

Role of Universities Working to Address Issues of Local Social Acceptance: the UMass Outreach Experience

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Timeline: UMass Outreach and Federal/State Agencies in Massachusetts

- 1990s →
 - DOE Region 1
 - Division of Energy Resource (DOER)
- 1990s-2000s →
 - Renewable Energy Trust (MRET) Fund/ Massachusetts Technology Collaborative (MTC)
- 2000s-2010s →
 - Massachusetts Clean Energy Center (MassCEC)
 - Massachusetts Dept. of Environmental Protection (MassDEP)

1990s

- UMass worked under contract or Intergovernmental Service Agreement (ISA) with DOE and DOER
 - Technology evaluations (Strategic Envirotechnology Program, STEP)
 - Technical advisor to DOER
 - Including re-assessment of offshore wind
 - Rule making regarding renewable portfolio standard (RPS) and renewable energy trust fund (RET)
 - Wind turbines for Hull
 - Wind resource assessments
 - Feasibility studies

First Hull Wind Turbine



Hull Wind I, Hull, MA, Vestas 660 kW, 47 m diameter, 50 m tower; 2001

1990s-2000s

- UMass worked under ISAs with MTC/MRET, mostly on→
 - Wind resource assessment
 - Preliminary feasibility studies
 - Community outreach
 - Wind energy 101s
 - Offshore wind energy
 - Cape Wind “honest broker”
 - Offshore wind energy consortium (OWEC)
- Blade test facility (w/ MRET and Mass Office of Business Development)

2000s-2010s

- ISAs with MassCEC
 - Mostly wind resource assessment
- Panel membership at request of MassDEP regarding →
 - Wind turbine health issues
 - Wind turbine noise technical advisory group

“Big Picture” of last 30 years

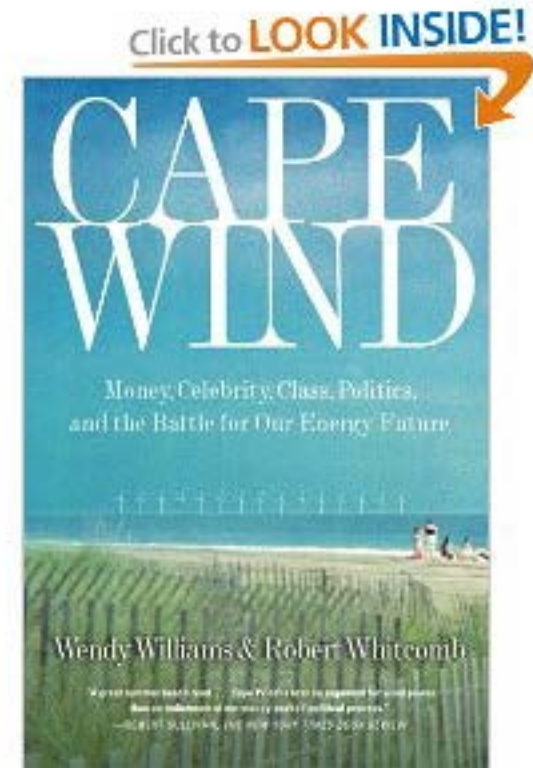
- Initially, little experience in Mass. with wind energy. Agencies appreciated assistance
- With increasing development of wind energy, focus changed to economic development. Agencies came to rely more on consultants
- In the 2000s, resistance to wind energy became more widespread. Some agencies took on new roles; other agencies became involved

Resistance to Wind Energy

- With proposal for Cape Wind (offshore wind) and increase in size and number of land based wind turbines, resistance has increased
- Factors →
 - Proximity to people
 - Conflicting uses of Nantucket Sound
 - Visual impact
 - Noise
 - Politics
 - Threat to conventional energy suppliers?

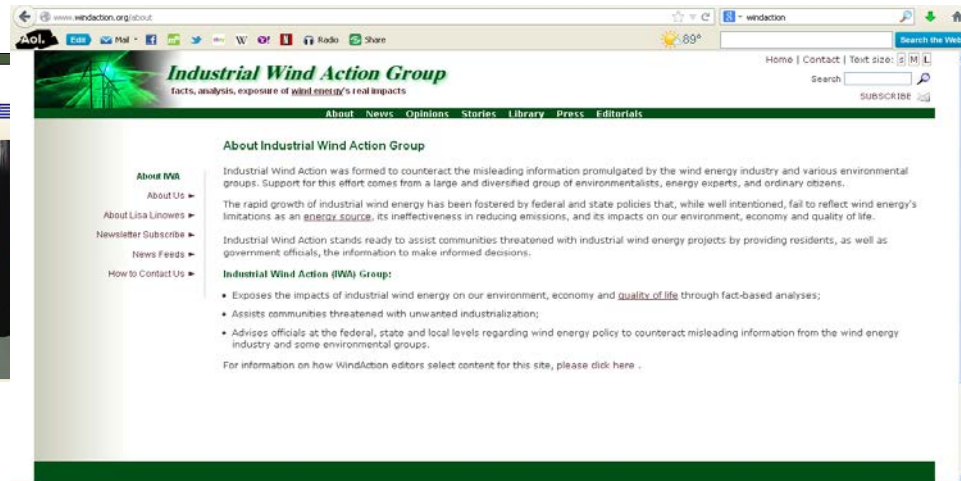
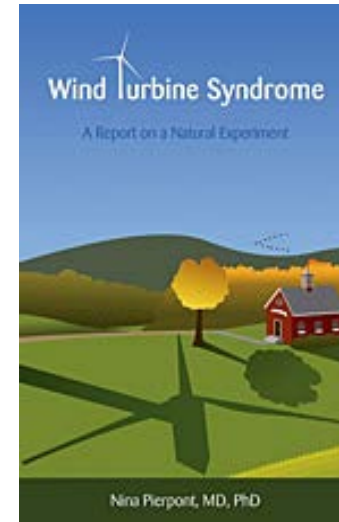
Cape Wind

- A focal point for resistance to wind energy and an incredible story!



See this book for just part of the story: *Cape Wind: Money, Celebrity, Energy, Class, Politics, and the Battle for Our Energy Future*, by Wendy Williams

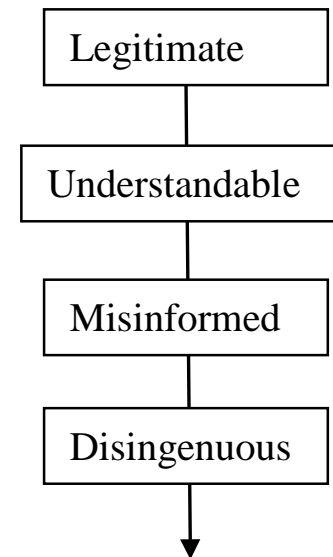
Some of the Objectors...



Objections to Wind Energy

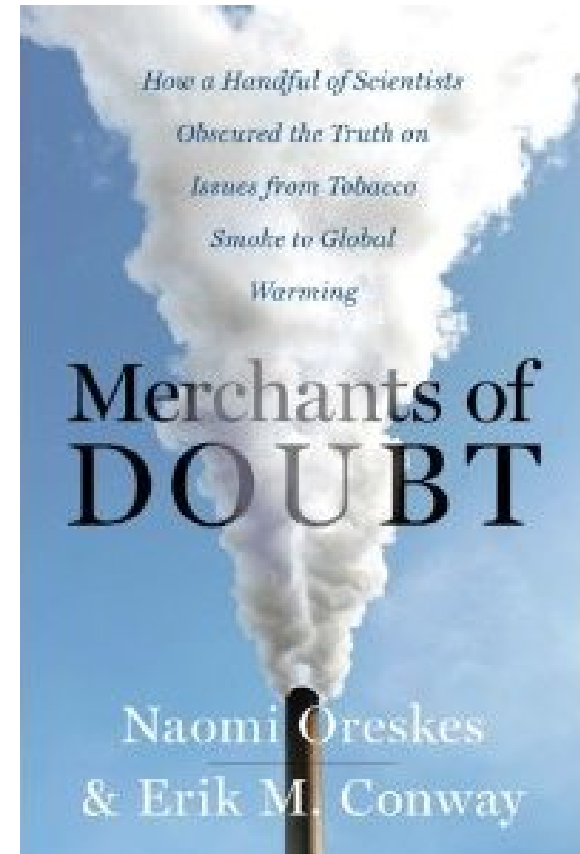
- Some objections and the “scale of plausibility”

| | | |
|----------------------------|--|--|
| Turbine(s) too close | | |
| Shadow flicker | | |
| Excessive noise | | |
| | | |
| Turbines visible | | |
| Audibility | | |
| Visual impact | | |
| | | |
| Environmental impact | | |
| Birds, bats, construction | | |
| | | |
| Health effects | | |
| Wind turbine syndrome | | |
| Infrasound | | |
| | | |
| Spurious complaints | | |
| Turbines can break | | |
| Developers get rich | | |
| | | |
| Implausible objections | | |
| Turbines do not reduce CO2 | | |



Inauspicious Precedents

- Campaign against wind energy has much in common with previous campaigns in defense of tobacco and DDT and sowing doubt about acid rain and global warming
- See *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* by Oreskes and Conway



Wind Turbine Health Impacts?

- In 2011 Massachusetts Dept. of Environmental Protection convened an independent panel to review the literature on wind turbine health impacts, identify best practices and write a summary report
- Panel: 7 members, M.D.s or Ph.D.s, specializing in neurology, sleep medicine, acoustics, wind energy, environmental health, public health and epidemiology

Potentially Significant Impacts

- Ice throw
- Shadow flicker
- Audible unwanted sound (“noise”)

General Conclusions

- Ice throw is real; can be dealt with
- Shadow flicker is real; can be dealt with
- Noise is the most contentious
 - Resolving noise issues in densely populated areas is not easy

Wind Turbines and Noise Annoyance

- Noise annoyance related to
 - Amplitude/frequency
 - Characteristics of noise
 - Noise sensitivity
 - Fear of danger from noise source
 - Attitudes toward noise prevention
 - Attitudes about importance of noise source
 - Annoyance with non-noise aspects of noise source
- Annoyance often only weakly related to noise levels
- Excessive noise can affect sleep

Responding to Resistance

- Education
 - Wind energy has many advantages compared to other sources
- Some impacts are real
 - Benefits are global, impacts are local
 - Distance, turbine size and number matter
 - Policies should consider local impacts
- Many impacts are exaggerated
 - Objections must be supported by evidence!

Policy Suggestions

- Develop national/state energy policies emphasizing renewables
- Public education
- Encourage local participation/ownership in projects
 - Municipal electric companies
 - Cooperatives
- Financing incentives to recognize multiple aspects of projects
- Pay attention to experience elsewhere

Opportunities for Universities

- Universities can offer unbiased source of information
 - Advice and outreach are particularly compatible with Land Grant universities
- Best opportunities are dealing with cutting-edge problems, where students can provide useful contributions
 - Highly politicized issues are difficult
 - Universities can “stick to the facts”