

Wind Energy Regulation

A Division of New York Department of State

Overview of presentation

- Role of wind energy in NY
- Residential, agricultural & commercial systems
- Regulatory Tools
- Concerns and mitigations
- State Agency resources



Role of wind energy in NY

- NY Renewable Portfolio Standard "30 x15" goal:
 - 30 % electricity from renewable sources by 2015
- Offset fossil fuels pollution
 - 1 turbine (2-3 MW) offsets more than 11,000 lbs. carbon dioxide, sulfur dioxide, and nitrogen oxides daily
- Domestic energy diversity
- Significant wind potential exists
 - 20% of state energy demand can be met



Public Service Law Article 10

- State Siting Board will determine locations of "major electric generating facilities"
 - At least 25 MW
 - Until 2003, at least 80 MW
- "One stop" approval process by Siting Board



Public Service Law Article 10

Absolute local authority over land use decisions diminished:

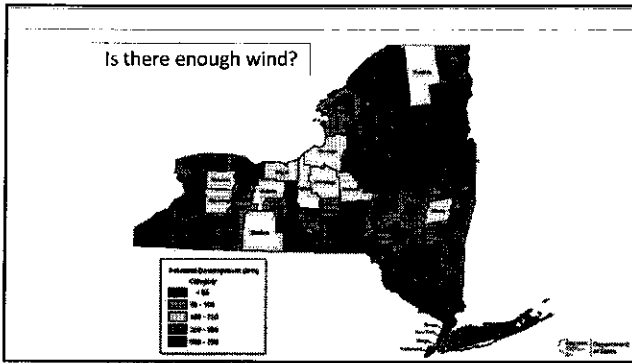
- Siting Board has authority to override local restrictions in appropriate cases
- Siting Board has 60 days to deem application complete
- Must make final decision within 1 year (or 6 months if modifying certain existing facilities)

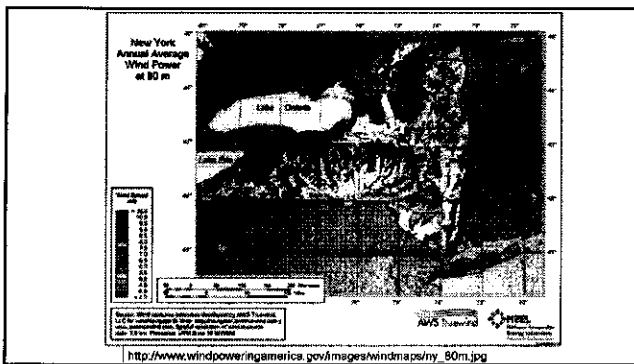


2008 wind industry ethics code

- Prohibited conflicts of interest between municipal officials and wind companies
- Established new public disclosure requirements
- Created Task Force to monitor and ensure compliance
- Noble Environmental Power and First Wind were first companies to comply

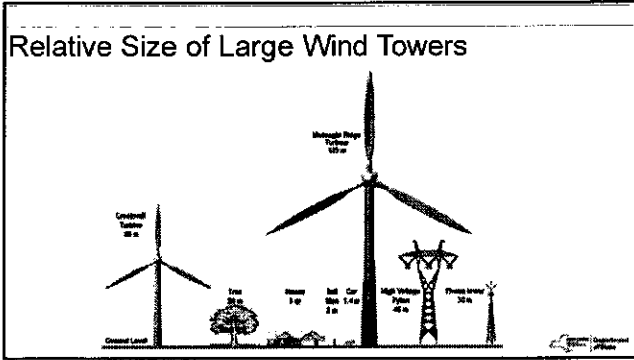







Types of Wind Energy Systems

- Residential
- Agricultural
- Commercial

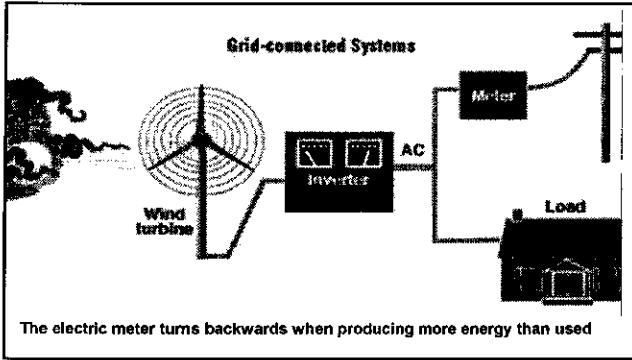


Residential Systems

Residential Wind Systems ≤ 50 kW




- Homes, farms, remote applications such as water pumping, telecom sites
- Installed off-grid or at on-grid facilities
- Economic viability requires 9 mph avg. wind speed
- Price of residential wind comparable to solar



Agricultural Systems

Agricultural wind systems >40 kW



- System can meet the needs of an entire farm, or can be targeted to specific applications
- More efficient and reliable than the old water-pumping fan-bladed windmills
- May be cheaper than extending power lines
- More convenient and cheaper than diesel generators

Agriculture

Concern

- Damage to soil disturbed during construction
- Permanent loss of productive land



Mitigation

- Precautions during construction
 - Collect top soils and separate for reuse after construction
 - Avoid compaction of soils by construction equipment
- Proper siting minimizes land lost



Agricultural siting considerations

- Avoid dividing larger fields by locating structures and access roads along the edge of farm fields
- Reduce new access road drainage problems
 - Locate along ridge tops to eliminate need to cut and fill
 - Construct road surfaces level with adjacent field surface
- Avoid existing drainage and erosion control structures or take measures to maintain their design and effectiveness



Special treatment for on-farm use

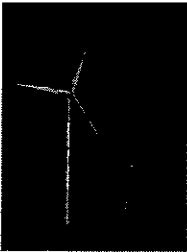
- May be considered common farming practice in state agricultural district
- No official determination by Commissioner of Ag & Markets
- Still can be reasonably regulated locally by right or special use permit
- Ag & Markets can assist with drafting local law



Commercial Systems

Commercial Wind Systems ≥ 1.5 MW

- Central station wind farms, distributed power
- Energy sold in power markets
- Height ranges from 213 – 236' at nacelle, with maximum height about 300 – 400' at blade tip
- Economic viability requires 16 mph avg. wind speed
- Wind Farms range in size from 20 - 300 MW

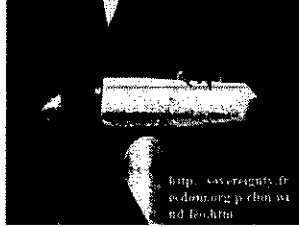


Potentially Positive Wind Farm Impacts

- Renewable energy without emissions or hazardous waste
- Local employment in a potentially long-term industry
- Increases municipal tax base/PILOT payments
- Potential second income for landowners/farmers through land rental
- Harmonious with existing agriculture practices
- Supports agricultural land restoration

Potentially Negative Wind Farm Impacts

- Visually intrusive
- Wildlife habitat disruption
- Bird and bat injury or death
- Shadow or flicker effects
- Noise
- Ice throw



Economic Impact (Estimated)

- Typical 2 year construction project
 - Employs local and non-local workers
 - Operations & maintenance permanent jobs
 - \$45,000 to \$75,000/year in payroll & benefits
- Worker spending on services
- Construction spending on materials
- Payment In Lieu of Taxes (PILOT)
 - Typically 15 year term; some assessment & revenue thereafter
 - \$3,000 to \$5,000/year
- Landowner revenue
 - \$4,000 to \$8,000/year



Regulatory Tools

- Comprehensive planning
- Moratoria
- Site plan review
- Zoning
- SEQRA



Comprehensive Planning

- Basis for zoning and other land use regulations
- Enlist early and significant public involvement
- Consider regional or multi-municipal efforts
- Identify significant wind resources; determine support for wind energy projects
- Identify visual resources that should be protected
- Adopt wind ordinance reflecting community's sentiment towards wind power will help to avoid future conflicts



To promote wind development...

Sample goal:

"To protect high-priority wind energy sites for wind energy development."

Sample action to achieve goal:

"Revise the zoning ordinance to permit wind energy facilities."



To prevent wind development...

Sample goal:

"To preserve the natural habitat by preventing the development of energy projects that are inconsistent with community's values."

Sample action to achieve goal:

"Create a wind ordinance, or revising an existing one, to preclude the development of future wind projects."



Moratoria

- Adoption allows for planning and development of regulations
- Defines period of time while working on plan and/or regulations
- Consider exempting meteorological "met" towers so data collection can continue or allowing by special use permit



Met or Meteorological Towers



- Site map
- Applicant identification information
- Written permission of land owner
- Require all equipment removal and site restoration after wind site assessment
- Proof of applicant's public liability insurance



Regulation without zoning



- No prohibition of use
- Site plan review
- Noise control laws



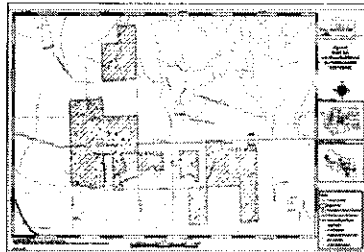
Site Plan Review

- Can be used with or without zoning
- Develop submission requirements
 - Property survey
 - Architectural drawings
 - Engineering plans and studies
 - Decommissioning and site restoration plan
 - SEQRA forms
- Develop clear decision criteria
- Authorize board to charge applicant for expert review



Site plan review elements

- Tower location
- Utility lines
- Safety issues
- Visibility
- Lighting plan
- Maintenance structures
- Access roads
- Tower design



Regulation with zoning

Prohibit

- Municipal-wide or only specific districts
- Use clear language in regulations
- Prohibit all other uses not listed as permitted

Permit

- Zoning districts
- Wind overlay zones
- Special use permit



Clearly address in regulations

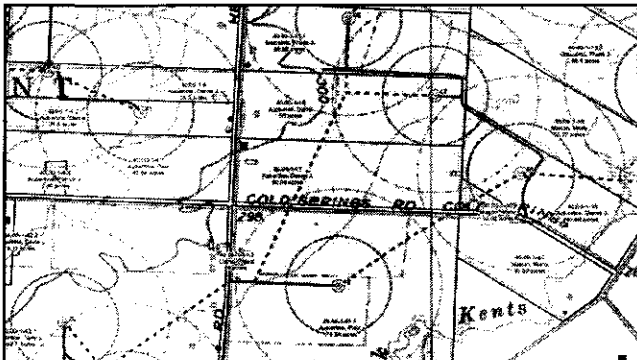
- Test or met towers
 - Temporary and length of time
- Residential systems
- Agricultural systems in and outside of agricultural districts
- Commercial systems



Establish Measurements

- Maximum tower height
- Minimum lot size
- Maximum noise level
 - At lot line
 - At receptor
- Setbacks





Setbacks

- Distance to other structures
 - Habitable vs. non-inhabited
 - Lenience for participating land owners
- Distance to property line and roads
 - Waivers for participating adjacent property owners
- Separation between each tower
 - Wind capacity and concerns about turbulence
- Consider
 - Height of windmill
 - Ice melt hazards
 - Noise



SEQR Department
2004

Setbacks

Local Law No. 3 – 2004 Town of Eden

"... (a) WECS shall be set back from any property line, above ground utility line or other WECS a distance greater than its overall height, including blades. WECs shall also not be placed in front yard of any existing structure.

(b) In the case of cluster development, WECS shall be erected within the common open space area and be set back from all residences a distance greater than Subsection C (12)(a) above.

(c) Contiguous property owners may construct WECS for use in common, provided that the required setback, as defined in Subsection C(12)(A) above, is maintained relative to the property lines of non-participant owners."

SEQR Department
2004

State Environmental Quality Review Act

- Most wind projects are subject to review under SEQRA
- Process typically begins with permit application
- In most cases local planning board will manage process as "lead agency"
- Most projects are designated as Type I or unlisted actions under SEQRA

SEQR Department
2004

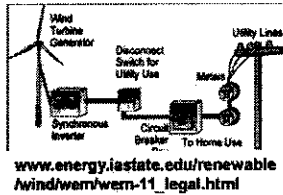
Wind facility as a public utility

- Local laws or ordinances may define a "public utility" to include or exclude WECS
- If facility is NOT deemed a "public utility" under zoning, applicant must meet statutory test for use variance
- If facility is deemed a "public utility", a use variance application should be evaluated under the "public necessity" use variance test



Building code

- Not currently specifically addressed by NYS Uniform Fire Prevention and Building Code
- Local building standards/permits for windmills and ancillary structures
- NYS Standard Interconnection Requirements



Concerns & Mitigations




Construction	
Concern	Mitigation
Increased traffic/road maintenance	Reinforce or widen roads
Soil erosion	Minimize grading, limit soil disruption, keep existing vegetation, prohibit off road vehicle travel
Stormwater runoff	Stormwater guidelines
Wetlands and stream crossings	Wetland permits (DEC, Army, APA)
Solid and hazardous waste	Collection program for boxes, hydraulic fluids, etc.
Repowering and decommissioning	Replace/remove turbines (20 years) & restore original site conditions
Liability	Insurance proof prior to permit

Liability mitigation

Town of Fenner

"Prior to issuance of a Building Permit, the applicant shall provide the Town proof, in the form a duplicate insurance policy or a certificate issued by an insurance company, of liability insurance, of a level to be determined by the Town Board in consultation with the Town's insurer, to cover damage or injury which might result from the failure of a tower or towers or any part(s) of the generation and transmission facility."



Ice


Concern

- Accumulated ice on rotor blades may be shed

Mitigation

- Ice buildup detection systems
- Increased setbacks (greatest danger under tower)
- Consider wind speed and direction when locating
- Post property warning

Studies of potential danger vary; no reported injuries from turbine ice throws



Noise

Concern

- May cause health complaints
- Disrupts rural "quiet" quality

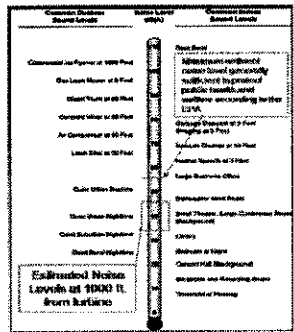
Mitigation

- Model expected noise levels
- Setbacks or distance is most effective
- Setbacks based on proximity of certain "receptors" (property line or inhabited house)
- Determine and enforce permitted decibel level at property line/receptor



Noise in context

- Rural areas have unusually low ambient noise levels
- An increase of 6 decibels over ambient noise level at receptor may cause complaints, according to the DEC/EPA
- Usually noisiest at full load



Noise

Town of Westfield, LL2 of 2002

"WECS towers shall be properly maintained and operated at all times and shall be located with relation to property lines so that the noise produced during operation shall not exceed fifty (50) dbA, measured at the boundaries."



Noise enforcement

Town of Westfield, LL2 of 2002

"After conducting inspection, the Code Enforcement Officer may order owner to render WECS inoperative for reasons related to assuring safety of operations, abating noise, or eliminating electromagnetic interference. Owner shall not return WECS to service until any and all reasons CEO issued order have been corrected to satisfaction of CEO."



Electromagnetics

Concern

- Electromagnetic interference (may cause "shadows" in weak TV signals)

Mitigation

- Enhance signal strength; provide alternative receiver
- No towers along major access of existing microwave communications link
- Require applicant to minimize/mitigate signal interference



Electromagnetics mitigation

Town of Portland

"No individual tower can be installed in any location along the major access of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the links operation."

"WECS generators and alternators shall be properly filtered and/or shielded in order to avoid EMI and shall comply with FCC regulations contained in 47 CFR Parts 15 and 18"



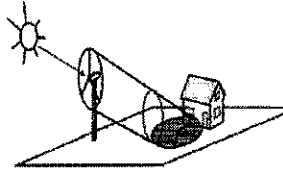
Shadow flicker

Concern

- Blades cast a moving shadow over nearby windows

Mitigation

- Careful site selection, design and planning
- Program turbine to turn off during certain periods



NY DEC Department of Environmental Conservation

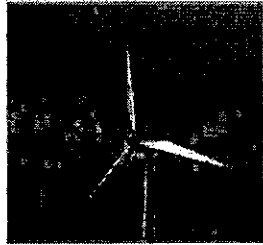
Birds

Concern

- Avian fatalities

Mitigation

- NYSDEC guidelines for monitoring wildlife mortality (pre/post-development)
- Develop research plan for wind/wildlife projects
- Initiate comparative risk analysis (wind vs. other forms of electricity production)



NY DEC Department of Environmental Conservation

Bird fatality mitigation

Town of Roxbury, LL3 of 2002

"No individual tower facility shall be installed in any location where there is a recognized migratory flight path for birds or at a location where birds commonly congregate, unless the operation of the wind energy-deriving tower will not have a significant impact on either migratory or resident birds."

NY DEC Department of Environmental Conservation

Bats

Concern

- Collisions and fatalities

Mitigation

- Avoid turbines near utility right of ways that cross over mountains (migratory paths)
- Feather blades so rotation is slowed, which could greatly reduce bat strikes
- Close farm when summer storms or warm, low-wind evenings are predicted



Appearance

Concern

- Visually distracting
- Ancillary buildings out of character with community

Mitigation

- Require uniform appearance
- Require power lines be underground
- Require ancillary buildings be made of local materials to harmonize with landscape



Viewsheds

Concern

- Aesthetic or scenic natural beauty disrupted
- Turbines visible up to 1/2 mile away (foreground)

Mitigation

- Require landscape simulations
 - Balloon tests
 - Install temporary poles to determine visual impact
 - Turbines sited beyond 7 miles are much less visible



Conclusions

- Don't wait for a wind energy project to be submitted to decide where you stand
- Decide through consensus, as much as possible
- Comprehensive planning a good forum to address the issue



State Agency Resources



Department of Environmental Conservation (NYSDEC)

- <http://www.dec.ny.gov/energy/40966.html>
- Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects www.dec.ny.gov/docs/wildlife_pdf/finwindguide.pdf
- NYSDEC Assessing & Mitigating Visual Impacts www.dec.ny.gov/docs/permits_ej_operations_pdf/visual2000.pdf
- NYSDEC Assessing & Mitigating Noise Impacts http://www.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf



Department of Agriculture & Markets (NYSDAM)

- "Guidelines for Agricultural Mitigation for Windpower Projects"
www.agmkt.state.ny.us/AP/aqservices/constructWind.html
- Matt Brower (518) 457-2713



Energy Research & Development Agency (NYSERDA)

- Renewables Programs
www.PowerNaturally.org
- Standards for agricultural roads in Prattsburgh Scoping document
www.nyserda.org/pdfs/WFPFinalScope.pdf
- Wind Energy Toolkit (NYSERDA)
www.powernaturally.com/Programs/Wind/toolkit.asp



Office of Parks, Recreation, & Historic Preservation (NYS OPRHP)

- Inventory of historic properties and historic districts that are listed or eligible for listing on the State and National Registers of Historic Places
www.nationalregisterofhistoricplaces.com/
- Inventory of state, national and locally designated scenic and aesthetic resources within the affected area (state parks, forestlands, county and town parks, etc.)
www.nysparks.state.ny.us/historic-sites/default.aspx?tab=1



New York Department of State

(518) 473-3355 Training Unit

(518) 474-6740 Counsel's Office

(800) 367-8488 Toll Free

Email: localgov@dps.ny.gov

Website: www.dps.ny.gov
www.dps.ny.gov/lq/ut/index.html