Policy Brief WIND TURBINE SETBACKS

What's the Barrier to Business?

In 2014, the Ohio General Assembly revised a wind-turbine siting law in House Bill (HB) 483 as part of the mid-biennium review of the Ohio budget. The revision effectively requires new installations of wind turbines to be set back significantly further from neighboring properties.

The effect of the new setback rules on wind turbine farm development has been dramatic. Prior to the setback change, private enterprise had developed two commercial wind farms in Ohio – Blue Creek and Timber Road. Since the setback change, over 1,400 MW of wind farms have been stalled.[i] Wind farm developers attribute the abrupt halt in new installations to the setback revision.[ii] As a result, Ohio stands to lose tens of thousands of jobs and billions of dollars of lost Gross Domestic Product (GDP).[iii]

In light of these potential benefits, the 2014 revision to Ohio's wind setback rules has created a significant barrier to business, reducing new investments in Ohio and forfeiting jobs and tax revenue to other states with more reasonable setback levels. In short, the current rules have made our state much less competitive in terms of this rapidly growing industry.

Insights on Ohio's Revised Wind Setbacks

- Ohio's revised wind setback law is 2-3 times larger than those required by most other states.
- The Ohio Power Siting Board already has the authority and expertise to evaluate and require more stringent setbacks for wind development, if needed. The revised setbacks are a blunt tool that replaces the role of the siting board's expertise at the cost of new business.
- The rationale for the setback change invokes nuisances to a person, and protection of built property, yet the law is now based on the distance to the property line, instead of people and structures. It also excludes smaller private projects of less than 5 megawatts or less.
- Ohio's wind setback policy functionally discriminates against a specific business sector.

History of Ohio's Wind Setbacks

Ohio policymakers initially drafted setbacks for wind turbines in 2008, establishing two minimums, both of which must be met. One established a 750-foot setback that was later increased to 1,125 feet from the "nearest, habitable, residential structure" while the other set a distance from the base of the turbine to the edge of the property line of 1.1 times the total height of the turbine (inclusive of the blade radius)[iv]. In 2014, HB 483 kept the minimum setback of a distance 1.1 times the height of the turbine to the property line but replaced the provision regarding habitable residential structures with a distance of 1,125 feet to the property line. By changing the requirement of 1,125 feet from a habitable, residential structure to the property line, the new setback means, in effect, that most new wind developments must be much farther away from a neighboring property. The revised setback does not apply to smaller, private projects of less than 5 megawatts, which are not subject to oversight by the Ohio Power Siting Board[v]. These smaller projects have less oversight and undermine the argument that the revised setbacks address safety and nuisance issues.

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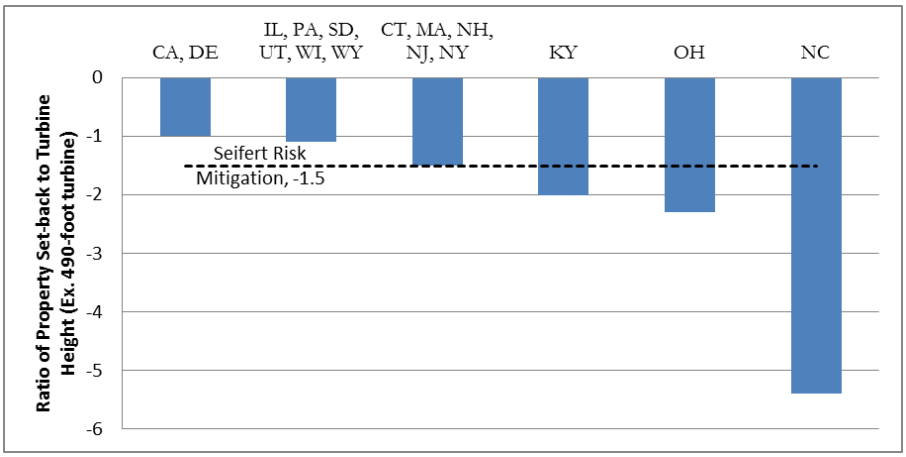
It is important to note that setbacks for large-scale wind developments are statutory minimums and that the Ohio Power Siting Board has the ability and authority to require greater setbacks on a case-by-case basis[vi]. In fact, the agency required lengthier set-backs than in law for the Blue Creek Wind Farm.[vii]

Wind Setbacks in Other States

Other states approach the issue of wind turbine setbacks differently, not just in the length of setback, but also in which level of government or state agency that has the authority for determining the setback. For example, 20 states rely on "home rule," and cede siting authority to local governments.[viii] Other states designate siting authority to state agencies, such as a siting board or public utility commission. Ohio has a state agency, the Ohio Power Siting Board, whose specific charge is to consider the environmental and public impact of electricity generation

A comparison of different state statutory minimums can be insightful. The following graph illustrates the setback to height-ratio for a standard 490-foot tall wind turbine. Ohio's revised wind setback distance is approximately 2.3 times the height of the turbine and blade from a neighboring property line. In comparison, California is a ratio of 1, nearby states such as Illinois, Pennsylvania, and Wisconsin are 1.1; while many New England states are at 1.5.



Rationale for a Wind Turbine Setback

Wind farms, like any development project, may impact the land, public infrastructure, neighbors, and the general public. Wind setbacks are an attempt to protect neighbors of wind farms from four potential safety or nuisance issues: ice throw, wind shear, shadow flicker, and sound levels. However, determining a specific setback length in feet is a highly technical question. Significant subject matter expertise from an agency like the Ohio Power Siting Board is needed to gauge whether a setback is an appropriate mechanism to protect against, say, noise and flicker nuisance.

- **Ice throw** can pose a risk of injury when ice builds up on turbine blades, and is then propelled from an operating turbine. While research on ice throw continues, one leading study indicates that ice throw can be approximately 1.5 times the height of the turbine hub plus rotor diameter height.[ix] For a standard turbine height of 490-feet, the equivalent ice throw distance would be 735 feet. Ohio's previous wind setback was 1,125 feet from a habitable residential structure, far outside the expected radius of ice throw.

- **Noise** While setbacks can be a means of addressing noise, some states make use of a more accurate measurable unit of sound: decibels. Using decibels as a measure allows more broadly applicable requirements across industry, in addition to being a more precise way of measuring noise impact on neighbors. Noise nuisance can be considered by the OPSB in determining if specific projects or turbine locations need additional setback length.
- **Wind shear** is the difference in wind speed by height. The higher the wind speeds aloft when winds are close to calm on the ground, the higher the wind shear. Wind shear results in a unique noise issue due to the differential in the ambient sound levels at the turbine rotor and the surrounding ground level. Wind shear, a type of noise nuisance, can be considered by the OPSB in determining if specific projects or turbine locations need additional setback length.
- **Shadow flicker** is the term used to describe the intermittent shadows cast by rotating turbine blades interrupting sunlight. For areas whose direct line to the sun lies in the area swept by the turbine blades, there is a resultant flickering of incident sunlight. Shadow flicker can be considered by the OPSB in determining if specific projects or turbine locations need additional setback length.

Potential Benefits of Wind Development

Investment in wind farms has many benefits to Ohio, including increases in jobs, increased state GDP, increased payroll, and reduced public health costs.

A 2016 comparative study by The Greenlink Group found that wind farm development produced near-term economic development and long-term public health benefits, all while keeping bill impacts low due to private capital investment carrying the implementation cost.[x]

In light of these potential benefits, the 2014 revision to Ohio's wind setback rules has created a significant barrier to business, reducing new investments in Ohio and forfeiting jobs and tax revenue to other states with more reasonable setback levels. In short, the current rules have made our state much less competitive in terms of this rapidly growing industry.

Potential Benefits from Wind

Economic impact

- 40-100,000 new jobs through 2030
- $4-11 billion additional GDP through 2030

Low bill impact

- Private investment as opposed to ratepayer-funded

Public health

- Public health costs reduced by $1 billion annually by 2030

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Considerations for Lawmakers

Determining a specific setback length in feet is a highly technical question. Significant subject matter expertise from an agency like the Ohio Power Siting Board is needed to gauge whether a setback is an appropriate mechanism to protect against, say, noise and flicker nuisance. Moreover, an excessive setback creates barriers to wind farm market development, and thus also creates a cost to the state. Ohio's lawmakers should weigh the alleged benefits in terms of public safety from larger setback rules against the significant economic costs of effectively blocking new installations of wind development in the state.

Several key considerations for lawmakers are:

- The Ohio Power Siting Board can solicit subject matter expertise on a project-by-project basis to determine if any project or individual turbine requires a greater setback than required by law.
- Ohio's current setback appears to be overly restrictive and a barrier to business, discouraging new wind farm investments and thus costing the state the significant economic benefits associated with wind farm development.
- Ohio's wind turbine setback could likely be changed back to previous versions, allowing for wind farm development, while the OPSB could still capably protect property rights and public safety by considering lengthier setbacks on a case-by-case basis.

This policy brief was prepared by Runnerstone, a technical consultancy with subject matter expertise on energy-efficiency, customer-sited energy resources, and advanced energy technologies in regards to policy, regulatory, and markets. For more information contact John Seryak, PE at jseryak@runnerstonepower.com.

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