 10, 2012 at 6:03 am (<https://www.masterresource.org/nuclear-power/tuckers-terrestrialism-modernity/#comments>)

[...] Superior article about the origins of turbine setbacks

<http://www.masterresource.org/2012/01/wind-ordinance-offset-debate/>

(<http://www.masterresource.org/2012/01/wind-ordinance-offset-debate/>) [...]

Reply

GeorgeG () • February 17, 2012 at 12:12 pm

This whole article and several assumes that there is some magic number. That is an incompetent risk analysis. Mitigation must be proportional. Setback distances should be based on operating sound levels as well as hub height and blade length as well as base elevation and surface structure. All of these factors will vary from one turbine to another and from one site to another.

Try this one on: why is the typical residential speed limit 30 miles an hour? Given the number of fatalities each year it is surely not a safe number that any science could support – how slowly does a car need to be moving when it hits you not to do injury? The most ‘science’ one can find is that this is twice the 15 mph which was the original common limit based on the theory that going faster would be injurious to lady passengers. The scientific answer is that there is no practical speed which is intrinsically safe.

The water quality at my cottage has been degraded by smokestacks nearly 100 miles away. Scientifically, a setback of at least 2000 miles from any similar body of water should be observed. Prof Fleming: Indiana produces about 95% of its electricity from coal. Please stop — you are inside of my scientifically based setback distance.

Reply

Kathleen Miller () • October 29, 2017 at 12:39 pm

Exactly Sir, Keep your unsafe setbacks off my property completely. Thank you very much!

Reply

Tom Stacy () • May 17, 2012 at 7:50 am

In Ohio a recent blade shatter episode occurred in winds no higher than 35MPH – well within the standard operating range of the devices. Two blades apparently flexed too much as they passed the tower, causing collisions that moments later sent sharp pieces weighing hundreds of pounds sailing through the air. The vertical drop in such cases is between 150 and 400 feet. In this case, the debris field spread horizontally 1,150 ft. from the tower.

It seems reasonable that nearby property owners should be able to use their full property safely – not just the inside of their dwelling. In fact the dwelling offers a degree of protection from blade debris that being outdoors on one's own property does not. This is why setbacks from dwellings is only an applicable standard when it comes to nighttime noise and infrasound because people usually sleep in their dwellings. Ohio Senator William Seitz recently offered an amendment to Governor Kasich's energy bill based on the empirical evidence of this debris field. The amendment would have superceded language related to dwelling setbacks, and increased the property line setbacks from 1.1 times total device height to 1,250 ft. The amendment was rejected for reasons we do not yet understand. This circumstance looks (to this non-attorney) like it ripens civil action against the state for negligence. Class action must begin with plaintiffs, not counsel.

Vestas and Nordex both published "do not linger" radius recommendations for the maintenance personnel of their customers in safety and operator manuals. For Vestas the minimum was 1,300 feet; for Nordex, 1,620. Adjacent property owners would be well advised to "not linger" on their own land within the same distances from wind turbines on nearby properties. If that does not represent an illegal taking of property rights, John Kasich please explain to us why not. Ohio may have some of the safest regulations to protect people from hazards associated with natural gas development, but they cannot say their wind energy siting regulations are prudent.

Reply

Tom Stacy () • May 17, 2012 at 10:29 am

To be clear, setbacks in Ohio are 1.1 times the height of the turbine to non-participating property lines, and 750 ft' plus the length of one blade from the foundation of a home. These two standards are considered independently. A blade is typically about 150 ft. long, so the effective setback from a home is 900 ft. with today's technology.

"Remember, a bumper crop of grain can be stored in a silo. A bumper crop of wind energy must be consumed on the spot!"

Reply

Proposed Campbell County Temporary Zoning ORDINANCE #2019-1 - Attorney Blog | Natural Resources, Commercial Law - Attorney Blog | Natural Resources, Commercial Law (<https://www.lexenergy.net/proposed-campbell-county-temporary-zoning-ordinance-2019-1/>) • January 28, 2019 at 10:14 am

[...] [1] See Tony Fleming, *Wind Ordinance Debate: The 1,000-foot Set-Back Standard (Are environmentalists underregulating themselves?)*, Master Resource (Jan. 23, 2012), <https://www.masterresource.org/wind-offset-distance/wind-ordinance-offset-debate/> (<https://www.masterresource.org/wind-offset-distance/wind-ordinance-offset-debate/>). [...]

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