



Annotated Bibliography of Wind Resources by Topic

As of 4/4/07

To be posted and regularly updated at www.ucsusa.org

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Habitat Wildlife

AWEA and American Bird Conservancy. *Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts*. Washington, DC May 18-19, 2004. Published September 2004.

[http://www.awea.org/pubs/documents/WEBBProceedings9.14.04\[Final\].pdf](http://www.awea.org/pubs/documents/WEBBProceedings9.14.04[Final].pdf)

Proceedings of a comprehensive two-day workshop on wind energy, birds, and bats co-sponsored by the American Bird Conservancy (ABC) and the American Wind Energy Association (AWEA) in Washington, D.C., May, 2004.

Wind Energy and Wildlife: If Not Wind, Then...? AWEA.

http://www.awea.org/pubs/factsheets/050629_If_Not_Wind.pdf

2-page factsheet comparing the wildlife and environmental impacts of wind with other energy generation technologies specifically nuclear, coal, and natural gas.

Save the Loon with Wind Energy: Comparative Impacts of Wind and Other Energy Sources on Wildlife. AWEA.

<http://www.awea.org/pubs/factsheets/wildlife.pdf>

2-page factsheet on the harmful impacts to wildlife of fossil and nuclear power generation.

Wind Energy and Wildlife: Frequently Asked Questions. AWEA.

http://www.awea.org/pubs/factsheets/050629_Wind_Wildlife_FAQ.pdf

6-page factsheet covering some wind basics, but also the wildlife impacts FAQs.

Wind and Wildlife: Learning from the Past, Changing for the Future. AWEA.

http://www.awea.org/pubs/factsheets/050622_Wildlife_Lessons_Fact_Sheet.pdf

3-page factsheet on the lessons of Altamont and solutions for moving forward.

Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions. NWCC. November 2004.

http://www.nationalwind.org/publications/avian/wildlife_factsheet.pdf

8-page factsheet of what is currently known about bird and bat-wind interaction and what questions still need to be addressed.

Erickson, W.P., G.D. Johnson, M.D. Strickland, D.P. Young Jr., K.J. Sernka, R.E. Good. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons of Avian Collision Mortality in the United States.* NWCC. August 2001

http://www.nationalwind.org/publications/avian/avian_collisions.pdf

67-page paper evaluating the impact of avian collisions with wind turbines and providing comparison with other causes of avian mortality specifically related to other collisions.

Anderson, R., M. Morrison, K. Sinclair, D. Strickland. *Studying Wind Energy/Bird Interactions: A Guidance Document.* NWCC. December 1999.

http://www.nationalwind.org/publications/avian/avian99/Avian_booklet.pdf

A 94-page document that covers a variety of metrics and methods for determining or monitoring potential impacts on birds at existing and proposed wind energy sites

Wind Power: Impacts and Issues. UMass Amherst.

http://www.ceere.org/rerl/publications/published/communityWindFactSheets/RERL_Fact_Sheet_3_Impacts&Issues.pdf

4-page factsheet covering the impacts of wind on land, wildlife, and human environment, as well as briefly touching on the impacts of fossil fuel power generation.

United States Government Accountability Office. *WIND POWER: Impacts on Wildlife and Government Responsibilities for Regulating Development and Protecting Wildlife.* GAO-05-906. September 2005.

<http://www.gao.gov/new.items/d05906.pdf>

64-page overview of recent studies, and state regulations also includes recommendations for Fish and Wildlife Service. Also has a table of Bird and Bat deaths at 23 US Wind sites.

Desholm, Mark. *Wind farm related mortality among avian migrants – a remote sensing study and model analysis.* National Environmental Research Institute - Ministry of the Environment, Denmark. August 2006.

http://www2.dmu.dk/Pub/phd_mde.pdf

130-page PhD Thesis studying avian mortality associated with offshore wind farms particularly studying the avoidance trends of migrating birds around the Nysted offshore wind project in the Baltic Sea.

New York State Energy Research Development Authority (NYSERDA) and Global Energy Concepts. *Birds and Bats: Potential Impacts and Survey Techniques.* October 2005.

http://www.powernaturally.org/Programs/Wind/toolkit/4_birdsbatsrevised.pdf

14-page review of the potential impacts of utility-scale wind power on birds and bats, ways to study the impacts, and finally a few suggestions for mitigating impacts.

Visual Impacts

Series of select web pages under Wind and Environment from the site [windpower.org](http://www.windpower.org)

DWIA Landscape: <http://www.windpower.org/en/tour/env/index.htm>

NYSERDA and Saratoga Associates, Inc. *Assessing and Mitigating Visual Impacts*. October 2005.

http://www.powernaturally.org/Programs/Wind/toolkit/6_visualimpactupfront.pdf

25 pages detailing visual impact assessment techniques as well as New York States policy detail for assessing and mitigating visual impacts

Ice

U.S. National Renewable Energy Laboratory. Ice and Snow – and the Winds Do Blow.

<http://www.nationalwind.org/events/siting/presentations/baring-gould.pdf>.

Powerpoint presentation on safety issues related to ice and throw.

Antoine Lacroix and Dr. James F. Manwell. *Wind Energy: Cold Weather Issues*. University of Massachusetts at Amherst Renewable Energy Research Laboratory. June 2000

http://www.ecs.umass.edu/mie/labs/rerl/research/Cold_Weather_White_Paper.pdf

17-page paper on cold weather issues especially icing as well as snow, freezing rain, and impacts of varying elevations

Noise

Facts about Wind Energy and Noise. AWEA.

http://www.awea.org/pubs/factsheets/WE_Noise.pdf

4-page factsheet on noise associated with wind farms and steps that have been taken to reduce wind farm noise.

Series of select web pages under Wind and Environment from the site windpower.org

DWIA Sound: <http://www.windpower.org/en/tour/env/sound.htm>

DWIA Sound measurement: <http://www.windpower.org/en/tour/env/db/dbdef.htm>

Manwell, J.F., A.L. Rogers. *Wind Turbine Noise Issues*. Center for Energy Efficiency and Renewable Energy University of Massachusetts Amherst. March 2004.

<http://www.ceere.org/rerl/publications/whitepapers/WindTurbineNoiseIssues.pdf>

19-page white paper describing the basics of noise and assessing the sources and propagation of wind turbine noises. Also looks briefly into varying noise regulations.

British Wind Energy Association (BWEA). *Briefing Sheet: Low Frequency Noise and Wind Turbines*. February 2005.

http://www.bwea.org/pdf/briefings/lfn_summary.pdf

2 pages giving a quick overview of low frequency noise issues related to wind turbines – including an explanation of infrasound.

British Wind Energy Association (BWEA). *Low Frequency Noise and Wind Turbines: Technical Annex*. February 2005.

<http://www.bwea.org/pdf/lfn-annex.pdf>

10 pages addressing the information in the BWEA briefing in significantly more detail. Especially going into research that has already been completed.

Lighting – Flicker – Shadows

Series of select web pages under Wind and Environment from their site windpower.org

DWIA Shadow casting: <http://www.windpower.org/en/tour/env/shadow/index.htm>

DWIA Shadow calculation: <http://www.windpower.org/en/tour/env/shadow/shadow.htm>

Lighting – Radar – Air Force – FAA Requirements

Wind Turbine Lighting. AWEA. May 14, 2004.

<http://www.awea.org/pubs/factsheets/WTLighting-factsheet-rev.pdf>

1-page factsheet on FAA lighting requirements and testing.

Series of select web pages under Wind and Environment from the site windpower.org

DWIA Aviation obstruction: <http://www.windpower.org/en/tour/env/airmark.htm>

Wind Turbines and Radar: An Informational Resource. AWEA. June 6, 2006.

http://www.awea.org/pubs/factsheets/060602_Wind_Turbines_and%20Radar_Fact_Sheet.pdf

3-page brief summary of the issues, some background, potential problems, and some possible solutions.

Wind Power and Radar. NWCC. Issue Forum Brief. Reno, NV. July 27, 2006.

<http://www.nationalwind.org/events/business/37/issuebrief.pdf>

7-page summary of six presentations on Wind and Radar interaction issues. Presenters were experts in the field from a variety of US Government agencies and the US military.

Transmission

Porter, K. *Transmission Planning and Wind Energy*. NWCC. August 2004.

<http://www.nationalwind.org/publications/transmission/transbriefs/Planning.pdf>

6-page issue brief on transmission issues with specific information/examples from the West and Midwest.

Porter, K., C. Smith, S. Wiese. *Wind Energy Interconnection*. NWCC. September 2003.

<http://www.nationalwind.org/publications/transmission/transbriefs/Interconnection.pdf>

9-page issue brief on interconnection issues and regulations

Minnesota Public Utility Commission. 2006. *Final Report – 2006 Minnesota Wind Integration Study Vol I and II*. Prepared by EnerNex Corporation. November 30.

http://www.puc.state.mn.us/docs/windrpt_vol%201.pdf

http://www.puc.state.mn.us/docs/windrpt_vol%202.pdf

Intermittency/Reliability

Series of select web pages under Wind and Environment from their site windpower.org

DWIA Power quality: <http://www.windpower.org/en/tour/grid/rein.htm>

Wind Power: Performance and Economics Factsheet. UMass Amherst.

http://www.ceere.org/rerl/publications/published/communityWindFactSheets/RERL_Fact_Sheet_2_Community_Wind_Performance.pdf

4-page factsheet on wind performance and grid connection.

Wind Power: Capacity Factor, Intermittency, and what happens when the wind doesn't blow? UMass Amherst.

http://www.ceere.org/rerl/publications/published/communityWindFactSheets/RERL_Fact_Sheet_2a_Capacity_Factor.pdf

4-page factsheet and capacity and reliability of wind power generation.

NYSERDA and Global Energy Concepts. *Power Grid and Electricity Delivery*. October 2005.

http://www.powernaturally.org/Programs/Wind/toolkit/8_overviewpowergrid.pdf

9-page factsheet explaining how the electric grid works and what it means to have an intermittent source.

Parsons, B, M. Milligan et al. *Grid Impacts of Wind Power Variability: Recent Assessments from a Variety of Utilities in the United States*. NREL. July 2006.

<http://www.nrel.gov/docs/fy06osti/39955.pdf>

16-page detail on studies looking into impact of wind power on the grid provides some conclusions and suggestions for ongoing research.

Public Opinion

Gray, Thomas O., *Views on the Environment: Clean and Green*. AWEA.

<http://www.awea.org/pubs/documents/oppoll.PDF>

11-page summary of public opinion surveys on the environment in general, renewable energy in general, and wind energy in particular in that order, using data gathered from polling in the U.S., the United Kingdom, and Canada.

Wind Power Facility Siting Case Studies: Community Response. NWCC.

http://www.nationalwind.org/publications/permit/Wind_Power_Facility_Siting_Case_Studies.pdf

A 51-page study evaluating community response, siting process, controversy, and resolution at nine wind sites with in depth evaluation at three of the nine sites.

Orco Macro. Poll Results Factsheet. Renewable Energy Vermont. March 2004.

http://www.revermont.org/Macro_poll.pdf

3-page results of a public acceptance poll asking about desirability of wind and other energy sources.

Property Values

Beck, F., Kostiuk, D., Sterzinger, G. *The Effect of Wind Development on Local Property Values*. REPP. May 2003.

http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf

An 81-page document looking at property value changes in the view sheds of ten different wind projects.

Hoen, Ben. *Impacts of Windmill Visibility on Property Values in Madison County, New York*. Masters of Science in Environmental Policy Thesis. Bard College. Annandale on Hudson, NY. April 2006.

http://www.aceny.org/pdfs/misc/Property%20Value%20Study%20Full%20Text5_24_06.pdf

A 73-page thesis document looking at property value changes in Madison County. The analysis finds an absence of measurable effects of wind farm visibility on property transaction values. This result holds even when concentrating on homes within a mile of the facility

Agriculture Impacts

Brower, Matthew – New York State Department of Agriculture and Markets. *Agricultural Impacts Resulting from Wind Farm Construction*. NYSERDA. October 2005.

http://www.powernaturally.org/Programs/Wind/toolkit/7_visualimpactupfront.pdf

16-page description of the potential impacts to agriculture of wind farm construction primarily consisting of construction phase photographs.

Other Economic Impacts

Clemmer, S., B. Haddad, A. Noguee, B. Paulos. *Powerful Solutions Appendix A: Renewable Energy Technology Potential Costs and Market*. UCS. 1999.

http://www.ucsusa.org/assets/documents/clean_energy/ACFF6pMpQ.pdf

pages 3-6 of Appendix A discuss the specific costs and benefits of wind power.

ECONorthwest. *Economic Impacts of Wind Power in Kittitas County: Final Report*. Phoenix Economic Development Group. November 2002.

<http://www.phoenixgroupedc.org/Kittitas%20Wind,%20final.pdf>

20-page report examining potential property value impacts, economic impacts, and tax revenue impacts from two wind power proposals in Kittitas County Washington.

NYSERDA and Global Energy Concepts. *Economic and Socioeconomic Impacts of Utility-Scale Wind Power Projects*. October 2005.

http://www.powernaturally.org/Programs/Wind/toolkit/20_economicandsocioeconomicimpacts.pdf

12-page factsheet addressing a variety of issues including jobs and property taxes as well as many others.

Wind Energy and U.S. Energy Subsidies. AWEA. October 2006.

http://www.ifnotwind.org/pdf/Subsidy_10-6-06.pdf

brief 2-page look at Wind compared with other electricity generation technologies for federal subsidies

Multiple Categories

Most Frequently Asked Questions about Wind Energy. AWEA.

<http://www.awea.org/pubs/documents/FAQ2002%20-%20web.PDF>

30-page document covering many aspects of wind energy including: basics, costs, potential, economics, environment, size, and policy.

Reeves, A., F. Beck. *Wind Energy for Electric Power*. REPP. November 2003.

http://www.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf

29-page issue brief providing a general background on utility-scale wind power as well as details including environmental impact and regulatory issues like transmission and permitting.

Wind Power: Siting in Communities. UMass Amherst.

http://www.ceere.org/rerl/publications/published/communityWindFactSheets/RERL_Fact_Sheet_4_Siting.pdf

2-page factsheet on technical and environmental issues in the siting of wind projects.

Wind Power: Permitting in Your Community. UMass Amherst.

http://www.ceere.org/rerl/publications/published/communityWindFactSheets/RERL_Fact_Sheet_7_Permitting.pdf

4-page factsheet on the permitting process, details, and agencies for wind power in New England.

Windpower: Clean, Sustainable, Affordable. UCS.

http://www.ucsusa.org/clean_energy/coalvswind/index.html

quick intro to basic impacts of wind power

Farming the Wind: Wind Power and Agriculture. UCS.

http://www.ucsusa.org/assets/documents/clean_energy/Agfs_wind_2003.pdf

2-page factsheet on wind and farms

How Wind Energy Works. UCS.

http://www.ucsusa.org/clean_energy/renewable_energy_basics/how-wind-energy-works.html

backgrounder with general info on wind.

Enxco. *Understanding Wind, FAQ*.

http://www.enxco.com/understanding_wind_faqs.php

Online FAQ about basic wind power technology issues.

Greenlight Energy. *Wind Energy Facts*.

http://www.glnrg.com/news/we_facts.php.

Online fact sheet with information on wind basics, as well as economic and environmental benefits data.

Natural Resources Defense Council. *Wind Energy Fact Sheet*.

<http://www.nrdc.org/air/energy/fwind.asp>.

Online fact sheet providing basic information on wind power.

UPC Wind. *Why Wind? Benefits and FAQ*.

<http://www.upcgroup.org/whywind.php>.

Online information on the economic and environmental benefits of wind power, including a FAQ page responding to many of the issues raised by opposition groups.

Horizon Wind Energy. *Wind Energy and Environment*.

<http://www.horizonwind.com/forteacherskidsconsumers.asp?id=6>.

Online information basic wind and environment facts.

Applied Wind Technology. *North Worcester County Wind Energy FAQ*.

http://www.appliedwindtechnology.com/faq/no_worc_co.asp.

Online FAQ about basic wind issues.

Cielo Wind Power. *Wind and the Environment*.

<http://www.cielowind.com/Downloadable%20PDF%20Files/Environment.pdf>.

One page fact sheet with basic wind and environment benefits information.

Energy Center of Wisconsin. *Wind Power and the Environment*.

<http://www.ecw.org/prod/433-3.pdf>.

Two page fact sheet with basic information on wind benefits and impacts.

U.S. DOE. EERE. *Some Common Misconceptions about Wind Power*.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/34600_misconceptions.pdf. Six page white paper that lists common wind power misconceptions—primarily with respect to technology feasibility—and provides responses to them.

U.S. DOE. EERE *Wind Energy Myths*. Wind Powering America Factsheet Series. May 2005.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/wpa_factsheet_myths.pdf

2-page factsheet including info on noise and siting.

U.S. DOE. EERE *Wind Energy Benefits*. Wind Powering America Factsheet Series. April 2005.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/wpa_factsheet_series.pdf

2-page factsheet on benefits of wind including environmental.

U.S. DOE. EERE. *Clean Energy for the 21st Century*.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/35873_21century.pdf.

Six page brochure on the basics on wind power, and the wind powering America program.

U.S. DOE. EERE. *Wind Energy for Rural Economic Development*.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/33590_econ_dev.pdf.

Eight page brochure on wind and economic development.

U.S. DOE. EERE. *Wind Energy Guide for County Commissioners*. October 2006.

http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/county_commissioners.pdf

28-page briefing book for local government officials with many one page info sheets on various wind topics and how they will influence the permitting process.

NYSERDA and Global Energy Concepts. *Other Potential Environmental Impacts*. October 2005.

http://www.pownaturally.org/Programs/Wind/toolkit/5_otherpotenviroimpactsrevised.pdf

A 22-page document detailing a variety of potential impacts from wind turbines including visual and sound impacts, construction and decommissioning consequences, television and other communications interference, and more. It also touches on how many of these impacts can be mitigated in the design stage.