Wind Power: An Environmentalist Perspective

New York Wind Power Education Project

~ a collaborative effort of ~

Pace Law School Energy Project New York Public Interest Research Group Citizens Campaign for the Environment

Why are we here?

New York is at an energy crossroads



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Rising Demand for Electricity

- In 1994, New Yorkers used 131,177 GWh
- In 2004, New Yorkers used 144,542 GWh.
- ~ 1.2% increase/year
 - 1,734 GWh/year (without added demand control)

(GWh = gigawatt-hour)



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Shrinking Reserves

- Growing imbalance between supply and demand
 - Compromises reliability
 - Higher prices for generation
 - Greater reliance on older, inefficient and high-emitting plants



In-State Capacity Reserve Margin

The 78 percent reserve margin is the current requirement to meet criteria for adequate resources. The requirement changes as the mix, performance and location of resources change, in general, the more dependent a Control Area is on the transmission system or external resources, the higher the reserve margin.

The Three Solutions to meet energy needs <u>and</u> protect public health

- 1. Decrease demand
- 2. Clean up dirty power plants
- 3. Add clean technologies



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Sources of Electricity in NYS



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Harmful Emissions

- Fossil fuel burning power plants cause several forms of pollution :
 - Carbon Dioxide(CO₂); greenhouse gas
 - Sulfur Dioxide (SO₂); soot particles precursor of acid rain
 - Nitrogen Oxides (NO_x); primary component of smog
 - Mercury contamination; metal neurotoxin



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Power Plant Pollution Impacts

- Particulate matter from power plants (soot) causes 1,200 premature deaths and 2,500 heart attacks a year in NY
- Many areas fail to meet health-based air quality standards
 - Red counties fail U.S. EPA standard for ozone



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Mercury Contamination from Power Plant Pollution

- NY Department of Health fish consumption advisories due to mercury contamination (06-07)
- Adirondack & Catskill waters
 - Women and children should eat no northern pike, pickerel, walleye, largemouth bass, smallmouth bass, or yellow perch longer than 10"
 - Women and children should eat no more than one meal a month of brook trout, brown trout, rainbow trout, bullhead, bluegill/sunfish, rock bass, crappie, or yellow perch less than 10"
- Advisories for 87 specific water bodies



Impacts of Global Warming

- Predicted Impacts in New York State
 - Up to 40% decrease in agricultural yield
 - Loss of Sugar Maples to Oak-Hickory Forest
 - Loss of Trout Habitat
 - About a 3 ft. sea level rise
 - Coast of Long Island, New York
 City and Hudson River to Albany
 - Receding of the Great Lakes and Finger Lakes



Oil, Gas or Coal Exploration & Extraction







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Pollution Offsets

Electricity Generation	Coal Fired	Gas Fired	Oil Fired	Wind
MWh	350,000	350,000	350,000	350,000
Fuel Consumed	180,000 Tons of Coal	2,500,000 Btu Nat. Gas	560,000 Barrels of Oil	None
Tons CO ₂ Emitted	347,673	183,446	296,433	0
Tons NO _x Emitted	865	324	562	0
Tons SO ₂ Emitted	1,973	1	2,292	0

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Understanding Wind: BIRDS

- Bird impacts from modern wind turbines can range from <1 – 7.5 bird deaths per turbine per year [1]
- In contrast to earlier designs, turbines now have a sleek base to prohibit birds from perching, and generate energy with larger blades that rotate much slower, which can help birds avoid the structure.[2]





American Bird Conservancy. Wind Energy Policy, www.abcbirds.org/policy.windpolicy.htm
 Morrison, Michael. The role of visual acuity in bird-wind turbine interactions. CA State U., Sacramento CA

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Eastern Red Bat Photo Credit: Merlin Tuttle BCI

Understanding Wind: BATS

- Bat fatalities reported at nearly all U.S. wind farms w/ mortalities estimated to range from <2 to nearly 50 bats per turbine per year.
- Scientists identified that 88-90% of all bat deaths attributed to wind turbines are Eastern Red bat (Lasiurus borealis), Hoary bat (Lasiurus cinereus), or Silver-tailed bat (Lasionycteris noctivagans).
- Additional studies using radar and thermal imaging have found that these bats are attracted to slow moving turbine blades. [2]

[]] Key Facts Bat Conservation International (BCI) http://www.batcon.org/home/index.asp?idPage=55&idSubPage=32

[2] Gauthreaux Jr., Sidney A., Jr., Clemson University, presentation at *Toward Wildlife Friendly Wind Power: A Focus on the Great Lakes Basin Conference* proceedings, Toledo OH June 24 2006.

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Wildlife Impacts in Perspective

- Causes of Bird Mortality
 - Collisions, pollution & toxics, global warming, habitat fragmentation
- Human-related bird deaths per year in US

Cause	Estimated Annual Mortality		
Cats (feral and house)	1 billion		
Buildings, housing	100 million - 1 billion		
Power lines	10,000-174 million		
Hunters	100 million - 1 billion		
Cars	60-80 million		
Pesticides	67 million		
Communication	10-40 million		

11 AWEA, "Wind Energy and Wildlife: Frequently Asked Questions," 3, http://www.awea.org/pubs/factsheets/Wind-WildlifeFAQ-April2005.pdf

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Wind and Wildlife

- Support Wind Power
 - pollution-free wind energy releases no harmful mercury, sulfur dioxide, nitrogen oxides, or carbon dioxide
- Ensure Adequate Wildlife Analysis
 - Environmental Impact Statement prepared for every project should include a thorough wildlife analysis.
- Demand Post Construction Monitoring
 - to gauge impacts to wildlife, including bird and bat collisions

Public Participation

- Encourage public to participate early and often:
 - Scoping sessions
 - Public hearings
 - Submit comments
- Stay informed: sign up for updates with the Wind Power Education Project (WPEP)



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Questions?

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