

Setbacks for Wind Projects

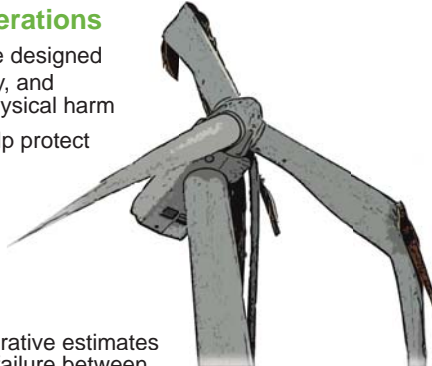
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Rationale Behind Setbacks

- Public safety
- Preventing annoyance
- Encouraging greater financial involvement
- Prohibiting commercial and utility scale wind
- Setbacks and constraints have different sources:
 - Local, state, or federal law, regulation, or guidance
 - Developers' siting or operations policy
 - Contracts with land owners
- Setbacks and constraints are only one of many tools to ensure the safe and environmentally benign construction and operation of wind projects:
 - Safety planning
 - Mitigation measures, permit conditions, and compliance programs
 - Proper inspection of turbine components and construction
 - Regular inspection, maintenance, upgrades, and retrofitting

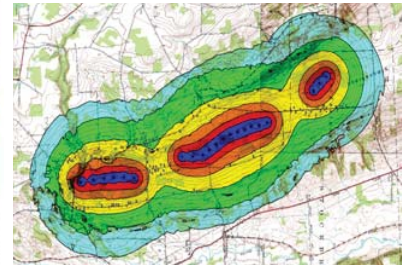
Public Safety Considerations

- Public safety setbacks are designed to protect people, property, and common services from physical harm
- Public safety setbacks help protect against damage from:
 - Blade failure
 - Tower failure
 - Ice shed
 - Fires
- Incidents are rare
 - California Wind Collaborative estimates the chance of a blade failure between 1 in 100 per turbine per year to 1 in 1000 per turbine per year
 - Tower collapse and fire are more rare than blade failure
- Minimum public safety setback is typically tip-height plus at least 10% from structures and infrastructure
 - Most recorded impacts are within 100 m (328 ft) of tower base
 - Recorded impacts outside 200 m (656 ft) are almost unheard of
 - Radius of potential impact based more upon tip speed than height of tower



Annoyance Considerations

- Annoyance setbacks are designed to protect people from:
 - Noise
 - Shadow flicker
 - Viewshed impacts
- Potential impacts are turbine specific – typically (but not always) larger/taller turbines have a greater area of potential annoyance impact
- Some people are more sensitive than others
 - Many ordinances give participating landowners the option to opt out of annoyance-based setbacks
- Annoyance setbacks commonly protect residences, schools, hospitals, churches, and places where people work
- Annoyance setbacks can be based upon tip-height increments, performance measures, or a fixed distance. For example:
 - 3 (or other multiple) times tip-height
 - db (A) increase at receptor
 - Hours of shadow flicker at receptor
 - 1,000 – 1,600 feet



Encouraging Greater Financial Involvement

- Establishment of more substantial setbacks from non-participating parcel boundaries (i.e. greater than tip height plus 10%) is often used as a mechanism to encourage developers to enter into more "neighbor agreements" with properties that don't host wind turbines

Prohibiting Commercial and Utility Scale Wind

- Extensive setbacks have been used to make utility scale wind impossible
 - This may not be legal. . . for example, NYS Supreme Court has upheld the treatment of wind projects as public utilities, requiring jurisdictions to make development possible



Sources

- Recommendations for Risk Assessments of Ice Throw and Blade Failure in Ontario, by Garrad Hassan, for the Canadian Wind Energy Association, 31 May 2007
- Permitting Setbacks for Wind Turbines in California and the Blade Throw Hazard, by Scott Larwood, California Wind Energy Collaborative, University of California, Davis, 16 June 2005
- Public Health and Safety, by Global Energy Concepts for NYS Energy Research & Development Authority, 2005