

FINDING RELIABLE INFORMATION ABOUT WIND ENERGY4.0

This resource was developed by members of the Department of Environmental Quality's Renewable Energy Local Government Outreach Stakeholder Group, an effort that involved representatives from local government, public colleges and universities, industry, environmental organizations and others in reviewing ways to identify reliable information about wind energy.

Purpose

The purpose of this document is to help local decision makers and citizens identify reliable sources of information about modern wind power.

Anyone can now find a wealth of information about wind power, but some may be unreliable, anecdotal, outdated or from less than credible sources. Whether the information is in books, periodicals or newspapers, on the Internet or on television, accuracy and objectivity must be assessed. This is particularly true on the Internet, where many sites have no review process.

This document identifies sources that are likely to be regarded as reliable by academic and government researchers because of the level of peer review or similar forms of evaluation. It also suggests characteristics that might signal the need for more careful scrutiny by the reader.

General guidelines

The following types of sources tend to have highly reliable information about wind energy:

- **Government and university sources.** These sites provide a wide variety of information including wind resources maps and studies on many aspects of wind energy. Examples of such sources include the following:
 - For Virginia-specific information, tools and other resources
 - James Madison University's Wind Energy Collaborative
<http://vwec.cisat.jmu.edu/index.html>
 - Virginia Department of Environmental Quality
http://www.deq.state.va.us/renewable_energy/homepage.html

- U.S. Energy Information Administration for statistics, studies and projections on energy use of all types <http://www.eia.gov/>. Details of electricity generation by source and location are found on this site as well <http://www.eia.gov/electricity/data.cfm>
 - The U.S. Department of Energy (DOE)
 - Wind and Water Program <http://www1.eere.energy.gov/windandhydro/index.html>
 - Wind Powering America <http://www.windpoweringamerica.gov/>
 - The DOE's National Renewable Energy Laboratory (NREL) wind research program <http://www.nrel.gov/wind/> and its affiliated laboratories such as
 - E.O. Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division, University of California <http://eetd.lbl.gov/>
 - National Wind Technology Center (Boulder, Colorado) <http://www.nrel.gov/wind/nwtc.html>
 - University of Massachusetts Wind Energy Center <http://www.umass.edu/windenergy/>
 - U.S. Fish and Wildlife service on wind energy <http://www.fws.gov/habitatconservation/wind.html> and <http://www.fws.gov/midwest/wind/references/index.html>.
- **For medical and scientific information, peer-reviewed sources** (i.e., statements that have been reviewed and scientifically accepted by credentialed experts in the field – see detailed explanation below) such as
 - **PubMed**, a free search resource developed and maintained by the National Center for Biotechnology Information (NCBI), at the U.S. National Library of Medicine (NLM), located at the National Institutes of Health (NIH) http://www.ncbi.nlm.nih.gov/books/NBK3827/#pubmedhelp.PubMed_Quick_Start (search "Pub Med" in the pull-down menu)
 - **On bats and wind energy, the Bats and Wind Energy Cooperative**, which draws on expertise from Bat Conservation International (BCI), the U.S. Fish and Wildlife Service, the American Wind Energy Association (AWEA), and the U.S. Department of Energy's NREL <http://www.batsandwind.org/>

The American Wind Energy Association (AWEA), though decidedly pro-wind, is a reputable industry group that provides a great deal of technical information about wind energy and the wind industry. <http://www.awea.org/>

For details about particular makes and models of wind turbines or components, technical specifications may be available from the manufacturer.

Assessing a source of information

When presented with information about wind energy, the following questions can help determine the credibility and usefulness of the source.

1. **Where does the information appear?**
 2. **What is the original source of the information?**
 3. **How was the information reviewed before publication? If scientific, medical, or scholarly information, was it peer-reviewed?**
 4. **What is the publication date of the original information?**
- *Comments in italics indicate CAUTION. Information with these characteristics may be less reliable.*

1. Where does the information appear?

Information may be found in a myriad of sources, including print (newspapers, magazines, journals, books) and electronic (Internet, radio, television) media.

The most reliable information generally comes from scientific, educational and government sources whose **primary purpose** is to

- Determine the facts
- Report peer-reviewed research

- Caution is advised if: *Purpose of the source is to sell a product (unless the source is providing technical specifications of the product)*
- *Purpose of the source is entertainment*

Special note on Internet sources. When using Internet search engines, it is important to remember that most popular search engines do not determine the accuracy of content. The highest listed results are often

- Paid advertisements, or
- Sites with many hits (popular but not necessarily accurate)

Most search engines do not assess the reliability of sources. They reflect popularity or a paid listing. The criteria in this document may help sort out less reliable sources.

In general, scholarly sources are more credible than mass media. The following criteria can be used to help distinguish between scholarly and popular sources, using the example of a scholarly journal compared with a magazine article. These criteria apply to both print and electronic media.

Articles in scholarly journals, whether print or electronic, are usually

- Signed by the author(s)
- Written by one or more experts whose position(s) and institution(s) are listed
- Footnoted and/or include a bibliography
- Published by a professional association, journal or scholarly press (see more details on publishers below)

- Caution is advised if: *Work is unsigned*
- *Work is written by someone outside the field*
- *No references (footnotes and/or bibliography) are provided*
- *Work contains advertisements*
- *Author represents the wind industry or an industry that competes with wind energy (example: competing energy sources)*

Reliable sources base their conclusions on data gathered over time, that is, carefully recorded observations that have been widely documented.

- Caution is advised if: *Conclusions based on anecdotal (casual, one-time, and difficult-to-replicate) observations that are poorly documented or not documented at all* *Work is an Internet video from an unreviewed source (reliability cannot be determined)*

2. What is the original source of the information?

Regardless of where the information appears, it is important to identify the original source of the information. Mass media do not always identify the original source of the information, simply quoting an individual.

Caution is advised if:

- *The original source of information is not known.*

Once the original source is known, proceed to determining how the information was reviewed before publication.

3. How was the information reviewed before publication? If scientific, medical, or scholarly information, was it peer-reviewed?

Many Internet publications are not reviewed before being posted; however, government and educational sites generally have some sort of review process. If no review process is stated or evident on a site, there may well be none.

In the scholarly world, "peer-reviewed" has a fairly specific meaning. Peer-reviewed scientific, medical or scholarly articles should meet the following criteria:

- The work was originally published by a scholarly journal or academic press , or,
 - The work has been reviewed and deemed credible by scholars in the appropriate field, and
 - The peers are chosen by a scholarly publication, not by the author of the work.
- Caution is advised if: *Work was self-published (the author paid for publication) or published by non-academic or non-reviewed press*

When examining a source, some useful questions are:

- If the source is a periodical article, was it peer reviewed (refereed) or reviewed by an editorial board?
- If the source is a book, what is the reputation of the publisher?
- If it is from the Internet, was there any review process?
- Was it critically reviewed by qualified experts after it was written?
- Has the source been widely (and positively) cited in other peer-reviewed publications?

Some useful sources for assessing the quality of a source:

- To find out whether a journal is peer reviewed or refereed, look at the journal's Web page or check [Ulrich Web](http://ulrichsweb.serialssolutions.com/login) <http://ulrichsweb.serialssolutions.com/login> (requires institutional membership; should be available at local college, university or public library).
- Information may be published by an association, a university press, a commercial publisher, or a governmental entity. Knowledge of the publisher can help identify point of view and potential bias.
- The following reference sources can help in evaluating publishers:
 - [Associations Unlimited](http://galenet.galegroup.com/servlet/AU/form?l=2&u=n&u=i&u=r&u=s&locID=salt60366&n=10) <http://galenet.galegroup.com/servlet/AU/form?l=2&u=n&u=i&u=r&u=s&locID=salt60366&n=10>
 - Publisher's Directory (access through public library, college or university)

Caution is advised if

- *No review process*
- *For periodicals, no evidence of peer review or review by editorial board*
- *Publisher has poor review process*

4. When was the information first published?

In fields such as medicine, science, business, and technology, currency of information is important. Wind energy technology is developing rapidly and experience with wind energy is growing, so more recent sources tend to be more reliable than older sources.

Some sources that are currently in use rely on information that was published many years ago. Whenever possible, determine the original publication date of the information. Original publication dates of cited information should be available in the footnotes or bibliography. Information published before 2000 is of little, other than historical, value due to rapid changes in technology, cost of production, siting requirements, and other factors.

Caution is advised if:

- *Original source of information is pre-2000, especially regarding turbine technology, turbine noise, government policies, incentives, and legal requirements.*

Sources consulted:

Go for the Gold, Information Seeking Skills, James Madison University Libraries, Module 6, "Evaluating Sources of Information," <http://www.lib.jmu.edu/gold/default.aspx>)

CalPoly Library Services <http://lib.calpoly.edu/research/guides/peer.html>

Life Sciences Library, The University of Texas at Austin
<http://www.lib.utexas.edu/lsl/help/modules/peer.html>

University Libraries, University of Nevada, Reno <http://knowledgecenter.unr.edu/help/using/peer.aspx>

Wilson Web
http://www.hwwilson.com/documentation/peer_reviewed.cfm