

CASE NO. 696-S-11

SUPPLEMENTAL MEMORANDUM

September 1, 2011

Champaign
County
Department of

**PLANNING &
ZONING**

Petitioners: California Ridge Wind Energy LLC and the participating landowners listed in the attached legal advertisement. California Ridge Wind Energy LLC is wholly owned by Invenergy Wind North America LLC, One South Wacker Drive, Suite 1900, Chicago, IL 60606, with corporate officers as listed in the attached legal advertisement.

Request: Authorize a Wind Farm which consists of 30 Wind Farm Towers (wind turbines) in total with a total nameplate capacity of 48 megawatts (MW) of which 28 Wind Farm Towers with a total nameplate capacity of 45 MW are proposed in Compromise Township (Part A) and 2 Wind Farm Towers with a total nameplate capacity of 3 MW are proposed in Ogden Township (Part B), and including access roads, wiring, and public road improvements, and including the waivers of standard conditions in Section 6.1.4 as listed in the attached legal advertisement.

Location: In Compromise Township the following sections are included with exceptions as described in the attached legal advertisement:

- Sections 19, 20, 21, 28, 29, 30, 31, 32, and 33 of T21N, R14W of the 2nd P.M.,
- Sections 24, 25, and 36 of T21N, R10E of the 3rd P.M.,
- Fractional Sections 30 and 31 of T21N, R11E, of the 3rd P.M.

In Ogden Township the following sections are included with exceptions as described in the attached legal advertisement:

- Fractional Section 6, T20N, R11E of the 3rd P.M.,
- Fractional Sections 4, 5, 6, and 7 of T20N, R14W of the 2nd P.M.,
- Sections 8, 9, and 16 of T20N, R14W of the 2nd P.M.

Site Area: Approximately 10,193 acres

Time Schedule for Development: Fall 2011

Prepared by: John Hall
Zoning Administrator

STATUS

This is the second hearing on this zoning case. The minutes are included separately for approval at the next meeting (September 8, 2011). Other attachments are listed below.

The Draft Reclamation Agreement has been forwarded to the State's Attorney for legal review.

Attachment E reviews compliance with Subsection 6.1.4 that does not require any waivers.

Other new information is briefly reviewed below.

SOILS ARE NOT BEST PRIME FARMLAND OVERALL

The Champaign County Soil and Water Conservation District has completed an analysis of the soils that will be used for the wind tower sites and access roads. Approximately 22 acres of farmland will be used for the sites and roads. The soils that will be used have an overall Land Evaluation of about 80.5 which is well below the LE of 85 that indicates best prime farmland.

ATTACHMENTS

- A Public Notice (modified legal advertisement) for Case 696-S-11 Parts A and B dated August 17, 2011
- B Fifteen Bad Things with Windpower- and Three Reason Why handout from Bill Ingram at the August 25, 2011, public hearing
- C Erratum received August 2, 2011, to the California Ridge Wind Energy Project Champaign County Special Use Permit Application received July 1, 2011
- D Draft Reclamation Agreement received August 30, 2011
- E Compliance With Subsection 6.1.4 Not Requiring Waivers
- F Memorandum dated August 26, 2011, from Petitioner's Attorney Michael S. Blazer (included separately)
- G Minutes of public hearing on August 25, 2011 (included separately)

PUBLIC NOTICE OF PUBLIC HEARING IN REGARD TO A COUNTY BOARD SPECIAL USE PERMIT UNDER THE PROVISIONS OF THE CHAMPAIGN COUNTY ZONING ORDINANCE

CASE: 696-S-11

California Ridge Wind Energy LLC and the participating landowners listed below have filed a petition for a Special Use Permit under the provisions of the Champaign County Zoning Ordinance on property in unincorporated Champaign County. The petition is on file in the office of the Champaign County Department of Planning & Zoning, 1776 East Washington Street, Urbana, IL.

California Ridge Wind Energy LLC is wholly owned by Invenergy Wind North America LLC, One South Wacker Drive, Suite 1900, Chicago, IL 60606, with President, Michael Polsky; Vice President, James Murphy; Vice-President, Bryan Schueler; Vice-President, James Shield; Vice-President, Kevin Parzyck; Secretary, Joseph Condo, all with offices at One South Wacker Drive, Suite 1900, Chicago, IL 60606.

A public hearing will be held **Thursday, August 25, 2011 at 7:00 p.m.** prevailing time in the Lyle Shields Meeting Room, Brookens Administrative Center, 1776 E. Washington Street, Urbana, IL, at which time and place the Champaign County Zoning Board of Appeals will consider a petition to:

Authorize a Wind Farm which consists of 30 Wind Farm Towers (wind turbines) in total with a total nameplate capacity of 48 megawatts (MW) of which 28 Wind Farm Towers with a total nameplate capacity of 45 MW are proposed in Compromise Township (Part A) and 2 Wind Farm Towers with a total nameplate capacity of 3 MW are proposed in Ogden Township (Part B), and including access roads, wiring, and public road improvements, and including waivers of standard conditions as listed below, on the following properties in Compromise Township (Part A) and Ogden Township (Part B) in Champaign County, Illinois:

PART A COMPROMISE TOWNSHIP

Section 19, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 19, with exceptions. A total of 6 Wind Farm Towers (wind turbines) are proposed in Section 19 as follows:

- 2 Wind Farm Towers are proposed in the Northwest Quarter of Section 19 on a 209.15 acre tract owned by G & E Farms, Inc., POB 35, Gifford, IL 61847-0335;
- 1 Wind Farm Tower is proposed in the Northeast Quarter of Section 19 on a 66 acre tract owned by William Pflugmacher, 333 Eiler Drive, Gifford, IL 61847-9727;
- 1 Wind Farm Tower is proposed in the Northeast Quarter of Section 19 on a 65.63 acre tract owned by Eric Suits, 2655 CR 2600E, Penfield, IL 61862;
- 1 Wind Farm Tower is proposed in the East Half of the Southwest Quarter of Section 19 on a 30 acre parcel owned by Louise Fruhling, 31361 N 750 East Rd, Potomac, IL 61865-6601;
- 1 Wind Farm Tower is proposed in the North Half of the Southeast Quarter of Section 19 on an 80 acre parcel owned by Loretta Fruhling/ Fruhling Family Trust, 388 Gibbs Drive, Rantoul, IL 61866

Other participating landowners in Section 19 are the following:
John Fruhling, 2499 CR 2600N, Penfield, IL 61862

Attachment A. Public Notice (modified legal advertisement) for Case 696-S-11 Parts A and B

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Roy and Barbara Johnson, 2640 CR 2500E, Penfield, IL 61862
Robert and Dorene Pflugmacher, 866E CR 2250N, Ogden, IL 61859-9602
Greg Frerichs, 2506 CR2300N, Ogden IL 61859

Section 20, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes an 80 acre tract of land in the West Half of the Northwest Quarter of Section 20 and an 80 acre tract of land in the South Half of the Southwest Quarter of Section 20 and a 157.98 acre tract of land in the Southeast Quarter of Section 20. Participating landowners in Section 20 are the following:

Michael Babb, 2635 CR 2700E, Penfield, IL 61862
Marsha Gates, POB 704, Tolono, IL 61880
G & E Farms, Inc., 502 S. Main St. POB 35, Gifford, IL 61847-9713

Section 21, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes the Southwest Quarter of Section 21. Participating landowners in Section 21 are the following:

Derald and Florene Ackerman, 519 South Main Street, Gifford, IL 61847-9713
Kenneth and Rosetta Suits, 2738 CR 2600N, Penfield, IL 61862
Rosetta Suits, 2738 CR 2600N, Penfield, IL 61862

Section 24, T21N, R10E of the 3rd P.M., Compromise Township. The Special Use Permit includes the South Third of the Northwest Quarter and the Southwest Quarter. Participating landowners in Section 24 are the following:

Derald and Florene Ackerman, 519 South Main Street, Gifford, IL 61847-9713
Kenneth and Rosetta Suits, 2738 CR 2600N, Penfield, IL 61862

Section 25, T21N, R10E of the 3rd P.M., Compromise Township. The Special Use Permit includes all of Section 25 with exceptions. A total of 2 Wind Farm Towers (wind turbines) are proposed in Section 25 as follows:

- 2 Wind Farm Towers are proposed on an 80 acre parcel in the South Half of the Southeast Quarter of Section 25 on land owned by the Mary Ruth Elfe Revocable Trust and Charlotte R. Van Blokland Trust, aka Tate Farm #3/Busey Ag Services, 3002 West Windsor Road, Champaign, IL 61822

Other participating landowners in Section 25 are the following:

Russell and Marilyn Buhr, 2594 CR 2300E, Gifford, IL 61847-9740
Vernon and Wilma Buhr, 2152 CR 2400N, St. Joseph, IL 61873
Luella Busboom, 2258 CR 2500N, St. Joseph, IL 61873
Maury Busboom, POB 131, Royal, IL 61871
Roger and Betty Gronewald, 508 E Main POB 117, Royal, IL 61871
Erna Hinrichs, 1037 Englewood Drive, Rantoul IL 61866
Darrell and Marilyn Mennenga, 5205 Beech Ridge Road, Nashville, TN 37221
David and Danita Uken, 2146 CR 2100N, St. Joseph, IL 61873

Section 28, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 28 with exceptions. A total of 3 Wind Farm Towers (wind turbines) are proposed in Section 28 as follows:

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- 1 Wind Farm Tower is proposed on a 62.54 acre parcel in the Northeast Quarter of Section 28 on land owned by Kenneth Suits, 2738 CR 2600N, Penfield, IL 61862
- 1 Wind Farm Tower is proposed on an 80 acre parcel being the East Half of the Southwest Quarter of Section 28 on land owned by Michael O'Neill, POB 236, Philo, IL 61864
- 1 Wind Farm Tower is proposed on a 70.26 acre parcel in the East Half of the Southeast Quarter of Section 28 on land owned by Roy and Barbara Johnson, 2640 CR 2500E, Penfield, IL 61862

Other participating landowners in Section 28 are the following:

Michelle Babb, 2635 CR 2700E, Penfield, IL 61862
Alice Buck c/o Steve Buck, 609 Bayshore Drive, #9, Ft. Lauderdale, FL 33304
Steve Buck, 609 Bayshore Drive, #9, Ft. Lauderdale, FL 33304
Alice Cain Heirs c/o Steve Cain, POB 103, Philo, IL 61864
Gary Hovel, 2518 CR 2600E, Penfield, IL
Claas Hovel, 2971 CR 2700E, Penfield, IL
Jeffrey Suits, 2703 CR 2500N, Penfield, IL 61862
Union Pacific Railroad, 1400 Douglas, Stop 1640, Omaha, NE 68179

Section 29, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 29, with exceptions. One Wind Farm Tower (wind turbine) is proposed in Section 29 as follows:

- 1 Wind Farm Tower is proposed on a 75 acre tract in the North Half of the Southeast Quarter of Section 29 on land owned by Velma Werner, 312 Penny Lane, Peotone, IL 60468

Other participating landowners in Section 29 are the following:

Albers Farm c/o Sandra J. King, POB 562, St. Joseph, IL 61872
Dick Albers, POB 213, Royal, IL 61871
Thomas and Patricia Buck, 2321 CR 2900N, Gifford, IL 61847
Bruinius Family Limited Partnership, 7723 W. Stuenkel Rd., Frankfort, IL 60423
Franzen Family Living Trust, 861 CR 900E, Tolono, IL 61880
Edgar and Sharon Hovel, 408 Moraine Dr., Rantoul, IL 61866
Gary Hovel, Trustee, 2518 CR 2600E, Penfield, IL 61862
Kenneth and Rosetta Suits, 2738 CR 2600N, Penfield, IL 61862

Fractional Section 30, T21N, R11E, of the 3rd P.M., Compromise Township. The Special Use Permit includes all of Fractional Section 30, with exceptions. A total of 5 Wind Farm Towers (wind turbines) are proposed in Fractional Section 30 as follows:

- 1 Wind Farm Tower is proposed on a 60.86 acre parcel in the North Half of the South Half of Fractional Section 30 on land owned by Kay and John Fiscus, 105 Thomas Dr., St. Joseph, IL 61873
- 2 Wind Farm Towers are proposed on an 80 acre tract in the Southwest Quarter of Fractional Section 30 on land owned by Annette Brya Edwards c/o Busey Bank Ag Services, POB 107, Leroy, IL 61752
- 1 Wind Farm Tower is proposed on a 62.66 acre parcel in the East Half of Fractional Section 30 on land owned by Marvin and Pamela Ideus, 401 Eden Park Dr., Rantoul, IL 61866

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- 1 Wind Farm Tower is proposed on an 80 acre parcel in the Southeast Quarter of Fractional Section 30 owned by Roseann Clifford, 2008 Sunview Dr., Champaign, IL 61821

Other participating landowners in Fractional Section 30 are the following:

Lois and Herbert Frerichs, POB 25, Royal, IL 61871

Alfred and Lorine Ideus, 2124 CR 2400N, St. Joseph, IL 61873

Roy and Barbara Johnson, 2640 CR 2500E, Penfield, IL 61862

Section 30, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 30 except the Northwest Quarter. A total of 3 Wind Farm Towers (wind turbines) are proposed in this Section 30 as follows:

- 1 Wind Farm Tower is proposed on an 80 acre parcel being the West Half of the Northeast Quarter of Section 30 on land owned by the Michael and Eileen Jarboe Trust, 2792 CR 2400N, Penfield, IL 61862
- 1 Wind Farm Tower is proposed on a 53.33 acre parcel located in the Northeast Quarter of the Southwest Quarter and the Northwest Quarter of the Southeast Quarter of Section 30 on land owned by Robert and Dorene Pflugmacher, 866E CR 2250N, Ogden, IL 61859-9602
- 1 Wind Farm Tower is proposed on an 80 acre parcel being the West Half of the Southwest quarter of Section 30 on land owned by Vernon and Wilma Buhr, 2152 CR 2400N, St. Joseph, IL 61873

Other participating landowners in this Section 30 are the following:

John Blue, 2148 CR 2650E, Ogden, IL 61859

Daniel and Amy Cain, 2567 CR 2600E, Penfield, IL 61862

Edgar and Sharon Hovel, 408 Moraine Dr., Rantoul, IL 61866

Evelyn Suits, 2331 CR 2000E, Urbana, IL 61802

Robert and Dorene Pflugmacher, 866E CR 2250N, Ogden, IL 61859-9602

Fractional Section 31, T21N, R11E of the 3rd P.M., Compromise Township. The Special Use Permit includes the North Half of the Fractional Section 31 and the North Half of the Fractional Southwest Quarter of Fractional Section 31 and the East Half of the Southeast Quarter of Fractional Section 31. One Wind Farm Tower (wind turbine) is proposed in Fractional Section 31 as follows:

- 1 Wind Farm Tower is proposed on a 140 acre parcel in the Northeast Quarter of Fractional Section 31 on land owned by Larry Foster, 28012 State Route 49, Armstrong, IL 61812

Other participating landowners in Fractional Section 31 are the following:

Mary Ruth Elfe Revocable Trust and Charlotte R. Van Blokland Trust, aka Tate Farm #3/Busey Ag Services, 3002 West Windsor Road, Champaign, IL 61822

John Blue, 2148 CR 2650E, Ogden, IL 61859

Judith E. Kopmann, POB 7, Royal, IL 61871

Douglas Walker and Susan Kingston, 1111 Stockholm Rd., Paxton, IL 60957

Section 31, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes the North Half of Section 31 and the Southwest Quarter of the Southeast Quarter of Section 31. One Wind Farm Tower (wind turbine) is proposed in this Section 31 as follows:

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- 1 Wind Farm Tower is proposed on an 80 acre parcel being the East Half of the Northeast Quarter of Section 31 on land owned by the LaVeda Pollack Trust c/o Kalin Kocher, 2455 CR 2600E, Penfield, IL 61862

Other participating landowners in this Section 31 are the following:

Larry Frerichs, 2474 CR 2500E, Penfield, IL 61862

Evelyn Suits, 2331 CR 2000E, Urbana, IL 61802

Carl and Jane Udovich, 3526 Bankview Dr., Joliet, IL 60431

Section 32, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 32 except a 1.10 acre tract of land located in the West Half of the Northwest Quarter of Section 32. Participating landowners in Section 32 are the following:

Brian Loschen, 2692 CR 2300N, Ogden, IL 61859

Illini FS, Inc., 1509 E. University Avenue, Urbana, IL 61802

Union Pacific Railroad, 1400 Douglas, Stop 1640, Omaha, NE 61879

Wendy M. Heeren Trust, 50 Maywood Dr., Danville, IL 61832

Arnold & Delores Loschen Trusts, 2654 CR 2400N, Ogden, IL 61859

Section 33, T21N, R14W of the 2nd P.M., Compromise Township. The Special Use Permit includes all of Section 33, with exceptions. A total of 3 Wind Farm Towers (wind turbines) are proposed in this Section 30 as follows:

- 1 Wind Farm Tower is proposed on a 40 acre parcel being the Northeast Quarter of the Northwest Quarter of Section 33 on land owned by Robert Long, Pearl St., Bluffs, IL 62621
- 1 Wind Farm Tower is proposed on a 77.04 acre parcel in the West Half of the Northeast Quarter of Section 33 on land owned by Roger N. Carter, 2562 CR 3000N, Penfield, IL 61862
- 1 Wind Farm Tower is proposed on an 80 acre parcel being the East Half of the Northeast Quarter of Section 33 on land owned by Harold and Darlene Hovel, POB 134, Royal, IL 61871

Other participating landowners in Section 33 are the following:

Michael and Eileen Jarboe Trusts, 2792 CR 2400N, Penfield, IL 61862

Thomas and Beverly Lee, 2308 Naples Court., Champaign, IL 61822

Dennis Madigan Living Trust, 18877 Medford, Beverly Hill, MI 48025

Section 36, T21N, R10E, Compromise Township. The Special Use Permit includes all of Section 36 except the South Half of the Northwest Quarter of Section 36 and the Southwest Quarter of Section 36. A total of 3 Wind Farm Towers (wind turbines) are proposed in this Section 30 as follows:

- 1 Wind Farm Tower is proposed on a 70 acre parcel in the Northeast Quarter of the Northwest Quarter and the Northwest Quarter of the Northeast Quarter of Section 36 on land owned by Earl and Delores Ideus, 508 N. West St., Gifford, IL 61847
- 1 Wind Farm Tower is proposed on a 50 acre parcel in the North Half of the South Half of the Northeast Quarter of Section 36 on land owned by Royce and Shauna Ideus, 2229 CR 2600N, Gifford, IL 61847
- 1 Wind Farm Tower is proposed on a 157 acre parcel in the Southeast Quarter of Section 36 on land owned by Judith, Leroy and Bonita Kopmann, POB 7, Royal, IL 61871

Other participating landowners in Section 36 are the following:

Leroy and Bonita Kopmann Trust, 117 Susan Drive, Dwight, IL 60420

PART B OGDEN TOWNSHIP

Fractional Section 6, T20N, R11E of the 3rd P.M., Ogden Township. The Special Use Permit includes all of Fractional Section 6 except the Fractional Northwest Quarter of Fractional Section 6 and except the North Half of the Southwest Fractional Quarter of Fractional Section 6 and except the Northwest Quarter of the Southeast Quarter of Fractional Section 6 and except the West Half of the Northeast Fractional Quarter of Fractional Section 6. Participating landowners in Fractional Section 6 are the following:

Delores Ann Harms Trustee, POB 87, Royal, IL 61871

Mildred Hinrichs Trust, c/o Laveda Clem, 1982 CR 2100N, Urbana, IL 61822

Herbert and Betty Osterbur, 302 Benjamin Street, Royal, IL 61871

Fractional Section 6, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes all of Fractional Section 6, with exceptions. One Wind Farm Tower (wind turbine) is proposed in Fractional Section 6 as follows:

- 1 Wind Farm Tower is proposed on an 83.84 acre tract of land in the Southwest Quarter of Fractional Section 6 on land owned by Sylvia Flessner-Fulk, POB 837, St. Joseph, IL 61873

Other participating landowners in Fractional Section 6 are the following:

Darrell Bruns, c/o Marlys McCartney, 1113 Ascot Dr., Rantoul, IL 61866

Kristi Bruns, c/o Marlys McCartney, 1113 Ascot Dr., Rantoul, IL 61866

Neil Bruns, c/o Marlys McCartney, 1113 Ascot Dr., Rantoul, IL 61866

Marlys McCartney, 1113 Ascot Dr., Rantoul, IL 61866

Marvin and Bernita Harms Trust, 2592 CR 2145N, St. Joseph, IL 61873

Gene and Deanna Osterbur Irrevocable Trust c/o Julie Carlson, 3828 East Whipporwhill Lane, Byron IL 61010

Reka Sage, 2304A CR 3000N, Apt. 203, Gifford, IL 61847

Wayne and Roxie Sage, 2545 CR 2400N, Ogden, IL 61859

Fractional Section 5, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes all of Fractional Section 5, with exceptions. One Wind Farm Tower (wind turbine) is proposed in Fractional Section 5 as follows:

- 1 Wind Farm Tower is proposed on a 78.10 acre parcel in the Fractional North Half of Fractional Section 5 on land owned by Mark Loschen, 2455 CR 2050N, St. Joseph, IL 61873

Other participating landowners in Fractional Section 5 are the following:

Anna Albers, 2304A CR 3000N, Apt. 107, Gifford, IL 61847

Albers Farm c/o Sandra J. King, POB 562, St. Joseph, IL 61872

Douglas Frerichs, 2634 CR 2300N, Ogden, IL 61859

Arnold and Delores Loschen Trusts, 2654 CR200N, Ogden IL 61859

Gene and Deanna Osterbur c/o Julie Carlson, 3828 East Whipporwhill Lane, Byron IL 61010

Wayne and Roxie Sage, 2545 CR 2400N, Ogden, IL 61859

Dan Shearin, 2431 Parklake Drive, Morris, IL 60450

Fractional Section 4, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes a 72.8 acre tract of land located in the West Half of the West Half of Fractional Section 4 and an 80 acre tract of land located in the South Half of the Southeast Quarter of Fractional Section 4. Participating landowners in Fractional Section 4 are the following:
Inez K. Britt, 2333 CR 2800E, Ogden, IL 61859
John and Erna Ludwig Living Trusts, c/o Judith Ludwig Gorham, 409 N. Cherry St., Galesburg, IL 61401

Fractional Section 7, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes the Northeast Quarter of Fractional Section 7, with exceptions and a 60 acre tract of land in the East Half of the Southeast Quarter of Fractional Section 7. Participating landowners in Fractional Section 7 are the following:
Vernon and Wilma Buhr, 2152 CR 2400N, St. Joseph, IL 61873
Louis and Laverne Osterbur, 2293 CR 2600E, Ogden, IL 61859

Section 8, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes all of Section 8 with the exception of 160 acres in the West Half of Section 8 and 60.85 acres in the Southeast Quarter of Section 8. Participating landowners in Section 8 are the following:
Albert J. Franzen, POB 206, Broadlands, IL 61816
John and Erna Ludwig Living Trust, c/o Judith Ludwig Gorham, 409 N. Cherry St., Galesburg, IL 61401
Jillene and Ben Henderson, 2651 CR 2150N, Ogden, IL 61859
Randall and Deanna Loschen, 2629 CR 1800N, Ogden, IL 61859
Union Pacific Railroad, 1400 Douglas, Stop 1640, Omaha, NE 61879

Section 9, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes the Northwest Quarter of Section 9 and the Northeast Quarter of the Southeast Quarter of Section 9 and a 100 acre tract of land in the South Half of the Northeast Quarter and the West Half of the West Half of the Southeast Quarter of Section 9 and the East Half of the Southwest Quarter of Section 9. Participating landowners in Section 9 are the following:
Robert Scott Trust and Alsip Family Trust c/o Robert P. Scott, 107 Arrowhead Lane, Haines City, FL 33844
Robert and Joan Sattler Trusts, 207 McKinley, Milford, IL 60953
Busboom Family Trust c/o Glen L. and Billie J. Busboom, 2756 CR 2200N, Ogden, IL 61859

Section 16, T20N, R14W of the 2nd P.M., Ogden Township. The Special Use Permit includes an 80 acre tract of land in the East Half of the Northeast Quarter of Section 16. Participating landowners in Section 9 are the following:
Carol Sage Peak, c/o Helen Green, 206 Ridgeview St., Danville, IL 61832.
Clifford Peak, c/o Helen Green, 206 Ridgeview St., Danville, IL 61832.
Helen Green, 206 Ridgeview St., Danville, IL 61832.

Waivers of standard conditions in Section 6.1.4 are required as follows:

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1. Waive the standard condition of 6.1.4 A. 1.(e) that requires the special use permit area to include a minimum of 40 feet wide area for electrical lines
2. Waive the standard condition of 6.1.4 A.2.(b) that requires a wind farm to be a minimum of one mile from the CR District to allow wind farm wiring to be less than one mile from the CR District.
3. Waive the standard conditions of 6.1.4 C.3. and 6.1.4 C.8. that require the application to include copies of all private waivers of wind farm separations.
4. Waive the standard condition of 6.1.4 D. 1 (a) that requires certificates of design compliance from Underwriters Laboratories ("UL") or equivalent third party.
5. Waive the standard condition of 6.1.4 D.9 that requires wind farm towers to be protected by non-climbing devices 12 feet vertically from the base.
6. Waive the standard condition of 6.1.4 F.1. that requires a signed Roadway Upgrade and Maintenance Agreement prior to the close of the public hearing before the Zoning Board of Appeals.
7. Waive the standard condition of 6.1.4 F.1.u. that requires street upgrades be in accordance with IDOT Bureau of Local Roads manual, 2005 edition.
8. Waive the standard condition 6.1.4 I. 1. that requires the noise level of each wind farm tower and wind farm to be in compliance with the Illinois Pollution Control Board regulations at the residential property line rather than to be compliance just at the dwelling.
9. Waive the standard condition of 6.1.4 J. that requires the application to contain a copy of the Agency Action Report from the Illinois Department of Natural Resources Endangered Species Program.
10. Waive the standard condition of 6.1.4 P.4.(b) that requires the applicant to gradually pay down 100% of the value of the irrevocable letter of credit by placing cash deposits in an escrow account over the first 13 years of the Wind Farm operation.
11. Waive the standard condition of 6.1.4 S.1.(c)(3) that requires that locations of wind turbines for the zoning use permit application cannot increase the noise impact over that approved in the special use permit.

All persons interested are invited to attend said hearing and be heard. The hearing may be continued and reconvened at a later time.

Eric Thorsland, Chair
Champaign County Zoning Board of Appeals

Fifteen Bad Things with Windpower—and Three Reasons Why

via
Thorslund
1/2/14
From
Henry
in
CMI
(Kare)
11

Trying to pin down the arguments of wind promoters is a bit like trying to grab a greased balloon. Just when you think you've got a handle on it, it squirts away. Let's take a quick highlight review of how things have evolved.

1 – Wind energy was abandoned well over a hundred years ago, as it was totally inconsistent with our burgeoning more modern needs of power, even in the late 1800s. When we throw the switch, we expect that the lights will go on — 100% of the time. It's not possible for wind energy, by itself, to ever do this, which is one of the main reasons it was relegated to the dust bin of antiquated technologies (along with such other inadequate sources like horse power).

2 – Fast forward to several years ago. With politicians being convinced by lobbyists that Anthropological Global Warming (AGW) was an imminent threat, a campaign was begun to favor all things that would purportedly reduce CO₂. Wind energy was thus resurrected, as its marketers pushed the fact that wind turbines did not produce CO₂ in their generation of electricity.

3 – Of course, just that by itself is not significant, so the original wind development lobbyists then made the case for a quantum leap: that by adding wind turbines to the grid we could significantly reduce CO₂ from fossil fuel electrical sources (especially coal). This argument became the basis for many states' implementing a Renewable Energy Standard (RES) — which **mandated** that their utilities use an increased amount of wind energy.

4 – Why was a mandate necessary? Simply because the real world reality of integrating wind energy made it a very expensive option. As such, no utility company would likely do this on their own. They had to be forced to.

5 – Interestingly, though the stated main goal of these RES's was to reduce CO₂, not a single state's RES required verification of CO₂ reduction either beforehand or after the fact from any wind project. *The politicians simply took the lobbyists' word that consequential CO₂ savings would be realized.*

6 – It wasn't too long before utility companies and independent energy experts calculated that the actual CO₂ savings were miniscule. This was due to the inherent nature of wind energy, and the realities of balancing the grid (with fossil fuel sources) on a second-by-second basis. The recently released Bentek study (*How Less Became More*) is a sample independent assessment of this aspect.

7 – The wind lobbyists soon added another rationale to prop up their case: *energy diversity*. Since we already had considerable diversity, and many asked "more diversity at what cost?" this hype never gained much traction.

8 – The next justification put forward by the wind marketers was *energy independence*. This cleverly played on the concern most people have about oil and mid-eastern instability. Many ads were run promoting wind energy as a good way of getting away from our "dependence on mid-eastern oil."

None of these ads mentioned that only about 1% of our electricity is generated from oil. Or that the US exports more oil than we use for electricity. Or that our main import source for oil is Canada (not the mideast). Despite the significant misrepresentations, this claim still resonates with many people, so it continues to be pushed. Whatever works.

9 – Presumably, knowing full well that the assertions to date were specious, wind proponents manufactured still another claim: *green jobs*. This was carefully selected to coincide with widespread employment concerns. Unfortunately, when independent qualified parties looked closer at the situation, they concluded that the claims were wildly exaggerated. Big surprise!

10 – Relentlessly moving forward, the wind marketers then tried to change the focus from jobs to "*economic development*." Developers utilized a computer program called JEDI to make bold economic projections. Unfortunately JEDI is a **totally inadequate model** for accurately arriving at such numbers, for a variety of good reasons. These contentions have also been shown to be inaccurate.

11 – Along the way, yet another claim has been made: *that wind energy is low cost*. This is surprisingly bold considering that if that was really true, then why would any RES be necessary? For some reason all "calculations" showing wind to be low cost conveniently ignore exorbitant subsidies, extra backup and balancing costs, additional transmission costs, etc. Independent analyses of levelized costs (e.g. from the EIA) have concluded that wind energy is much more expensive than any conventional source we have.

12 – Modern civilization is based on our ability to produce electrical POWER. Our modern sense of power is inextricably related to controlled performance expectations: when we throw the switch we expect the stove to go on 100% of the time — not just when the wind is blowing within a certain speed range. A fundamental assertion of wind promoters is that there is an equivalence between wind and conventional power sources. (That is the basis for such claims that XYX wind project will power 1000 homes.) This is false from several perspectives. The obvious error is that XYX wind project will NOT provide power to any 1000 homes: 24/7. It might not provide power for even 1 home 24/7.

13 – A more subtle (but significant) difference is in power quality. This term refers to such technical performance factors as voltage transients, voltage variations, waveform distortion (e.g. harmonics), frequency variations, etc. The reality is that wind energy introduces many more of these issues than does a conventional power facility. Additional costs are needed to deal with these wind caused problems. *These are rarely identified in economic analyses.*

14 – A key grid ingredient is Capacity Value (for layman: this is an indication of dependability). Conventional sources (e.g. nuclear) have a Capacity Value of about 99%. Wind has a Capacity Value of about 0%. *Big difference!* Wind apologists first stab at solving this major problem was to assert that if many wind projects over a wide geographic area were joined together, that the composite would look like a real (conventional) power source.

Like most of their claims this came from the imaginations of promoters, rather than empirical evidence. When real world data was looked at (e.g. a 1000± mile spread of wind projects in SE Australia on a single grid) no such result appeared. Back to the drawing board.

15 – Here is the latest spiel. Since this enormous Capacity Value discrepancy is indisputable, wind energy marketers decided to adopt the strategy that wind energy isn't a "capacity resource" after all, but rather an "energy resource." Surprisingly, this is actually the first contention that is actually true! But what does this mean?

The reality is that saying "wind is an energy source" is a trivial statement, on a par with saying "wind turbines are white." The fact is that your cat is an energy source too. So what? Lightning is an energy source. So what? Should we also connect them to the grid (after subsidies, of course)?

Again, our modern society is based on reliable and economic electric power. Making claims that wind provides us energy is simply another in a long line of misleading assertions that are intended to fool the public, to enable politicians to justify favoring special interests, and to enrich various rent seekers.

All this comes about for three basic reasons:

1. Wind proponents are not asked to independently PROVE the merits of their claims before (or after) their product is forced on the public,
2. There is no penalty for making specious assertions about their product's "benefits," so each contention is more grandiose than the last, and
3. Promoting wind is a political agenda that is divorced from true science. True science is based on real world data — not carefully massaged computer models, which are the mainstay of anti-science agenda evangelists.

So, in effect, we have come around full circle. A hundred plus years ago wind energy was recognized as an antiquated, unreliable and expensive source of energy, and now (after hundreds of billions of wasted dollars) we find that (surprise!) it still is an unreliable and expensive source of energy. This is what happens when science is relegated to a back-of-the-bus status.

Paraphrasing Dr. Jon Boone:

Let's see the evidence, in the real world, for the lobbyists' case. I'm weary of these relentless projections, uncontaminated as they are by reality. In a nutshell, what these profiteers are seeking to do, through methodological legerdemain, is to make wind appear to be what it is not. This is a plot lifted out of Cinderella and her step sisters, or the Emperor's New Clothes. It's really a story of class aspirations, but one that is bizarrely twisted: giving wind a makeover to make her seem fetching and comely when in fact she's really a frog.

See online presentation at [EnergyPresentation.Info](http://www.energypresentation.info) for more details, which includes numerous references. John Droz Jr. 9-20-10 Master Resource <http://www.masterresource.org/2010/09/15-bad-things-windpower/>



ONE COMPANY | *Many Solutions*SM

July 29, 2011

Mr. John Hall
Director, Department of Planning and Zoning
Brookens Administrative Center
1776 E. Washington Street
Urbana, IL 61802

**Re: Champaign County Special Use Permit Application; Champaign County, Illinois
California Ridge Wind Energy Project: Erratum to the Special Use Permit
Application, Dated July 2011**

Dear Interested Party:

In July of 2011, you were provided a copy of the Champaign County Special Use Permit Application for a proposed by California Ridge Wind Energy LLC (California Ridge), a wholly owned subsidiary of Invenegy Wind LLC (together with its subsidiaries, Invenegy).

The following correction is made to the text:

Section 4.3.6 DECOMMISSIONING AND RESTORATION, third paragraph, page 4-10

“In summary, the decommissioning plan states that California Ridge will be responsible for all costs to decommission the Project. Based on estimated costs of decommissioning and the salvage value of decommissioned equipment—which is the estimate used by a structural engineer—the salvage value of the wind farm will be **more** than the cost of decommissioning. Per industry standards,....”

HDR is providing this Erratum to correct a specific error in the text. This Erratum is not all inclusive, and we have not included all typographical errors or minor discrepancies.

Should there be any questions or comments regarding this Erratum, please don't hesitate to contact Mr. Greg Leuchtman at Invenegy Wind LLC at (312) 582-1462.

Very truly yours,
HDR Engineering, Inc.

James W. Booty

RECEIVED

AUG 02 2011

CHAMPAIGN CO. P & Z DEPARTMENT



RECEIVED

AUG 30 2011

RECLAMATION AGREEMENT
Case 696-S-11

CHAMPAIGN CO. P & Z DEPARTMENT

KNOW ALL MEN BY THESE PRESENTS, that California Ridge Wind Energy LLC, hereinafter referred to as the "Principal", is firmly bound unto Champaign County, State of Illinois, hereinafter referred to as Champaign County, in the sum of the Financial Assurance (as defined below), well and truly provided unto Champaign County said Principal binds itself, their successors and assigns, jointly and severally by these presents:

THE CONDITION OF THE FOREGOING OBLIGATION is such that:

WHEREAS, Champaign County has approved, or will approve, as a Special Use to the Champaign County Zoning Ordinance (the "Zoning Ordinance"), the Principal's proposal to construct and install 30 wind powered electrical generating turbines ("the Project") as described in Champaign County Zoning Case 696-S-11 in the townships of Ogden and Compromise, Champaign County, Illinois, the case file of which, including all relevant testimony and record of decision, is on file in the Champaign County, Illinois, Department of Planning and Zoning and referred to here and made a part thereof. As part of the submittals of Champaign County Zoning Case 696-S-11, the case file contains a decommissioning plan ("Decommissioning Plan"), performed by a Professional Engineer in the State of Illinois, which outlines the expenses and salvage values for the Project. As part of the requirements for the approval of said zoning case, the Principal has entered into this Reclamation Agreement with Champaign County to provide for the final removal of the above-ground portions of the said Project and the structure supporting the said Project and any associated site grading and soil erosion control as may be necessary in accordance with the applicable laws and with the applicable ordinances and codes of Champaign County, Illinois.

NOW, THEREFORE, to fulfill the relevant requirements of the approval of Case 696-S-11, the conditions of this Reclamation Agreement are as follows:

(1) The Principal shall maintain an irrevocable letter of credit or successor letters of credit, bond or an escrow account as is described below to complete the removal and reclamation obligations described in subparagraph 6.1.1.4a of the Zoning Ordinance and anticipated repairs to any public Street used for the purpose of reclamation of the same and all costs related to removal of access driveways (collectively the "Financial Assurance") for the purposes described above and so as to remain in effect for a period of twenty-five (25) years from the date the first turbine begins generating electricity, with the ability to extend. Said Financial Assurance shall be drawn upon or deposited in, as the case may be, a federally insured financial institution having an office within 200 miles of Urbana, Illinois, or, if at a greater distance, the cost to Champaign County for any travel to and from said institution that is required to implement this agreement and make use of said Financial Assurance shall be recoverable by Champaign County from said Financial Assurance.

- a. Financial Assurance required to complete the removal and reclamation obligations described in subparagraph 6.1.1.4a of the Zoning Ordinance and

anticipated repairs to any public Street used for the purpose of reclamation of the same and all costs related to removal of access driveways for Champaign County Zoning Case 696-S-11 will be calculated as follows for the Project, designated from the date the first turbine begins generating electricity:

- i. A Decommissioning Plan shall outline the Decommissioning Expenses of the Project as well as the Salvage Value. "Decommissioning Expenses" shall mean expenses for removal and reclamation obligations described in subparagraph 6.1.1.4a of the Zoning Ordinance, anticipated repairs to any public Street used for the purpose of reclamation of the same, and all costs related to removal of access driveways for Champaign County. All such costs shall be estimated by a Professional Engineer licensed in the State of Illinois. "Salvage Value" shall mean recoverable costs from the Project, including steel, concrete, or other basic metals, but shall not include the value of any reclaimed roadway materials.;
- ii. Base decommissioning expense ("Base Decommissioning Expense") will be calculated by subtracting Salvage Value from Decommissioning Expenses;
- iii. Total financial assurance ("Financial Assurance") will be calculated by multiplying the Base Decommissioning Expense by 210%;
 - i. Financial Assurance will be provided through a combination of the following:
 1. An escrow account ("Escrow Account") maintained by the Principal or its successors in the amount of 25% of the Financial Assurance. The Escrow Account shall be in the amount of, at a minimum, 25% of the Financial Assurance on an annual basis;
 2. A letter of credit or bond ("Letter of Credit") maintained by the Principal or its successors for the remainder of the Financial Assurance not covered by the Escrow Account.
- iv. Such Financial Assurance shall be adjusted every five (5) years from the date the first turbine begins generating electricity to account for any increases or decreases in consumer price index (CPI) for decommissioning expenses and the Salvage Value.

(2) The Principal shall, at such time as it becomes necessary and appropriate, and only after notifying the Champaign County Zoning Administrator at such time, perform and complete or cause to be performed and completed, all necessary work and improvements required to remove the above-ground portions of the said Project, the structure supporting the said Project,

and any associated site grading and soil erosion control as may be required at that time, and to complete such removal and any grading and erosion control within a 90 day period following the Principal's notification to the Champaign County Zoning Administrator.

(3) In the event the Principal fails to perform the reclamation work called for by this Agreement, upon the determination by the Champaign County Zoning Administrator that the said Project and/or the structures supporting said Project are abandoned in place as described in subparagraphs (a) through (f) below, and after 30 days' notice by the Champaign County Zoning Administrator to the Principal of said determination, the Principal hereby authorizes Champaign County to draw on the Financial Assurance for the purpose of performing and completing or causing to be performed and completed all necessary work and improvements required to remove the above-ground portions of the said Project and the structure supporting the said Project, and any associated site grading and soil erosion control as may be necessary, including any related ancillary costs; provided, however, that any balance of the Financial Assurance that remains after the complete and full reclamation of the land and the payment of any related ancillary costs and any costs related to the removal of any covenants that were placed on the title to the land as a requirement for approval in said zoning case, shall be returned to the issuer of the Financial Assurance. It shall be further provided that if Champaign County draws on the Financial Assurance to deconstruct the Project, Champaign County will notify Principal at its last known address and allow the Principal to reclaim the Project and related equipment and remove the deconstructed equipment at Principal's sole cost; provided, however, that any costs to Champaign County that are not fully reimbursed by the Reclamation Agreement shall be reimbursed fully out of the Salvage Value of the Project and related equipment; provided, however, if the Principal has abandoned the Project and related equipment, the Salvage Value of the project referenced in Champaign County Zoning Case **696-S-11** will be utilized for decommissioning expenses with any remainder to be returned to the Principal or its successors. Said determination may be made by the Champaign County Zoning Administrator when there exists any one of the conditions included in paragraph 6.1.1.C.9. of the Champaign County Zoning Ordinance on the date of approval of Champaign County Zoning Case **696-S-11** and that are here made specific to the approval of Champaign County Zoning Case **696-S-11**, to wit:

(a) no response is received from the Principal within thirty (30) days from the initial notification by the Zoning Administrator regarding either the renewal of the Financial Assurance or a determination that the said Project and/or the Project's supporting structures are abandoned or any regrading and soil erosion control is incomplete;

(b) the Principal does not enter into, or breaches any term of, a written agreement with Champaign County to remove said Project and or the Project's supporting structures and regrade and provide soil and erosion control as provided in the approval of Zoning Case **696-S-11**;

(c) any breach or performance failure of any provision of this Reclamation Agreement;

(d) the Principal has filed a bankruptcy petition, or compromised Champaign County's interest in the Financial Assurance in any way not specifically allowed by this Reclamation Agreement;

(e) a court of law has made a finding that either said Project and/or the structures

supporting said Project and or any related site grading and soil erosion controls or lack of same, constitutes a public nuisance;

(f) the Principal has failed to replace an expiring Financial Assurance within the deadlines set forth in the approval of Zoning Case **696-S-11**;

(4) Upon any change in ownership of the subject Project, but prior to the legal transfer of title and prior to the release of any existing Financial Assurance, the new Principal shall:

(a) submit to the Champaign County Zoning Administrator a new Financial Assurance of same value;

(b) sign a new Reclamation Agreement with conditions identical to this Reclamation Agreement, or such other terms as may be approved by the Champaign County Board.

(5) Other requirements:

(a) Principal shall notify Champaign County by certified mail of the commencement of a voluntary or involuntary bankruptcy proceeding, naming the Principal as debtor, within ten days of commencement of the proceedings.

(b) Principal agrees that the sale, assignment in fact or at law, or such other transfer of Principal's financial interest in the Project and related equipment shall in no way affect or change Principal's obligation to continue to comply with the terms of this Reclamation Agreement. Any successor or assignee of Principal shall assume the terms, covenants and obligations of this Agreement and agrees to assume all reclamation liability and responsibility for the Project.

(c) Principal hereby authorizes the Champaign County Board and its authorized representatives the right of entry onto the Project premises for the purpose of inspecting the methods of reclamation or for performing actual reclamation if necessary.

(d) This Reclamation Agreement shall be governed by and construed with the laws of the State of Illinois.

(e) Principal shall defend, indemnify and hold harmless Champaign County from and against any and all third party claims, litigation, actions, proceedings, losses, damages, liabilities, obligations, costs and expenses, including reasonable attorneys', investigators' and consulting fees, court costs and litigation expenses ("Claims") suffered or incurred by Champaign County, arising from the actions or omissions of Principal under this Reclamation Agreement except to the extent such Claims arise from the negligence or intentional misconduct of Champaign County.

(f) Should any provision of this Reclamation Agreement be held, in a final and unappealable decision by a court of competent jurisdiction, to be either invalid, void or unenforceable, the remaining provisions hereof shall remain in full force and effect, unimpaired by the holding.

(6) The signatory on behalf of California Ridge Wind Energy LLC has been authorized by California Ridge Wind Energy LLC to enter into this agreement.

[signature page to follow]

PRINCIPAL:

5

ACKNOWLEDGMENT

STATE OF ILLINOIS)
) SS.
COUNTY OF CHAMPAIGN)

Personally came before me this ____ day of _____, 2011, _____
_____, who executed the foregoing instrument, and acknowledged the same, on behalf of
Champaign County, State of Illinois.

(S E A L)

Name: _____
Notary Public, State of Illinois
My Commission Expires: _____

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

COMPLIANCE WITH SUBSECTION 6.1.4 NOT REQUIRING WAIVERS

All substantive requirements for wind farms are standard conditions of the special use permit and are established by Subsection 6.1.4 of the Zoning Ordinance. The Supplemental Memorandum dated August 25, 2011, reviewed those particular requirements for which a waiver of all or some part of a standard condition are required. The following is a review of those parts of Subsection 6.1.4 for which no waiver is required.

Compliance with General Standard Conditions

Subparagraph 6.1.4 A. are general standard conditions for a WIND FARM. The proposed WIND FARM appears to be in compliance with all general standard conditions except for the following:

- Subparagraph 6.1.4 A.1. identifies specific areas that must at a minimum be included as the area of the WIND FARM special use permit. At this time the area of the WIND FARM Special Use Permit includes all of the relevant parcels of the participating landowners and is much larger than the minimum required area. The Supplemental Memorandum dated August 25, 2011, reviewed the requested waiver of the standard condition of 6.1.4 A. 1.(e) that requires the special use permit area to include a minimum of 40 feet wide area for electrical lines.
- Subparagraph 6.1.4 A.2.(a) requires a WIND FARM to be more than one and one half miles from an incorporated municipality with a zoning ordinance and is based in Illinois law (55 ILCS 5/5-12020) that reserves jurisdiction over wind farms and electric generating wind devices within one-and-one-half miles of a municipal zoning jurisdiction to that municipality. The *Special Use Permit Application* received July 1, 2011, indicated underground wiring for the WIND FARM within a mile and a half of the Village of Royal. Champaign County cannot authorize any wind farm development within a mile and a half of the Village of Royal.
- Subparagraph 6.1.4 A.2.(b) requires a wind farm to be a minimum of one mile from the CR District. The *Special Use Permit Application* received July 1, 2011, indicated underground wiring less than a mile from the CR District and a wavier has been requested. The Supplemental Memorandum dated August 25, 2011, reviewed the required waiver of 6.1.4 A.2.(b).

Compliance with Standard Conditions for Minimum Separations of WIND FARM TOWERS

Paragraph 6.1.4 C. contains minimum separations for WIND FARM TOWERS from other STRUCTURES, BUILDINGS, and USES and provides for PRIVATE WAIVERS of minimum separations. The *Special Use Permit Application* received July 1, 2011, discussed the proposed separations on pages 3-8 and 3-9 and illustrated the proposed separations in Figure 3-5 Participating Properties and Champaign County Required Setbacks. The proposed WIND FARM complies with all minimum separations in paragraph 6.1.4 C.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

Compliance with Standard Conditions for the Design and Installation of WIND FARM TOWERS

Paragraph 6.1.4 D. contains standard conditions for the design and installation of WIND FARM TOWERS. Compliance with paragraph 6.1.4 D. can be summarized as follows:

1. Subparagraph 6.1.4 D. 1 (a) requires certificates of design compliance from Underwriters Laboratories ("UL") or equivalent third party. The *Special Use Permit Application* received July 1, 2011, did not include a certificate of design compliance. The Supplemental Memorandum dated August 25, 2011, reviewed the required waiver of 6.1.4 D.1(a) and proposed a special condition to require this certification as a condition for a Zoning Compliance Certificate.
2. Subparagraph 6.1.4 D. 1 (b) requires certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer that the foundation and tower design are within accepted standards. The *Special Use Permit Application* received July 1, 2011, discussed this requirement on pages 3-4 and 4-3. The following special condition is proposed to ensure compliance with this requirement:

The Zoning Administrator shall not approve a Zoning Use Permit until the applicant submits a copy of an appropriate structural certification fulfilling the requirements of 6.1.4 D. 1.(b)

To ensure that:

The wind farm towers s are certified to meet accepted professional standards.

3. Subparagraph 6.1.4 D. 2. establishes minimum requirements for controls and brakes. The *Special Use Permit Application* received July 1, 2011, reviews controls and brakes on p. 4-2 and meets the requirements.
4. Subparagraph 6.1.4 D. 3. establishes minimum requirements for electrical components. The *Special Use Permit Application* received July 1, 2011, reviews electrical components on p. 4-1 and meets the requirements.
5. Subparagraph 6.1.4 D. 4. establishes a requirement for monopole construction. The *Special Use Permit Application* received July 1, 2011, reviews the proposed tower on p. 4-2 and illustrates the proposed tower on p. 4-4 and meets the requirement.
6. Subparagraph 6.1.4 D. 5. establishes a requirement for the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) to be less than 500 feet. The *Special Use Permit Application* received July 1, 2011, reviewed the proposed tower height on p. 4-8 and it meets the requirement with a total height of 492 feet.
7. Subparagraph 6.1.4 D. 6. establishes a requirement for a white or gray or another non-reflective, unobtrusive color for WIND FARM TOWERS, turbine nacelles, and blades. As depicted on p. 3-7 and in Appendix A and explained on page 1 of Appendix B of the *Special Use Permit Application* received July 1, 2011, the proposal meets the requirement.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

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8. Subparagraph 6.1.4 D. 7. establishes a requirement for compliance with all Federal Aviation Administration (FAA) requirements. The *Special Use Permit Application* received July 1, 2011, explains on p. 5-13 that proposed WIND FARM will comply with FAA requirements.
9. Subparagraph 6.1.4 D. 8. requires warnings for all pad mounted transformers. The *Special Use Permit Application* received July 1, 2011, explains on p. 3-4 that each turbine transformer will have proper voltage warning signs.
10. Subparagraph 6.1.4 D. 9 requires wind farm towers to be protected by non-climbing devices 12 feet vertically from the base. The *Special Use Permit Application* received July 1, 2011, requested a waiver from this requirement on p. 4-1 and the waiver was reviewed in the Supplemental Memorandum dated August 25, 2011.

Compliance with Standard Conditions to Mitigate Damage to Farmland

Paragraph 6.1.4 E. contains standard conditions to mitigate damage to farmland. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements and can be summarized as follows:

1. Subparagraph 6.1.4 E. 1. establishes a minimum depth of 4 feet for underground wiring or cabling and proposed compliance is established on p. 3-5 and p. 15 of Appendix I and in the Drainage Study (see Additional Considerations) at the back of Appendix I.
2. Subparagraph 6.1.4 E. 2. establishes requirements for protection of agricultural drainage tile and proposed compliance is established on p. 29 of Appendix I and in the Drainage Study at the back of Appendix I.
3. Subparagraph 6.1.4 E. 3. requires restoration for any damage to soil conservation practices and proposed compliance is established on the last few pages of the Drainage Study at the back of Appendix I.
4. Subparagraph 6.1.4 E. 4. establishes requirements for topsoil replacement pursuant to any open trenching and proposed compliance is established in the Drainage Study (see Additional Considerations) at the back of Appendix I.
5. Subparagraph 6.1.4 E. 5. establishes requirements for mitigation of soil compaction and rutting and proposed compliance is established in the Drainage Study (see Additional Considerations) at the back of Appendix I.
6. Subparagraph 6.1.4 E. 6. establishes requirements for land leveling and proposed compliance is established in the Drainage Study (see Additional Considerations) at the back of Appendix I.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

Compliance with Standard Conditions for Use of Public Streets

Paragraph 6.1.4F. requires the Applicant to enter into a signed Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney and/or any relevant Township Highway Commissioner prior to the close of the public hearing for the use of public streets. As reviewed in the Supplemental Memorandum dated August 25, 2011, there is currently no signed Roadway Upgrade and Maintenance agreement approved by either the County Engineer and State's Attorney or the Compromise or Ogden Township Highway Commissioners. See the August 25, 2011, Supplemental Memorandum for a proposed special condition.

Compliance with Standard Conditions for Coordination with Local Fire Protection Districts

Paragraph 6.1.4 G. contains standard conditions for coordination with local fire protection districts. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements on pages 5-14 and 6-1.

Compliance with Standard Conditions to Eliminate Electromagnetic Interference

Paragraph 6.1.4 H. contains standard conditions to eliminate electromagnetic interference. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements on pages 5-10 and 5-11.

Compliance with Standard Conditions for Allowable Noise Level

Paragraph 6.1.4 I. contains standard conditions for the allowable noise level. See the August 25, 2011, Supplemental Memorandum for a general discussion and a required waiver.

Compliance with Standard Conditions for Endangered Species Consultation

Paragraph 6.1.4 J. contains standard conditions for endangered species consultation. See the August 25, 2011, Supplemental Memorandum for a general discussion and requested a waiver regarding the Agency Action Report.

Compliance with Standard Conditions for Historic and Archaeological Resources Review

Paragraph 6.1.4 K. contains standard conditions for historic and archaeological resources review. The *Special Use Permit Application* received July 1, 2011, demonstrated substantive compliance with these requirements as follows:

1. By consulting with the Illinois Historic Preservation Agency as evidenced by letters dated March 4, 2009, and March 11, 2010, from Anne Haaker, Deputy State Historic Preservation Officer.
2. By proposing to do conduct both a Phase I archaeological survey and an architectural survey of all structures within the Project Area and submitting the results to the Illinois Historic Preservation Agency as stated on pages 5-39 and 5-40 of the *Application*.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

Compliance with Standard Conditions for Acceptable Wildlife Impacts

Paragraph 6.1.4 L. contains standard conditions for acceptable wildlife impacts from WIND FARM construction and ongoing operation of the WIND FARM. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements as follows:

1. Subparagraph 6.1.4 L. 1. establishes a requirement that the WIND FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife to a sustainable level of mortality. Proposed compliance is established as follows:
 - a. On p. 15 of Appendix D when it states that Indiana bats are not likely to be roosting, foraging, or migrating within the Project planning area
 - b. As summarized in Table 8 in Appendix E Biological Screening Report.
 - c. As summarized in the Executive Summary and the Conclusion of Appendix F Wildlife Baseline Studies for the California Ridge Wind Farm Final Report.
 - d. As reviewed and proposed on pages 5-18 through 5-39 of the *Special Use Permit Application* received July 1, 2011.
2. Subparagraph 6.1.4 L. 2. establishes a requirement that a qualified professional, such as an ornithologist or wildlife biologist, shall conduct a pre-construction site risk assessment study to estimate the impacts of the construction and operation of the proposed WIND FARM on birds and bats. Proposed compliance is established as follows:
 - a. As summarized in the Chiropteran Risk Assessment Summary of Appendix D Chiropteran Risk Assessment: Proposed California Ridge Wind Energy Generation Facility.
 - b. As summarized in the Executive Summary and the Conclusion of Appendix F Wildlife Baseline Studies for the California Ridge Wind Farm Final Report.
 - c. As summarized in the Executive Summary and the Summary of Appendix L Investigations of Bat Activity at the Proposed California Ridge Wind Energy Generation Facility.
 - d. As reviewed and proposed on pages 5-18 through 5-39 of the *Special Use Permit Application* received July 1, 2011.
3. Subparagraph 6.1.4 L. 3. establishes a requirement that a qualified professional, such as an ornithologist or wildlife biologist, shall also conduct a post-construction mortality monitoring study to quantify the mortality impacts of the WIND FARM on birds and bats. Proposed compliance is established as reviewed and proposed on pages 5-18 through 5-39 of the *Special Use Permit Application* received July 1, 2011, particularly pages 5-22 through 5-24 wherein post-construction monitoring is discussed.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

Compliance with Standard Conditions for Shadow Flicker

Paragraph 6.1.4 M. contains standard conditions for shadow flicker caused by the rotors of the WIND FARM TOWERS. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements as follows:

1. Appendix G of the Application is a shadow flicker assessment prepared using the WindPro software package. Figure 3 Predicted Shadow Flicker maps the proposed turbines and existing receptors and the predicted hours per year of shadow flicker in the project area.
2. As reviewed on pages 5-3 and 5-5 including Figure 5-1 illustrating the predicted shadow flicker for one turbine over the course of a year. As stated on p. 5-4 and illustrated in Figure 3 in Appendix G, no home experiences more than 30 hours of shadow flicker over the course of a year.

Compliance with Standard Conditions for Minimum Liability Insurance

Paragraph 6.1.4 N. contains standard conditions for the minimum liability insurance for the WIND FARM. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements in section 4.3.3 on page 4-9 of the *Application* although it should be clarified that the WIND FARM will be in compliance with the minimum liability insurance requirements even after construction ceases.

Compliance with Standard Conditions for Wind Farm Operation

Paragraph 6.1.4 O. contains other standard conditions for operation of the WIND FARM. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements in section 4.3.5 on page 4-9 of the *Application*.

Compliance with Standard Conditions for a Decommissioning Plan and Reclamation Agreement

Paragraph 6.1.4 P. contains standard conditions for a decommissioning plan and site reclamation agreement for the WIND FARM and modifies the basic site reclamation requirements in paragraph 6.1.1 A. See the August 25, 2011, Supplemental Memorandum for a general discussion and a required waiver and the Draft Reclamation Agreement attached to the September 1, 2011, Supplemental Memorandum.

Compliance with Standard Conditions for a Complaint Hotline

Paragraph 6.1.4 Q. contains Standard Conditions for a Complaint Hotline for complaints related to WIND FARM construction and ongoing operation. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements in section 4.2.4 on page 4-8 of the *Application*.

Attachment E. Compliance With Subsection 6.1.4 Not Requiring Waivers

Case 696-S-11

SEPTEMBER 1, 2011

Compliance with Standard Condition for Expiration of the Special Use Permit

Paragraph 6.1.4 R. contains the standard condition for expiration of the WIND FARM County Board Special Use Permit. The *Special Use Permit Application* received July 1, 2011, demonstrated compliance with these requirements in section 4.3.2 on page 4-9 of the *Application* although it is likely that the road agreements with the County and the townships will establish a shorter time period for expiration.

Compliance with Standard Conditions for Additional Application Requirements

Paragraph 6.1.4 S. contains standard conditions establishing additional requirements for application for a WIND FARM County Board Special Use Permit that supplement the basic requirements for a special use permit application. Compliance with these requirements is demonstrated as follows:

1. The *Special Use Permit Application* received July 1, 2011.
2. Parcel Status Summary Map with Setbacks California Ridge Wind Energy Center, Champaign and Vermilion Counties, received July 21, 2011 (an excerpt of only the Champaign County portion; included separately).
3. Champaign County Non-Participating Dwelling Separation Summary map received July 29, 2011 (included separately).

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M E M O R A N D U M

FROM: Michael S. Blazer
TO: John Hall
CC: Greg Leuchtmann
DATE: August 26, 2011
SUBJECT: California Ridge Wind Energy Project
Zoning Case No. 696-S-11
Point of Measurement for IPCB Noise Regulations

This is a follow-up to the information previously e-mailed to you on August 1, 2011 (copy attached), and per the discussion at last night's meeting. I enclose a copy of the IPCB's decision in *Knox v. Turriss Coal Co.*, 2003 WL 137447 (IPCB 2003), the case I mentioned last night. To put this in context, please note the following:

- a. Section 24 of the Illinois Environmental Protection Act provides that, "No person shall emit beyond the boundaries of his property any noise that unreasonably interferes with the enjoyment of life or with any lawful business or activity, so as to violate any regulation or standard adopted by the Board under this Act." 415 ILCS 5/24. The intention is to avoid unreasonable interference (defined as a violation of a regulation or standard). To apply Class A noise emission standards to land that is not used for a Class A purpose would be inconsistent with the intent of the legislature. See *Shell Oil Company v. Illinois Pollution Control Board*, 37 Ill.App.3d 264, 269 (5th Dist. 1976)(describing history of rule-making as a process of refining noise standards to apply to classes of receptors).

There would be no “interference” by the emission noise standards above Class A levels onto land that is not in fact used for a Class A purpose.

- b. The land Classification System incorporated into the Illinois Pollution Control Board (IPCB) regulations pertains to “land,” not parcels or property lines. 35 IAC 900.101 defines “LBCS” as “the Land-Based Classification Standards which designate land use functions by means of numeric codes.” 35 IAC 900.101 then defines “Residential dwelling unit” as “all land used as specified by the Land-Based Classification Standards (LBCS) Codes 1100 through 1340 and those portions of land used as specified by LBCS Code 6222 used for sleeping.” It is clear that the land used as a “residential dwelling unit”, not the parcel boundary, determines the classification.
- c. The IPCB confirmed the foregoing in the *Knox* case, in which the IPCB held that a farm dwelling was Class A land, but the remainder of the property was Class C. For ease of reference, I have highlighted some of the relevant portions of the opinions.

Section 6.1.4I of the Champaign County Wind Farm Ordinance requires compliance with the applicable IPCB regulations. Under the circumstances, a requirement of measurement from the parcel boundary, rather than at the residential land use, is inconsistent with Illinois law and the IPCB regulations.

Subject: Point of Measurement for IPCB Noise Standards
Date: Monday, August 1, 2011 1:51:29 PM Central Daylight Time
From: Mike Blazer
To: John Hall
CC: Gregory Leuchtmann

John:

We've looked at the issue of measurement for Class A premises where the parcel is smaller (a couple of acres or so). We have not found any cases other than the Knox case that I sent you last week. But we believe that the same principles apply even in a situation where the parcel is smaller than the one addressed in Knox.

First, please note that the court in Knox did not indicate that its analysis depended on the size of the parcel. Rather, Knox establishes that the farm dwelling is the only portion of the property given the Class A designation (benefiting from the most stringent noise emission standard). The remainder of the property is given the Class C designation (subject to the least stringent noise emission standard – Class C). This is consistent with the Environmental Protection Act (the Act) and IPCB regulations.

Section 24 of the Act provides that, "No person shall emit beyond the boundaries of his property any noise that unreasonably interferes with the enjoyment of life or with any lawful business or activity, so as to violate any regulation or standard adopted by the Board under this Act." 415 ILCS 5/24. The intention is to avoid unreasonable interference (defined as a violation of a regulation or standard). To apply Class A noise emission standards to land that is not used for a Class A purpose would be inconsistent with the intent of the legislature. See *Shell Oil Company v. Illinois Pollution Control Board*, 37 Ill.App.3d 264, 269 (5th Dist. 1976)(describing history of rule-making as a process of refining noise standards to apply to classes of receptors). There would be no "interference" by the emission noise standards above Class A levels onto land, the is not in fact used for a Class A purpose.

We then turn to the fact that the Classification System pertains to "land," not parcels or property lines. 35 IAC 900.101 defines "LBCS" as "the Land-Based Classification Standards which designate **land use** functions by means of numeric codes." 35 IAC 900.101 then defines "Residential dwelling unit" as "all **land** used as specified by the Land-Based Classification Standards (LBCS) Codes 1100 through 1340 and those portions of **land** used as specified by LBCS Code 6222 **used for sleeping.**" It is clear that the land used as a "residential dwelling unit", not the parcel boundary, determines the classification.

For example, per the LBCS Codes, "residence or accommodation functions" and "private household" are defined as Class A. What if that "private household" has a septic system? A "septic tank and related services" are defined as Class C uses.

This may be a bit more than you were looking for, but I want to make sure we have this covered since it seems to be one of the issues that is drawing the most interest. Please let me know if you need anything further on this.

Mike

Michael S. Blazer

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2003 WL 137447 (Ill.Pol.Control.Bd.)

Illinois Pollution Control Board
State of Illinois

*1 GLADYS L. KNOX AND DAVID A. KNOX, COMPLAINANTS
v.
TURRIS COAL COMPANY AND AEI RESOURCES, INC., RESPONDENTS

PCB 00-140

January 9, 2003

(Citizens Enforcement - Noise)

Charles J. Northrop of Sorling, Northrup, Hanna, Cullen and Cochran appeared on behalf of the Complainants; and

J. Randall Cox of Feldman, Wasser, Draper & Benson appeared on behalf of the Respondents

OPINION AND ORDER OF THE BOARD

On February 25, 2000, Gladys L. Knox and David A. Knox (complainants) filed a formal noise complaint against Turris Coal Company (Turris) and AEI Resources, Inc. (AEI). The complaint concerns noise emanating from a mine ventilation fan located on a Turris facility adjacent to the complainants' residence located in Williamsville, Sangamon County. In the complaint, the complainants allege that respondents violated Section 24 of the Act (415 ILCS 5/24 (2000)) *amended by* P.A. 92-0574, eff. June 26, 2002, and 35 Ill. Adm. Code 900.102, 901.102(a) and (b) of the Board's noise regulations.

A hearing was held on June 11, 2002, in Springfield before Board Hearing Officer Brad Halloran. The complainants filed a post-hearing brief on August 7, 2002. On September 9, 2002, the respondents filed for additional time to file their post-hearing brief. The complainants filed a response to the motion for extension of time on September 11, 2002. The respondents filed their post-hearing brief on September 20, 2002. The complainants filed their reply brief on October 2, 2002.

On October 9, 2002, the respondents filed a motion for leave to file a surreply brief accompanied by a surreply brief. The complainants filed a motion to strike the motion for leave to file a surreply brief and an objection to the surreply brief on October 9, 2002.

Based on the evidence presented in this proceeding, the Board finds that the noise emanating from the Turris facility in Williamsville does not constitute a violation of the numeric noise regulations or unreasonably interfere with the enjoyment of the complainants' property.

STATUTORY BACKGROUND

Section 24 of the Act provides:

No person shall emit beyond the boundaries of his property any noise that unreasonably interferes with the enjoy-

ment of life or with any lawful business or activity, so as to violate any regulation or standard adopted by the Board under the Act. 415 ILCS 5/24 *amended by* P.A. 92-0574, eff. June 26, 2002.

Section 33(c) of the Act provides that:

In making its orders and determinations, the Board shall take into consideration all the facts and circumstances bearing upon the reasonableness of the emissions, discharges, or deposits involved including, but not limited to:

- i. The character and degree of injury to, or interference with, the protection of the health, general welfare and physical property of the people;
- ii. The social and economic value of the pollution source;
- iii. The suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved;
- *2 iv. The technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source; and
- v. Any subsequent compliance. 415 ILCS 5/33(c) (2000) *amended by* P.A. 92-0574, eff. June 26, 2002.

Section 900.101 Definitions

Noise pollution: the emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity. 35 Ill. Adm. Code 900.101.

Section 900.102 Prohibition of Noise Pollution

No person shall cause or allow the emission of sound beyond the boundaries of his property, as property is defined in Section 25 of the Illinois Environmental Protection Act, so as to cause noise pollution in Illinois, or so as to violate any provision of this Chapter. 35 Ill. Adm. Code 900.102.

Section 901.102 Sound Emitted to Class A Land

a) Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound during daytime hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from		
	Class C Land	Class B Land	Class A Land
31.5	75	72	72
63	74	71	71
125	69	65	65
250	64	57	57
500	58	51	51
1000	52	45	45
2000	47	39	39
4000	43	34	34
8000	40	32	32

b) Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound during nighttime

hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from		
	Class C Land	Class B Land	Class A Land
31.5	69	63	63
63	67	61	61
125	62	55	55
250	54	47	47
500	47	40	40
1000	41	35	35
2000	36	30	30
4000	32	25	25
8000	32	25	25

Section 901.106 Prominent Discrete Tones

*3 a) No person shall cause or allow the emission of any prominent discrete tone from any property-line-noise-source located on any Class A, B or C land to any receiving Class A, B or C land, provided, however, that no measurement of one-third octave band sound pressure levels shall be made less than 25 feet from such property-line source.

b) This rule shall not apply to prominent discrete tones having a one-third octave band sound pressure level 10 or more dB below the allowable octave band sound pressure level specified in the applicable tables in Sections 901.102 through 901.104 for the octave band which contains such one-third octave band. In the application of this subsection, the applicable table for sound emitted from any existing property-line noise source to receiving Class A land, for both daytime and nighttime operations shall be found in Section 901.102(a).

BACKGROUND

On February 25, 2000, the complainants filed a formal noise complaint against Turriss and AEI Resources, Inc. (AEI). The complaint concerns noise emanating from a mine ventilation fan located on a Turriss facility adjacent to the complainants' residence. In response to the complainants' noise concerns, Turriss and the complainants met a number of times to discuss the situation. Tr. at 171-172. Turriss initially installed the ventilation fan with an upcast device designed to deflect noise up in the air. Tr. at 171. After the complainants notified Turriss about the noise complaint, Turriss contacted Greg Zak for his input. Tr. at 171. Zak recommends that Turriss hire Dr. Schomer to discuss abatement methodology. Tr. at 112.

Pursuant to the advice of Schomer, Turriss first attempted to close the upcast device that was open toward complainants' residence. Tr. at 171-72. Turriss then received permission from State mine regulators to install belting on the fan evase to dampen the noise. Tr. at 172, 177. In addition, steel plating and additional belting was installed around the evase, and belting was placed on the roof house to further dampen the sound. Tr. at 178-79. Dr. Schomer took noise measurements and recommended additional remedies to reduce the noise. Tr. at 175. Per the advice of Schomer, Turriss removed the up-

cast device and installed a silencer on the ventilation fan. Tr. at 171, 176.

In January 2002, the parties exchanged discovery. A pre-hearing conference was held on June 3, 2002. This matter proceeded to hearing on June 11, 2002. At hearing, Turriss moved to bar the testimony of Greg Zak.^[FN1] Tr. at 7. Zak was called to testify on the complainants' behalf at hearing. Tr. at 68. Zak testified that he toured the Turriss facility on May 10, 2001, and December 3, 2001. Tr. at 74. Prior to hearing he visited the complainants' residence on May 22, 23, and 25, 2002. Tr. at 82. As a result of his investigations, he prepared a written report dated June 2, 2002, titled "Noise Emission from the Turriss Coal Company Mine Vent Fan to an Abutting Residential Area." Tr. at 83. The hearing officer accepted the exhibit into evidence over objections by Turriss. Tr. at 86.

PRELIMINARY MATTERS

Turriss' Motion to Bar the Testimony and Report of Greg Zak

*4 At hearing, Turriss made a motion to bar the testimony and report of Knox's noise expert Greg Zak. This issue was addressed in an August 8, 2002 Board order in which the Board upheld the hearing officer's decision to allow the testimony and report into evidence. In its brief, Turriss renews the motion. Turriss asserts that it is revisiting the issue because the Board has been falsely led to believe that Turriss was afforded the opportunity to interview Zak when, in fact, the very opposite happened. Turriss Br. at 6.

In reply, complainants assert that Turriss was repeatedly advised that Zak would take noise readings and prepare a report prior to hearing. Reply at 3. Complainants contend that Turriss was given the report on the same day that it was received by complainants, that Turriss had eight days to review the report prior to hearing, that Zak was thoroughly cross-examined on the report at hearing, that no claim of prejudice has been made, and that Turriss made no attempt to compel the deposition of Zak or otherwise seek the assistance of the hearing officer. *Id.* Knox also asserts that Zak was identified as a witness six months prior to hearing, and that Turriss made no attempt to depose him. *Id.*

The Board considers Turriss' motion to bar testimony as a motion to reconsider the Board's August 8, 2002 decision. In ruling upon a motion for reconsideration, the Board will consider factors including new evidence, or a change in the law. 35 Ill. Adm. Code 101.902. Motion for reconsideration must be filed within 35 days after receipt of the Board order. 35 Ill. Adm. Code 101.520. The Board accepts the motion even though not timely filed. However, Turriss has not raised any issues that were not before the Board when they addressed Turriss' motion on August 8, 2002, and the motion is denied.

Complainant's Motion to Conform Pleadings to Proof

At hearing, complainants moved to amend the complaint to conform to the proof and add a violation of Section 901.106 of the Board's noise regulations. Tr. at 150. Complainants assert that it first discovered the potential violation in Zak's noise report, and therefore Turriss has been aware of the potential violation as long as complainants has. Tr. at 150; Knox Br. at 3. Complainants argue that the amendment of pleadings to conform to the proof introduced at trial is allowed under the Code of Civil Procedure. Knox Br. at 2.

Complainants argue that in Illinois there is a liberal policy of allowing material amendments to a complaint to conform to the proof adduced at trial. Knox Br. at 2-3, *citing Zook v. Norfolk & Western Ry Co.*, 268 Ill. App. 3d 157, 205 Ill. Dec. 231 (4th Dist. 1994). Complainants argue that when a motion to conform proof to pleadings adds greater specificity to the law violated, and the proof reflects such violations, it is an abuse of discretion not to allow the amendment. Knox Br. at 3, *citing Village of Wadsworth v. Kerton*, 311 Ill. App. 3d 829, 244 Ill. Dec. 560, 571 (5th Dist. 2000).

*5 Complainants assert that the motion does not represent any attempt to surprise or otherwise prejudice Turriss, and that Turriss has not identified any surprise or prejudice. Knox Br. at 3; Reply at 3. Complainants argue that Turriss had an opportunity to cross-examine on the new allegations, and did so, at hearing. Reply at 4.

Turriss asserts that complainants may not amend the complaint at such a late date. Turriss bases its objection, in part, on the manner in which the production of Zak's noise report was made and the non-availability of Zak prior to the hearing. Turriss Br. at 8. Turriss argues that complainants could have amended the complaint once they received the report, but instead used the tactic of surprise in making an oral motion to conform the pleadings to proof at hearing. Turriss Br. at 8-9. Turriss asserts that amending pleadings to proof is not encouraged or permitted in circumstances where such allowances would cause prejudice or surprise to either party. Turriss Br. at 9.

The Board grants complainant's motion to conform pleadings to proof. Amendments to pleadings to conform to the proof submitted are to be liberally allowed within the sound discretion of the hearing body. See Fitchie v. Yurko, 212 Ill. App. 3d 541, 577, N.E.2d 538 (4th Dist. 1991), Zook v. Norfolk & Western Ry Co., 268 Ill. App. 3d 157, 205 Ill. Dec. 231 (4th Dist. 1994). Here, the nature of proof required to defend an alleged violation of Section 901.106 is not materially different from defending the already pled alleged violation of 35 Ill. Adm. Code 901.102(b). Turriss has not shown any prejudice resulting from the amendment. Accordingly, the motion is granted.

Turriss' Failure to Answer the Complaint

In its brief, complainants moved to have all material allegations of the complaint deemed admitted because Turriss did not file an answer to the complaint within 60 days as required by Board rules. Knox Br. at 3-4. Turriss correctly responded that under the procedural rules in effect when the complaint was filed, the allegations of the complaint were deemed denied. Turriss Br. at 9. In its reply, complainants withdrew the argument on this point. Reply at 4. The issue is now moot and will not be addressed by the Board.

Turriss' Motion for Leave to File Surreply Instanter

Turriss asserts that complainants' reply brief had several factual misstatements and erroneous characterizations of either the record, evidence, controlling law or Turriss' position on the merits. Mot. at 1. Turriss argues that for the sake of clarity in the record, and as an aide to the Board, it has filed and served a surreply to address these issues. Mot. at 2. Turriss asserts that the filing of the surreply will not delay the disposition of these proceedings. *Id.*

Complainants reply that neither the hearing officer's established briefing schedule, nor the Board's procedural rules allow for surreply briefs. Obj. at 1. To allow Turriss, argues complainants, to take a second bite of the apple would be unjust, and that simple fairness dictates that the complainants should have the last opportunity to brief the Board in this matter. Obj. at 2.

*6 The Board denies Turriss' motion for leave to file a surreply. Although surreplies are not allowed for in the Board's procedural rules, the Board has accepted surreplies in the past in order to correct misstatements and material errors. See CDT Landfill v. City of Joliet, PCB 98-60 (Mar. 5, 1998). Turriss' surreply is not limited to correcting misstatements and material errors, but makes additional substantive arguments not necessitated by information or legal theories raised for the first time in complainant's reply brief. The Board finds that allowing the surreply would prejudice complainants. The surreply is also in violation of the briefing schedule set by the hearing officer in this matter, and is denied.

NOISE EMISSIONS TESTIMONY

Complainants

Mr. David A. Knox

Mr. Knox resides at 8214 East Main Street, Williamsville. He bought the property in November of 1975, and moved into the house in 1976. Tr. at 15. He originally purchased the four acres where the residence and buildings are located, and has added land since that time, so the property now consists of 94 acres. Tr. at 16.

Mr. Knox described the noise from the fans as an underlying background noise that is very noticeable. Tr. at 29. He testified that the noise can be heard on any portion of his property depending on wind direction and moisture in the air. Tr. at 30. He is aggravated when he awakes during the night and, if the windows are open, he hears the noise. *Id.* He testified that if awakened at night, the noise prevents him from falling back to sleep. Tr. at 29-30, 64. Mr. Knox testified that, although the noise level used to be considerably higher, it is still a problem today. Tr. at 26. He testified that currently, if the windows are closed, noise cannot be heard inside his house unless the wind is “just right,” but that if the windows are open, the noise can be heard. *Id.* He testified that he probably runs the air conditioning slightly more in warm weather; when the noise dictates, he closes the windows. Tr. at 27.

Mr. Knox testified that he used to have wood decks stretching across the south side of his house, but that the deck was taken out in January 2002. Tr. at 18. He testified that the deck was removed partially because it was not enjoyable to use it due to the noise level, and partially because the flooring needed to be replaced. Tr. at 18-19. Mr. Knox testified that two to three years after he built the house, he built a duck pond for recreational purposes such as fishing. Tr. at 21. He testified that his family used the pond for ice-skating and sledding parties during the winter and for fishing anytime the water was not iced. Tr. at 21. Mr. Knox testified that the duck pond has always been a getaway place where he likes to relax. The duck pond is stocked with fish that he feeds daily. Tr. at 22.

Mr. Knox testified that his use of the duck pond has diminished in the last couple of years, and that the solitude that was there has diminished tremendously. Tr. at 22. He testified that because of the noise from Turriss' fans, being at the duck pond is not as enjoyable as it used to be. *Id.* Mr. Knox used to spend an hour at the pond three to four evenings a week, but because of the noise now only spends, on average, one evening a week at the duck pond. Tr. at 22. He testified that the noise from the fans affects conversation at the pond. Tr. at 38. Mr. Knox testified that conversation is understandable, but the background noise is present - that participants don't have to scream at each other, but would have to speak in “somewhat of an elevated level.” Tr. at 38. He testified that he has noticed a marked decrease in the number of pheasant and quail visiting the duck pond. Tr. at 30.

*7 Mr. Knox testified that visiting is possible inside the shed without any great difficulty, but that the noise would be much the same as if you were living in a home close to an interstate highway or a railroad track where you hear the traffic going by. Tr. at 39. Mr. Knox testified that the sheds are used for storage and repair of machinery, general maintenance of farm equipment, and welding. Tr. at 19-20. Mr. Knox testified that he stores farm implements and supplies in his sheds in the course of his agricultural operation. Tr. at 41. He also has grain bins located there. Tr. at 42.

Mr. Knox testified that although he performs repair work for neighbors, he does operate a commercial enterprise out of the sheds. Tr. at 20. He testified that he works with a Mr. Kirby under the assumed name of K & K, and does welding work in his sheds, for which he is paid for his time. Tr. at 41-42.

He testified that normal conversation is possible in his backyard, but that background noise will be present. Tr. at 39-40. He testified that with the furnace on and the windows closed, the noise could not be heard in most cases unless the wind is direct. Tr. at 46.

Mrs. Gladys L. Knox

Mrs. Knox testified that the noise from the ventilation fan sounds like a whirring noise. Tr. at 63. She testified that the noise is constantly present and is an aggravation, that it is always there; and that "you can't go anywhere on the property that you don't hear that racket." Tr. at 63. She testified that although the noise is more tolerable than before, if the windows are open, the "racket" can be heard. Tr. at 64.

Mrs. Knox testified that if she wakes up in the middle of the night she would have trouble getting back to sleep, and that this happens a couple of times per week. Tr. at 65. She testified that the sounds from the pheasant and quail that she used to hear so much of is lessened. *Id.* Mrs. Knox testified that the noise from Turriss' fans is an aggravation to her, that she enjoys peace and quite and no longer has that. Tr. at 66.

Mr. Gregory Zak

Mr. Zak testified that he is a noise control engineer and a former employee of the Illinois Environmental Protection Agency (Agency), who has worked on several tens of thousands of complaints involving noise over the years. Tr. at 67-68. He said the noise from Turriss' facility is produced by the actual fan itself, by the electric motor of approximately 1,000 horsepower driving a vane axial fan, and that the physical act of the fan blades cutting through the air creates the noise. Tr. at 78.

Zak describes the noise as similar to a vacuum cleaner. Tr. at 89. Zak testified that he is familiar and complied with the Agency's sound level measurement procedures pursuant to 35 Ill. Adm. Cod 951.104. Tr. at 89. He took noise measurements at the duck pond. Zak selected the duck pond for measurement because he was informed by Mr. Knox that it was one of the complainant's' main areas of recreation, and also the area they were probably most disturbed by noise emissions. Tr. at 144. Zak testified that the complainants' residence, including the duck pond, should be classified residential. Tr. at 73, 116, 132, 145. Zak testified that he found violations of Section 901.102(b) at 125 Hz, 250 Hz, 1K Hz, 2K Hz and 4K Hz. Tr. at 95, Knox Ex. 2. Zak testified that he found a violation of 35 Ill. Adm. Code 901.106. Tr. at 100.

*8 Zak testified that in his opinion the noise from Turriss' ventilation fan unreasonably interferes with the Complainant's' enjoyment of their property. Tr. at 101.

Mr. Walter F. Schultz

Mr. Schultz is an engineer employed by Turriss. Tr. at 152. He testified that he was able to have a normal conversation 50 feet away from the fan. Tr. at 186. He also testified that he was able to hold a normal conversation in Mr. Knox's yard. Tr. at 187.

ARGUMENT**Complainants' Brief**

The complainants assert that the noise from Turriss' ventilation fan has violated nuisance and numeric standards.

Noise Nuisance

Complainants contend that the noise from the fan unreasonably interferes with the use and enjoyment of their property. Knox Br. at 11. Further, assert complainants', noise from the fan penetrates their homes and at times prevents them from falling asleep, compels them to close their windows when company comes to visit, has prohibited the use of their deck, and prevents them from using their pond that was created and used extensively prior to the presence of Turriss' fan. Knox Br. at 11-12, 14.

The complainants also contend that the noise from the fan has resulted in loss of wildlife such as pheasant and quail. Knox Br. at 14. The complainants argue that noise expert Greg Zak testified that sound measurements taken were consistent with the complainants being disturbed in their home, because of the ability of low frequency noise to penetrate structures such as residences. Knox Br. at 15. Also, complainants note that Zak testified that the noise from the ventilation fan unreasonably interfered with their use and enjoyment of their property.

The complainants admit that Turriss has some economic value, but urges that considerations of any such value should not come at the complainants' expense. Knox Br. at 16. Complainants assert that because they purchased their property in 1975 and the fan started operation in 1999; they have clear priority of location. Knox Br. at 17. Further, complainants state that, but for Turriss, the area remains rural and that given this rural nature, Turriss' facility is inconsistent with the surrounding area.

The complainants assert that Zak recommended the construction of a structure over the existing housing of the fan and attached building to remedy the noise. Knox Br. at 19. Complainants contend that Zak testified such a structure would reduce the noise emissions and provide a 10 dB reduction at the 125 Hz level, and likely more at higher frequencies. *Id.* Complainants argue that Turriss did not present any expert testimony on the true costs or reasonableness of the structure, and has not provided the Board any supportable cost figures. Knox Br. at 19-21. And, complainants assert that Turriss' quick estimate of the cost of such a structure was not based on any specific engineering or design plans, or made by a noise engineer. Knox Br. at 19. The complainants calculated the construction costs at \$37,000 - significantly less than the \$470,000 estimated by Turriss. Knox Br. at 19-20. The complainants argue that Turriss should not be allowed to avoid their obligations as established by the Act and disrupt the complainants' peace of mind simply by claiming the solution costs too much money. Knox Br. at 20.

*9 The complainants assert that Turriss' efforts to reduce noise emissions have not eliminated the interference to the complainants, and that the noise will only increase as operations at the mine progress further southwest and the fan must work harder to supply the necessary air and exhaust. Knox Br. at 21.

Numeric Violations

The complainants contend that a threshold issue that may be raised by Turriss is the classification of the complainants' property. The complainants assert that no dispute can exist that the Turriss property falls within Class C. Knox Br. at 22. The complainants contend that their property is properly classified as Class A or residential property. *Id.* The complainants argue that Class A property specifically includes farm homes. *Id.* Further, the complainants maintain that although their sheds are used for storage and repair of machinery, they do not constitute a commercial enterprise and that no business is conducted from the sheds. *Id.*

The complainants assert that Greg Zak specifically testified that their property was residential based on his knowledge and experience in the noise field. Knox Br. at 23. The complainants contend that Zak compared the four-acre property as equivalent to a much smaller typical subdivision yard. *Id.* The complainants assert that Turriss provided no testimony on the classification of the property. *Id.*

The complainants contend that Zak's testimony shows a significant deviation (a 4 dB exceedance) at the 125 Hz level. Knox Br. at 24. The complainants argue that this represents more than a doubling of sound energy. *Id.*

The complainants assert that Zak's testimony identifies a violation of the Board's regulations on prominent discrete tones. Knox Br. at 24. The complainants contend the limit was exceeded by 7 dB and that this is a significant exceedance of over four times the allowable sound energy. *Id.*

Turriss' Brief

Numeric Violation

Turriss first addresses the classification of complainants' property. Except for their actual, physical home, asserts Turriss, the complainants' property should be classified as agricultural. Turriss Br. at 10. Turriss contends the Standard Land Use Coding System (SLUCM) codes make clear that if a house is located on the farm, only the house is considered Class A property while the rest of the property is considered Class C. *Id.*

At best, asserts Turriss, the house may be Class A, but the farm is Class C and the duck pond is unclassified. Turriss Br. at 13. Turriss contends that only measurements taken at the complainants' house could have a proper bearing on this case, and that readings taken on an unclassified water are of no import. Turriss Br. at 14.

Turriss argues that Section 901.106 of the Board's regulations does not prohibit the emission of prominent discrete tones to unclassified property, and that they have been unable to locate any guidance from the Board as to how Section 901.106(b) should be applied with respect to tones emitted to Class C property. Turriss Br. at 15, 16. Turriss contends that the complainants' use of 59 dB as the limit for allowable sound energy from Class C to Class A property at 125 Hz is not correct, and that 69 dB should be used instead. Turriss Br. at 17.

*10 Turriss maintains that no daytime 901.102(a) violations are noted anywhere on the property, and that minimal nighttime 901.102(b) violations are alleged only on the unclassified duck pond remote from complainant's residence. Turriss Br. at 18. Turriss asserts that all the measurements upon which the alleged violations are predicated were taken well beyond the residential dwelling at the duck pond. Turriss Br. at 19.

Nuisance Violation

Turriss argues that the complainants have put on virtually no consistent body of testimony to support an allegation they have suffered a nuisance as a result of any noise from Turriss. Turriss Br. at 19. Turriss asserts that even if, arguendo, there has been some degree of interference, there has been no showing of an unreasonable interference. Turriss Br. at 23.

Turriss contends that Mr. Knox acknowledged the noise didn't prevent him from going to sleep at night, nor did he report any instance when it woke him in the night. Turriss Br. at 19. Turriss also asserts that Mr. Knox acknowledged that Turriss has cooperated with him on the noise abatement issue and has made improvements. *Id.* Turriss argues that the centerpiece of complainants' complaint is the dislike of any fan noise by the duck pond which happens during regulatory daytime hours when the fan is unquestionably in compliance with Section 901.102(a) numeric limits even though the limits do not apply to the property. *Id.*

Turriss contends that the complainants' ability to go to sleep has not been affected since the mine altered the pitch on the fan blades, and that this fact is not surprising in light of Mr. Knox's demonstrated ability to sleep in the mine. Turriss Br. at 20. Turriss asserts that the record reveals that the only noise ever to have actually awakened Mr. Knox has been coyotes. *Id.*

Turriss maintains that the deck on the south side of the house was not abandoned because of noise, but because the flooring on the deck had become rotten. Turriss Br. at 20. Turriss contends that Mr. Knox has acknowledged that he can carry on a normal conversation with someone down by the duck pond or in the equipment shed, and that the transcript contains no evidence that Mr. Knox has ceased to use his duck pond for recreational purposes. Turriss Br. at 20-21.

Turriss asserts it spent approximately \$125,000.00 to meet the concerns expressed by the complainants. Turriss Br. at 3. Turriss asserts that the complainants consistently report an improvement after Turriss took measures to abate the noise.

Turriss Br. 21. Turriss does not believe that there is an existing unreasonable interference with the complainants' ability to utilize their own property or lead normal lives, or that the record in this proceeding supports such a claim. Turriss Br. at 22. Turriss contends that the complainants' ability to entertain is unimpaired and that they report no changes in their sleep schedules or patterns. *Id.*

Turriss next addresses the 33(c) factors even though it contends no unreasonable interference has occurred. Turriss argues that it is clear that Turriss has high social and economic value, and employs 215 people; 75 percent of whom live within 35 miles of the mine. Turriss Br. at 24-25. Turriss asserts that it had to locate where it did because of access to roads and the mine. Turriss Br. at 26. Turriss argues that complainants' residence is an isolated residence in an otherwise agricultural area, and that Turriss' property is properly zoned for its use. *Id.*

*11 Turriss contends that it has devoted serious resources to attempt to satisfy the complainants' concerns, and has made considerable improvements to the noise situation at the mine. Turriss Br. at 26-27. Turriss asserts that the complainant glossed over the technical feasibility and economic reasonableness of the solution proffered by Zak. Turriss Br. at 27.

Complainant's' Reply Brief

Complainants argue that Turriss' analysis of the site classification issue is worthy of Procrustes himself. Reply at 4. Complainants assert that Turriss has presented no testimony or evidence that the property would be classified as C, and that the only commentary on the issue was hearsay statements not admitted for the truth of the matter asserted. *Id.* Complainants contend that the only testimony on the question of classification is from Zak who testified that the complainants' property is A property. Reply at 5. Complainants contend it is not trying to include their entire 90 acres of farmland as A property, but merely that portion they use as residence and yard. Reply at 5. Complainants assert that neither the machine sheds, nor ducks and geese raised at the pond, serve a commercial purpose. *Id.* Complainants conclude that the entire four-acre portion of the complainants' property, including the duck pond, is properly classified as A property. Reply at 6.

Complainants assert that given the ventilation fan runs constantly, there is ample evidence in the record to find that the complainants are disturbed throughout the day. Reply at 7. Complainants contend that the deck has not been used as a result of the constant noise, and that the deck is being rebuilt on the opposite side of the house in an effort to shield the deck from noise. Reply at 8.

The complainants assert that although they still garden and use their shed, they do these things in spite of the noise and should be commended for trying to maintain a normal life in the face of such constant noise harassment. Reply at 8. Complainants contend that Turriss has unreasonably interfered with the use and enjoyment of the complainants' property and that the evidence in this case demonstrates a clear and ongoing nuisance violation. *Id.*

DISCUSSION

The complainants have alleged that respondent violated Section 24 of the Act and 35 Ill. Adm. Code 900.102, 900.102(a) and (b), and 901.106. The Board will first address the alleged numeric violations - 35 Ill. Adm. Code 900.102(a) and (b), and 901.106.

Numeric Violations

To determine whether the respondent violated any section of 35 Ill. Adm. Code 901, complainants must take sound measurements in strict conformance with the procedures set forth in Section 900.103(b). 35 Ill. Adm. Code 900.103. The record shows the measurements were taken in accordance with the Board's procedures.

Next, the Board must address the threshold issue of classification of the complainants' property. In order to determine whether or not a numeric violation exists, it is necessary to first classify the receiving and emitting property. Property is classified pursuant to SLUCM incorporated into the Board's noise regulations at 35 Ill. Adm. Code Part 901, Appendix B.

*12 Property can be classified Class A, B, C or U. Generally, Class A signifies residential property, Class B is commercial, and Class C is agricultural. U denotes a land unclassified in 35 Ill. Adm. Code 901.101. The SLUCM code extensively lists what types of properties fall into each category. Both parties agree that Turriss' property is properly classified as Class C under the SLUCM code.

Although not conclusive of the issue, complainants' 94-acre farm is zoned agricultural. The majority of complainants' property is agricultural and falls within Class C. *See* SLUCM code 8120. Further, the SLUCM code is clear that, as a farm home, complainants' residence is specifically included within Class A. SLUCM code 110, footnote 2 provides that "farm homes are also included under "household units' and should be identified separately from the remainder of the farm which is coded under ' agricultural,' code 81." 35 Ill. Adm. Code Section 901.Appendix B, code 110, footnote 2. However, classification of the remainder of the approximately four-acre parcel containing complainants' residence, tool sheds and duck pond is at issue. Specifically at issue is classification of the duck pond where the noise measurements were taken.

The north edge of the duck pond is located approximately 345 feet south of the house. The wharf where the measurements were taken is approximately 393 feet south of the house. Plaintiff's Ex. 2, page 11. Between the duck pond and the complainants' residence are two steel sheds. Mr. Knox uses the sheds for storage and repair of machinery and farm equipment and supplies. He is also compensated financially for the welding work he does out of one of the sheds. The Board finds that the sheds are properly classified as Class C - used for other agricultural and related activities. *See* SLUCM code, 819.

The duck pond is effectively separated from the complainants' residence by the sheds. Ponds are not specifically provided for in the SLUCM code. However, the classification that best describes the duck pond is code 939 - other water areas, NEC.^[FN2] Accordingly, the Board finds that the duck pond is Class U.

The noise measurements upon which the alleged violations were based were taken at the duck pond - an unclassified property. Since the duck pond is not a classified property, the alleged numeric violations do not apply. Accordingly, the Board finds no numeric violations as alleged in the complaint.

Nuisance Noise Violations

Complainants also allege that Turriss violated Section 24 of the Act and Section 900.102 of the Board regulations. 35 Ill. Adm. Code 900.102; 415 ILCS 5/24 (2000). Together these provisions constitute a prohibition against nuisance noise pollution. Charter Hall Homeowner's Association and Jeff Cohen v. Overland Transportation System, Inc., and D. P. Cartage, Inc., PCB 98-81 (Oct. 1, 1998) (Charter Hall), citing to Zivoli v. Prospect Dive and Sport Shop, Ltd., PCB 89-205 (Mar. 14, 1991) (Zivoli) slip op. at 8. In determining whether noise emissions rise to the level of a nuisance noise pollution violation, the Board performs a two-step inquiry. First, the Board determines whether or not the noise constitutes an interference in the enjoyment of complainants' lives and second, considering the factors enunciated in Section 33(c) of the Act, the Board determines whether or not the interference is unreasonable. Charter Hall slip op. at 19-21. The following discussion will address first whether complainants have established that the noise emanating from the ventilation fan constitutes an interference with the enjoyment of life and second, whether the noise emissions constitute an unreasonable interference in their lives.

Interference With Enjoyment of Life

*13 The Board has stated that if there is no interference there can be no nuisance noise violation. Zivoli slip op. at 9. Accordingly the Board must first determine whether the sounds have interfered with the enjoyment of life. Furlan v. University of Illinois School of Medicine, PCB 93-15 (Oct. 3, 1996), (Furlan) slip op. at 4. The Board has held that the following disturbances constitute interference: sleeplessness from nightclub noise (Manarchy v. JJJ Associates, Inc., PCB 95-73, (July 18, 1996) slip op. at 10); noise interfering with sleep and use of yard (Hoffman v. Columbia, PCB 94-146, (Oct. 17, 1996) (Hoffman) slip op. at 5-6, 17); and, trucking operation noise impacting sleep, watching television and conversing (Thomas v. Carry Companies of Illinois, PCB 91-195 (Aug. 5, 1993), slip op. at 13-15).

The complainants testified that the noise from Turriss' ventilation fan causes prevents them from falling back to sleep, and that the use of the duck pond has diminished in the last couple of years because of the noise.

Discussion

As previously stated the Board has found that if there is no interference there can be no nuisance noise violation. Zivoli slip op. at 9. Therefore, the first step in the Board's inquiry about a nuisance noise violation is whether or not the sounds have interfered with the enjoyment of life. Furlan slip op. at 4. Only if there has been an interference does the Board proceed to the second inquiry of whether the noise unreasonably interferes with the enjoyment of life.

The Board has previously found that compliance with the numerical noise standards does not present an absolute bar to finding of violation of the general nuisance noise prohibitions. See Village of Matteson v. World Music Theatre, et al., PCB 90-146 (Apr. 25, 1991). However, noise measurements have been used to substantiate or refute a nuisance noise claim, even if they do not meet all Board requirements that would apply in a case alleging a numeric violation. See Charter Hall Home Owners Association v. Overland Transportation System, PCB 98-81 (Oct. 1, 1998). The Board will consider the noise measurements accordingly.

The Board has determined that noise interfering with sleep and use of yard (Hoffman) and trucking operation noise impacting sleep, watching television and conversing (Thomas v. Carry Companies of Illinois) does constitute an interference. Here, the noise impacts the sleep of the complainants.

The Board finds that the noise emissions from the school do interfere with the complainants' enjoyment of life. Accordingly, the Board must consider if the emissions unreasonably interfere with the complainants' enjoyment of life.

Unreasonable Interference, Section 33(c) Factors

The remaining issue is whether the noise from the ventilation fan has unreasonably interfered with the complainants' enjoyment of life. Whether an interference is unreasonable is determined by examining the factors set forth in Section 33(c) of the Act. The Board need not find against respondent on each factor to find a violation. See Wells Manufacturing Company v. PCB, 73 Ill. 2d 226, 233, 383 N.E.2d 148, 151 (1978) (Wells Manufacturing); Processing and Books, Inc. v. PCB, 64 Ill. 2d 68, 75-77, 351 N.E.2d 865, 869 (1976); Incinerator, Inc. v. PCB, 59 Ill. 2d 290, 296, 319 N.E.2d 794, 797 (1974). The Board will now consider each of the Section 33(c) factors.

The Character and Degree of Injury to, or Interference With the Protection of the Health, General Welfare and Physical Property of the People

*14 In assessing the character and degree of interference that the noise emissions from the ventilation fan caused, the standard applied by the Board is whether the noise "substantially and frequently interferes" with the enjoyment of life, "beyond minor or trifling annoyance of discomfort." Charter Hall, slip op. at 21, citing Kvatsak v. St. Michael's Lutheran Church, PCB 89-182 (Aug. 30, 1990), slip op. at 9.

As previously indicated, the complainants assert that the noise from the fan unreasonably interferes with the enjoyment of their lives and properties. They specifically point to impacts in the enjoyment of their duck pond and deck, as well as impacts on their abilities to get back to sleep if awakened. Knox Br. at 7. The complainants highlight that the noise is constant, and argue that the noise will only increase with time. Knox Br. at 13.

Discussion

In determining the character and degree of injury caused by the noise emissions from the plant the Board must examine whether the interference was substantial and frequent.

The evidence submitted by the complainants on the interference caused by the noise is inconsistent. Mr. Knox testified that the noise from the fans affects conversation at the pond, but that conversations are possible even though the background noise is present. Tr. at 38. Both of the complainants testified that the noise sometimes prevents them from going back to sleep if awakened, but neither complainants testified that the noise ever caused them to wake up. In addition, Mr. Knox testified that he cannot hear the noise if the windows on the house are closed or unless the wind is just right.

As previously stated, the Board may consider noise measurements in a nuisance noise claim. The measurements taken by Zak were not taken at the house, but approximately 390 feet away at the duck pond. The Board finds that the noise measurements are inconclusive, and do not substantiate or refute whether the interference was substantial and frequent.

The complainants have not proven that the noise emissions from Turriss' ventilation fans substantially and frequently interfere with their enjoyment of life. They have not shown that the noise in question is anything more than a minor annoyance. The noise in question was characterized as an aggravation by both complainants. Based on the evidence before it, the Board finds that noise emissions do not substantially and frequently interfere with the complainants' enjoyment of life, and weighs this factor in favor of the respondents.

The Social and Economic Value of the Pollution Source

In assessing this factor, the Illinois Supreme Court has looked to the number of persons that the respondent employed and whether respondent is an important supplier to a particular market. Wells Manufacturing, 73 Ill. 2d at 235-36. The Board has similarly looked to such factors as the number of employees at a facility and the total wages and taxes that a respondent paid. Charter Hall at slip. op. 23-24.

*15 The complainants do not disagree that Turriss has some economic value. Knox Br. at 16. However, they argue the Board should be cautious about finding social value in the public user's participation, as end product consumers. *Id.* Turriss argues that it has high social and economic value, that it employs 215 local people and pays approximately one million dollars per year in both payroll taxes and state and local taxes. Turriss Br. at 25.

Discussion

In addition to the taxes paid and the people employed, the record indicates that Turriss supplies a number of Illinois municipalities and State institutions with coal. The Board finds that Turriss does have significant social and economic value to the community, and weighs this factor in favor of the respondents.

The Suitability or Unsuitability of the Pollution Source to the Area in Which it is Located, Including the Question of Priority of Location in the Area Involved

Suitability of location is not the only factor the Board examines under this factor. Roti v. LTD Commodities, PCB 99-19 (Feb. 15, 2001) (Roti) slip. op. 26. The Board also looks to priority of location; however industry cannot rely on priority of location as a mitigating factor if emissions are substantially increased. Roti slip op 27 citing Wells Manufacturing 73 Ill. 2d 237. Thus, the Board examines suitability of the location of the source, priority of location and whether emissions

have increased when weighing this factor.

Turris' facility is located in an agricultural area, and is properly zoned. Tr. 188. The fan was located in its current location, in part, because of the access to roads, and partially because of the need to be located near pre-existing mine development. Tr. at 168, 202. The complainants purchased their property in 1975, and have been living there since 1976. Tr. at 15. Turris did not purchase the property where the fan is located until 1997. Tr. at 24.

Discussion

When weighing this factor, the Board must consider the suitability of the pollution source to its location, including priority of location. Turris' ventilation fan is located in an area the record establishes to be primarily agricultural. Tr. at 188. The record clearly shows that complainants have priority of location. Although Turris' facility is suitable to its location, the complainants' priority of location cannot be ignored. Accordingly, the Board weighs this factor neutrally, in favor of neither party.

The Technical Practicability and Economic Reasonableness of Reducing or Eliminating the Emissions, Discharges or Deposits Resulting from Such Pollution Source

In considering this factor, the Board must determine whether technically practicable and economically reasonable means of reducing or elimination noise emissions from Turris' ventilation fan are readily available to respondent. See Charter Hall slip op. at 24.

The complainants' noise expert, Greg Zak, recommended the construction of a structure over the existing housing of the silencer, the evase, the fan and the attached buildings. Knox Br. at 19. Zak testified that such a structure would reduce the noise emissions significantly. Tr. at 102, 140. Turris argues that complainants simply gloss over the technical feasibility and economic reasonableness of Zak's solution. Turris Br. at 27. Turris contends that the \$37,000 complainants posit the structure will cost does not accurately reflect the true cost of the building Zak is recommending. Turris Br. at 27. Turris presented evidence that the building will likely cost approximately \$470,000. Tr. at 182.

Discussion

*16 The Board finds that the record does not reflect the proposed remedies to be technically practicable or economically reasonable. The evidence in the record on the cost of the proposed remedy is vastly divergent. In addition, the evidence suggests that the proposed remedies may not be technically feasible.

Schultz, an engineer for Turris, testified that mine safety regulations prohibit the construction of anything combustible within 100 feet of the fan. Tr. at 218. Wood, therefore, could not be used in the construction. *Id.* This would support Turris' contention that the monetary figures offered by Zak are inaccurate. Technical issues also exist in that any building surrounding the fan must be designed and approved to comply with requirements regarding a potential explosion in the mine. Regulations require that the fan be placed in a certain location in case of an explosion. Schultz testified that Turris would have to obtain Mine Safety and Health Administration approval prior to the construction of any building over the fans. Tr. at 185.

The Board finds that the remedies suggested by the complainants are not technically practicable and economically reasonable solutions to the address the noise from the fans. Accordingly, this factor is weighed in favor of the respondents.

Any Subsequent Compliance

Under this factor, the Board analyzes the respondent's attempts to address the emissions that have led to the alleged violations of the Act or the Board's regulations. The record shows that Turris has engaged in substantial remedial efforts to alleviate the noise. After the complainants notified Turris about the noise complaint, Turris contacted Zak and Schomer

to discuss abatement methodology. Turriss made significant efforts to reduce the noise including the closure of the upcast device, the installation of belting on the fan evase, the installation of steel plating and additional belting around the evase, the placement of belting on the roof house, and the installation of a silencer. The record indicates the respondent spent approximately \$25,000 trying to resolve the noise issue. Tr. at 179-80.

The complainants do not dispute that Turriss has attempted to reduce the noise emissions. Knox Br. at 21. Both complainants agree that Turriss took steps that have drastically reduced the noise from the fan. Tr. at 26, 64.

The Board finds that the respondent made a considerable effort to alleviate noise emissions from the fan, and weighs this factor in favor of the respondents.

Summary of Findings on Unreasonable Interference

The Board finds that the noise from Turriss' ventilation fan has not unreasonably interfered with the complainants' lives. The complainants have not proven that the noise substantially interferes with their lives. In addition, Turriss has significant social and economic value. No practical solutions that are economically reasonable to alleviate the interference were evidenced, and the Turriss has vigorously attempted to address the complainants' complaints about noise. Accordingly, the Board finds that respondent did not violate Section 24 of the Act and 35 Ill. Adm. Code 900.102.

CONCLUSION

*17 Based on the record before the Board, the Board finds that the respondent did not violate Section 24 of the Act and 35 Ill. Adm. Code 900.102, 901.102(a) and (b) or 901.106. The Board finds that sound emanating from the ventilation fan did not unreasonably interfere with the complainants' enjoyment of their lives and property. This opinion constitutes the Board's finding of fact and conclusions of law. The Board dismisses the case and closes the docket.

IT IS SO ORDERED.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2000); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

T.E. Johnson

FN1. The transcript of the June 11, 2002 hearing will be cited as "Tr. at ____."; the complainants' post-hearing brief will be cited as "Knox Br. at ____."; Turriss' post-hearing brief will be cited as "Turriss Br. at ____."; the complainants' reply brief will be cited as "Reply at ____."; Turriss' motion for leave to file surreply instanter will be cited "Mot. at ____."; complainants' motion to strike motion for leave to file surreply brief and objection to respondent's surreply brief will be cited as "Obj. at ____."

FN2. NEC is an abbreviation for 'not elsewhere coded' in the SLUCM code. *See* 35 Ill. Adm. Code 901.Appendix B, code 110, footnote 5.

2003 WL 137447 (Ill.Pol.Control.Bd.)

END OF DOCUMENT

Caught in the turbine: Some aren't so excited to see the region filled with new wind farms

July 12, 2009 by Samantha Bates in *The East Oregonian*

Even though wind energy companies are flocking to Oregon and the state is working to attract the business, not everyone is jumping for joy for the arrival of this new institution. Many see the wind turbines as towering giants invading the state - an example of industrial engines spreading out over Oregon's unique landscape, threatening people, animals and resources.

The Umatilla County Planning Commission may have to take this issue, or at least one aspect of it, head on. Milton-Freewater-area resident Richard Jolly has filed an amendment to the county's comprehensive plan keep wind turbines out of the Blue Mountains, designating the view as a protected resource. On June 25, Jolly's proposal brought more than 150 people to fill the media room at the Umatilla County Justice Center. The topic is so big, and there are so many dissenting views, the planning commission is continuing the meeting on July 23, this time at the Pendleton Convention Center.

At that first meeting, while people conducted themselves cordially, there was still high tension in the room. People are divided over the topic of how much power should go to those wanting to protect the land from wind development, and how much power should go to landowners and wind companies to make their own decisions.

The state is primarily letting the market decide where to put wind farms. Companies make proposals to the state Energy Facility Siting Council, or EFSC. If the proposal meets all the requirements, the council has to approve it.

Eric Quaempts, director of the department of natural resources for the Confederated Tribes of the Umatilla Indian Reservation, gave a presentation at that meeting. And while he said the tribes weren't taking a stand for or against wind development, he struck a chord when he showed a photo of Celilo Falls. Or rather, where the falls once were.

The photo showed water pooled from dams producing electricity downstream. Far above the water, just over the edge of the cliffs of the Columbia River Gorge, peeked the white stems and blades of wind turbines.

"We've seen the impacts of hydro production on the river and the floodplain, and now that production's moving upslope, there'll be impacts to other resources," Quaempts said. He also summed up one of the reasons for the high tensions: People want to feel like they have some control over what's happening.

"It would be very beneficial for both the state and the county to develop a vision of what they want to see for energy development so we can create a context for planning and measuring toward those goals," Quaempts said. "I think what's creating a lot of anxiety right now is nobody knows where the endpoint is, or the goal. They've seen a lot of rapid expansion and growth and it's not clear when that's going to stop."

The big picture

So far, each wind project has been evaluated individually. When an Oregon Department of Energy analyst brings a proposal to the EFSC, he or she goes over each of the requirements and makes recommendations to the council.

But there doesn't seem to be any comprehensive look at the effects of wind farms statewide. The East Oregonian asked local and state officials about any statewide studies, and no one knew of any.

Louis Torres, spokesman for ODE, mentioned a list of guidelines put together by the U.S. Department of Fish and Wildlife, the Oregon Department of Fish and Wildlife and others, including county and state agencies in Oregon and Washington and environmental groups such as the Audubon Society and the Nature Conservancy. It compiled what had already been done to look at wind farm impacts and how they related to

standards for facility siting, said Rose Owens, habitat specialist projects coordinator with ODFW, who worked on the guidelines.

The study area, called the "Columbia Plateau Ecoregion of Oregon," stretched from Milton-Freewater, Pendleton and Pilot Rock to The Dalles and Maupin. It followed the Columbia River on the north and ran south to Heppner and Condon.

The **guidelines make recommendations such as a minimum of two years of monitoring of a wind farm for bird and bat mortality.** The guidelines recommend continued communication between the "permitting authorities" - in this case usually EFSC, the county or ODE - and the company to keep track of how many birds or bats are killed. The guidelines also address the likelihood of animals to avoid the wind turbines. Those may concern migrating species, elk and deer, for example, which have winter ranges in the Blue Mountains. It recommends looking for sites where it's less likely to put out animals from their migrating areas.

The guidelines leave it to the government and its standards to monitor these effects. Owens said those standards are pretty thorough, and both ODE and wind companies work with ODFW to try and follow its recommendations.

But Owens and the guidelines document said there is need for more work.

"As we speak, wind farms are being developed very rapidly here in Oregon, what with the state and federal incentives for renewable energy," Owens said. "It is a good idea to try and research what is happening to various sensitive species most affected by these wind farms."

And like the guidelines, she said **wildlife need to be studied from the perspective of fatality and avoidance, which will vary from species to species. Owens used the sage grouse, a species being considered by the U.S. Fish and Wildlife for possible protection,** as an example.

"In the Rocky Mountain region, sage grouse that are disturbed will not use breeding habitat close to some of the oil and gas development," she said. "There have not been adequate studies to determine what is the effect that wind energy has on sage grouse and sage grouse breeding habitat."

Harmful Effects

Some Oregonians wonder about adverse effects of wind farms. They wonder how turbine noise, flickering light from shadows of the turbines and the chances of ice flying off turbines will affect people. Some fear possible declining property values. They're also concerned about wildlife like birds and bats, or other animals like the endangered Washington ground squirrel or the sage grouse Owens mentioned.

Many of these concerns are addressed by statute. When a wind company applies to start a project, it has to meet guidelines for the fish and wildlife habitat, soil protection, sound and endangered species.

For instance, **noise levels require the turbines can't cause sound to surrounding houses greater than 10 decibels higher than the background noise, which is usually around 26 decibels. Often this can be solved by keeping turbines away from people's homes.**

But that doesn't mean those standards will necessarily protect people.

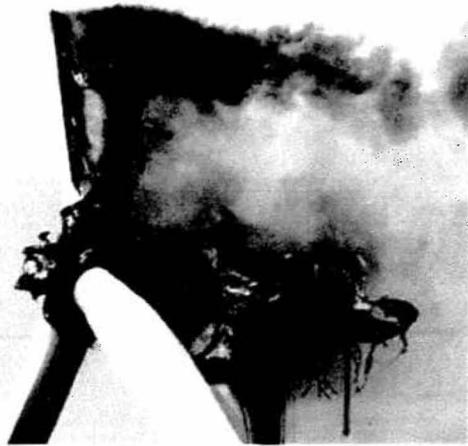
Neighbors of the Willow Creek wind project in Gilliam County have compared noise from turbines to freight trains or jet engines. One man said the vibrations activate an old war injury, giving him vertigo. Others said the noise keeps them from sleeping at night.

Champaign County ZBA Hearing - Invenergy - Night 2 - 9-1-11

Exhibits Submitted by Kim Schertz, POB 347 Hudson, IL 61748

- Trouble In the Wind - Bureau Valley Turbine Costs Skyrocket \$35,000 in Year Six
San Gorgonio Pass Monthly Wind Production Numbers
- Caught in the Turbine: Some Aren't So Excited to see the Region Filled with New WFs
- Decommissioning Myths
- The Rest of the Story - What I Learned at the Wind Conference
- Tilting At Windmills
- As the Turbine Blades Turn
- For the Sake of Green or Greed
- Decommissioning Costs and Scrap Value: Beech Ridge Wind Energy Facility
- Wind Energy's Ghosts
- Misquoted? Tell the DEC, USFSW
- Wind Farm Officials Emphasize Safety: Landowners Meet With Bent Tree Reps.
- Potential Road Damage From Loads Needed for Each Wind Turbine Tower
- Black Prairie WF ZBA Hearing Notes 10/09 Eric Schmidt
- County Board OK's Landscape Work for Soldiers and Sailors
- Wind Farm Dispute May be on Road to Court
- County To Take Legal Action
- Wind Farm Work Leaves Roads in Bad Shape
- Repairing a Wind Turbine
- The Money is Not Enough
- The Anatomy of A Sucker
- Wind Turbines, Health, Ridgelines and Valleys
- Study Says Wind Farm is Too Loud
- Like Chinese Water Torture - Turbine Complaints Focus on Noise
- Wind Turbines Too Noisy, Internal Ontario Government Memo Says
- Turbines Declared a Nasty Neighbor as Secret Buyout is Revealed
- For Those Near, the Miserable Hum of Clean Energy
- Noise Measurements - Twin Groves Wind Farm 4-23-07
- Living with the Twin Groves Wind Farm - Local Residents Speak Out
Title: Rene Taylor Testimony Before Union, WI Planning Commission
- Horizon Energy's Railsplitter Zoning Hearing, Logan Co, IL 6-28-08
- Shepherds Flat Wind Farm: What's the Cost to Taxypayers?
- Taxpayers United of America: Taxpayer Organization Charges Wind Turbine Promotion
as a Scam and Stealth Tax





Trouble In the Wind – EU Referendum 5-17-10 (WINDACTION)

Away from the likes of Chris Huhne and his mad vision of a land covered with wind turbines, the real world is beginning to intrude.

According to the independent business intelligence service *Wind Energy Update*, **wind turbine operation and maintenance (O&M) costs are increasing sharply, rising to two or three times more than first projected and causing a 21 percent decrease in returns on investments.**

O&M costs were found to be especially high in the United States, now the world's largest wind power market, but the even the average world costs are coming out at 27 US cents per kilowatt hour, compared with the 20 cents earned in the US through production credits.

The report says that while close to 80 percent of the world's wind turbines are still under warranty, "this is about to change." R&D is focusing especially on gearbox reliability. Many gearboxes, designed for a 20-year life, are failing after six to eight years of operation, the report finds.

The bizarre thing is that, while Huhne is so insistent that nuclear should not be given any subsidy, **even with the massive subsidy it already gets, wind cannot be made to pay.** And yet, in the economics of the madhouse which characterises British energy policy, it is wind which is set to inherit the earth.

There must be a special kind of madness that inflicts politicians – clearly, their brains are not wired the same as in normal human beings.

Bureau Valley Turbine Costs Skyrocket \$35,000 in Year Six

Holmes-Murphy Insurance Company insures the Bureau Valley School Turbine. This wind turbine was insured for 5 years for approximately \$8,500/yr. The turbine is no longer under warranty. If the school wants it insured for "turbine failure" (parts, equipment, labor) District #340 has been requested to pay approximately \$35,000 per year for "warranty insurance" in addition to the \$8,514 it currently pays for grounds insurance and liability insurance.

(Source: Holmes-Murphy Insurance, 512- S. Solberg Ave, Sious Falls, SD 605-336-1090)

3-9-11

San Gorgonio Pass monthly wind production numbers (1998 to 2006)

5-13-08

Summary

The wind energy industry claims to provide power for thousands of homes with each new windmill development, but in fact, wind turbines can only generate kilowatt hours of electricity when the winds are blowing at the right speeds. Wind is an intermittent resource, and as such, is unreliable as a power source.

The small amount of power they do generate typically does not match the time of need profile. To put this in context, the 4,000+ windmills in the San Gorgonio Pass (approx. 565 megawatts of installed capacity) generate only approximately 100 megawatts per year. Southern California Edison uses approximately 13,000 megawatts of power in their service area per year.

The document linked to this page lists the monthly production figures for the San Gorgonio Pass wind energy facility during the period from 1998 to 2006. The monthly production figures are broken down by Time of Use (TOU). In California, time-of-use rates are usually divided into three or four time blocks per twenty-four hour period (on-peak, mid-peak, off-peak and sometimes super off-peak) and by seasons of the year (summer and winter).

- TOU = 1 On peak
(only occurs during summer months Jun to Sep)
- TOU = 2 Mid peak
- TOU = 3 Off peak
- TOU = 4 Super Off peak
(only occurs during winter months Oct to May)

Below is a summary of the 1998 to 2006 average yearly windmill power production in the San Gorgonio Pass, based on 565 megawatts of installed capacity located within the Southern California Edison service area:

Year kWh production MW % of installed capacity

Year	kWh production	MW	% of installed capacity
1998	797709528	91.06	16%
1999	883429026	100.84	17.8%
2000	952507247	108.73	19.24%
2001	858533582	98	17%
2002	965777430	110.248	19.5%
2003	793296843	90.55	16%
2004	779315629	88.96	15.7%
2005	786556823	89.789	15.89%
2006	732561714	83.62	14%

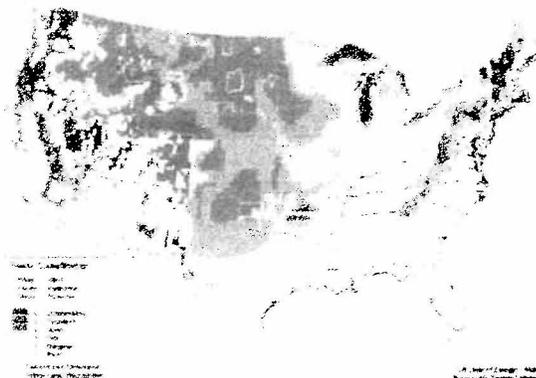
It is important to note that the percent capacity figures above represent an average percentage of installed capacity throughout the year.

Windaction.org wishes to thank Alexandra Weit for her efforts in obtaining this information from Southern California Edison and in the preparation of these average capacity figures.

Attachment: SCE Wind Production Records.pdf

Wind Resource Potential Illinois: Marginal

Figure 13. Wind Resource Potential



- 6 - Red Outstanding
- 5 - Purple Excellent
- 4 - Pink Good
- 3 - Orange Fair
- 2 - Beige Marginal
- 1 - White Poor

Source: US Dept. of Energy
National Renewable Energy Lab

House Energy & Commerce Committee -
Subcommittee on Energy & Air Quality
Hearing on "Unlocking America's Energy
Resources: Next Generation" 5-18-06
Written Testimony of Victor Abate
VP, Renewable Energy, GE Energy

Caught in the turbine: Some aren't so excited to see the region filled with new wind farms

July 12, 2009 by Samantha Bates in *The East Oregonian*

Even though wind energy companies are flocking to Oregon and the state is working to attract the business, not everyone is jumping for joy for the arrival of this new institution. Many see the wind turbines as towering giants invading the state - an example of industrial engines spreading out over Oregon's unique landscape, threatening people, animals and resources.

The Umatilla County Planning Commission may have to take this issue, or at least one aspect of it, head on. Milton-Freewater-area resident Richard Jolly has filed an amendment to the county's comprehensive plan keep wind turbines out of the Blue Mountains, designating the view as a protected resource. On June 25, Jolly's proposal brought more than 150 people to fill the media room at the Umatilla County Justice Center. The topic is so big, and there are so many dissenting views, the planning commission is continuing the meeting on July 23, this time at the Pendleton Convention Center.

At that first meeting, while people conducted themselves cordially, there was still high tension in the room. People are divided over the topic of how much power should go to those wanting to protect the land from wind development, and how much power should go to landowners and wind companies to make their own decisions.

The state is primarily letting the market decide where to put wind farms. Companies make proposals to the state Energy Facility Siting Council, or EFSC. If the proposal meets all the requirements, the council has to approve it.

Eric Quaempts, director of the department of natural resources for the Confederated Tribes of the Umatilla Indian Reservation, gave a presentation at that meeting. And while he said the tribes weren't taking a stand for or against wind development, he struck a chord when he showed a photo of Celilo Falls. Or rather, where the falls once were.

The photo showed water pooled from dams producing electricity downstream. Far above the water, just over the edge of the cliffs of the Columbia River Gorge, peeked the white stems and blades of wind turbines.

"We've seen the impacts of hydro production on the river and the floodplain, and now that production's moving upslope, there'll be impacts to other resources," Quaempts said. He also summed up one of the reasons for the high tensions: People want to feel like they have some control over what's happening.

"It would be very beneficial for both the state and the county to develop a vision of what they want to see for energy development so we can create a context for planning and measuring toward those goals," Quaempts said. "I think what's creating a lot of anxiety right now is nobody knows where the endpoint is, or the goal. They've seen a lot of rapid expansion and growth and it's not clear when that's going to stop."

The big picture

So far, each wind project has been evaluated individually. When an Oregon Department of Energy analyst brings a proposal to the EFSC, he or she goes over each of the requirements and makes recommendations to the council.

But there doesn't seem to be any comprehensive look at the effects of wind farms statewide. The East Oregonian asked local and state officials about any statewide studies, and no one knew of any.

Louis Torres, spokesman for ODE, mentioned a list of guidelines put together by the U.S. Department of Fish and Wildlife, the Oregon Department of Fish and Wildlife and others, including county and state agencies in Oregon and Washington and environmental groups such as the Audubon Society and the Nature Conservancy. It compiled what had already been done to look at wind farm impacts and how they related to

standards for facility siting, said Rose Owens, habitat specialist projects coordinator with ODFW, who worked on the guidelines.

The study area, called the "Columbia Plateau Ecoregion of Oregon," stretched from Milton-Freewater, Pendleton and Pilot Rock to The Dalles and Maupin. It followed the Columbia River on the north and ran south to Heppner and Condon.

The **guidelines make recommendations such as a minimum of two years of monitoring of a wind farm for bird and bat mortality.** The guidelines recommend continued communication between the "permitting authorities" - in this case usually EFSC, the county or ODE - and the company to keep track of how many birds or bats are killed. The guidelines also address the likelihood of animals to avoid the wind turbines. Those may concern migrating species, elk and deer, for example, which have winter ranges in the Blue Mountains. It recommends looking for sites where it's less likely to put out animals from their migrating areas.

The guidelines leave it to the government and its standards to monitor these effects. Owens said those standards are pretty thorough, and both ODE and wind companies work with ODFW to try and follow its recommendations.

But Owens and the guidelines document said there is need for more work.

"As we speak, wind farms are being developed very rapidly here in Oregon, what with the state and federal incentives for renewable energy," Owens said. "It is a good idea to try and research what is happening to various sensitive species most affected by these wind farms."

And like the guidelines, she said **wildlife need to be studied from the perspective of fatality and avoidance, which will vary from species to species. Owens used the sage grouse, a species being considered by the U.S. Fish and Wildlife for possible protection,** as an example.

"In the Rocky Mountain region, sage grouse that are disturbed will not use breeding habitat close to some of the oil and gas development," she said. "There have not been adequate studies to determine what is the effect that wind energy has on sage grouse and sage grouse breeding habitat."

Harmful Effects

Some Oregonians wonder about adverse effects of wind farms. They wonder how turbine noise, flickering light from shadows of the turbines and the chances of ice flying off turbines will affect people. Some fear possible declining property values. They're also concerned about wildlife like birds and bats, or other animals like the endangered Washington ground squirrel or the sage grouse Owens mentioned.

Many of these concerns are addressed by statute. When a wind company applies to start a project, it has to meet guidelines for the fish and wildlife habitat, soil protection, sound and endangered species.

For instance, **noise levels require the turbines can't cause sound to surrounding houses greater than 10 decibels higher than the background noise, which is usually around 26 decibels. Often this can be solved by keeping turbines away from people's homes.**

But that doesn't mean those standards will necessarily protect people.

Neighbors of the Willow Creek wind project in Gilliam County have compared noise from turbines to freight trains or jet engines. One man said the vibrations activate an old war injury, giving him vertigo. Others said the noise keeps them from sleeping at night.

For bird and bat species, companies provide analysis in their application estimating the number of animals that might be killed by the wind turbines. That number is compared to what is needed for mating pairs to continue the species survival, for instance, and if the numbers add up according to statute, the application continues.

In the guidelines Owens worked on, the study used numbers put together by WEST Inc., a consulting firm in Walla Walla, to get an idea of how many birds and bats turbines kill a year in the state. It found 69 percent of bird fatalities from wind projects are passerines, or birds like gold-crowned kinglets. It found 18 percent are game birds and seven percent are raptors or vultures. Annually, WEST estimated there were 0.07 raptor fatalities per megawatt, 2.2 general bird fatalities per megawatt, and 0.68 bat fatalities per megawatt. Two species of bat - hoary bats and silver-haired bats, which migrate through the area - made up 90 percent of the bat deaths WEST recorded.

Graveyards

Some people wonder what Oregon will look like once this wind gold rush is over. They cite the wind graveyards in California, where abandoned and obsolete turbines sit and decay.

The Department of Energy and EFSC have requirements to attempt to make sure this doesn't happen in Oregon. When a wind company applies to start a project, the site certificate EFSC issues includes an obligation by the wind company to restore the land when it's done. The exact wording is to **restore the land to a "useful and non-hazardous" condition.**

John White, ODE energy facility analyst, said for most wind projects on farm land, it means making sure the land can be farmed again. **It includes removing foundations and underground wiring to a depth of three feet - which is theoretically the depth needed to grow crops like wheat.**

If a wind company goes out of business and can't take down the turbines, ODE also requires it to take out a bond as a backup to the site certificate. So even if the company is long gone, there's a bank bond to fund removal of the turbines.

There's only one problem: **Oregon hasn't had to take down any wind turbines.**

To try and guess at the price, White said the ODE completed a study in 2004 estimating what a contractor would charge for taking down turbines, foundations, wiring, roads and transformers.

"It's similar to what a contractor would do if they were bidding on a contract to restore a site or take down a facility," White said. "The cost guide includes a pretty massive spreadsheet with unit costs for each job, each task." Each year that amount is adjusted with the consumer price index to change for inflation, or sometimes in the current economy, deflation. Most of these bonds are "in the millions" of dollars range, White said.

"It's always going to be an educated estimate," White said. "We can't really know what it's going to cost 30 years from now. ... We realize there's a lot of uncertainty, but we try to be pretty diligent about what we think is a reasonable estimate."

Web link:

<http://eastoregonian.com/main.asp?FromHome=1&TypeID=1&ArticleID=95196&SectionID=13&SubSectionID=48>



Decommissioning Myths

The G.E. 1.5 megawatt turbine is on an 80 meter three section tower. The construction requires the following approximate quantities per turbine:

- Earthwork: plus or minus 2,000 yards
- Concrete: up to 350 yards
- Reinforced Steel: 23 tons
- Gravel/Stone: 2,000-2,500 tons
- Craftsmen: plus or minus 150
- **Man Hours: 2,000**

Tower Steel:	Base: 75' long	Weights 128,000 lbs.	
	Midsection: 82' long	Weights 81,000 lbs.	
	Top: 98' long	Weights 65,000 lbs	Total: 137 tons of steel

Nacelle: 127,000 lbs. = approximately 64 tons

Blades: 123 feet long = 77 meter blade - weighs approximately 6.5 tons each (3 per turbine)
82.5 meter blade - weighs approximately 7.5 tons

“The only thing we bring in is our staff, our management staff, anywhere from 7-15 people.”

To remove it would cost **“\$25,000 to remove the first five feet of concrete (below grade). It did not include dis-erection of the turbine or the blades nor the tower....”**

...”to my knowledge, no one has taken one down in the U.S.”

When asked if he had a figure for taking down the tower, nacelle and blades, Ken Davis replied,

“I am in the business of estimating these projects and if I’m capable of understanding how much it cost to put it up the first time, it’s a pretty good bet it’s going to take as much to take down.”

“...the 450-ton crane should take care of that, so that crane weighs about half a million pounds.”

“We currently have seven of those cranes working today. We own two of the very large cranes and we own most of the smaller cranes that go along with that...it costs money to break those cranes” (disassemble for moving from site to site).

Does the \$25,000 decommissioning cost include bringing the crane back to the site?

“Absolutely not. That is the removal of the first five feet of the turbine foundation from six inches above the ground down four and a half feet, roughly a 16-foot diameter cylinder.”

“...we use Grade 60 bar, okay, which is better than most bars that have been used in the last 20 years. Once the concrete gets covered up with soil around it, it will not degrade, in my opinion.”

“...most foundations today are octagon in shape and they’ll go down seven to eleven feet...”

Ken Davis, White Construction- testifying at the White Oak Wind Farm Zoning Board hearing for Invenergy

1-18-07 McLean County, IL

The Rest of the Story.....

...What I Learned at the Wind Conference

(Illinois Wind Working Group – Siting, Zoning and Taxing Wind Farms in II 2-9-11)

DECOMMISSIONING

- What is the cost to decommission a turbine?
"I've seen estimates ranging from \$180,000 to one-quarter of a million dollars per turbine." (14)
- "A County may be tempted to put decommissioning bonds in right up for something that's taking place 25-30 years down the road, that's just not relevant to something happening so far down the road." (9)
(Lee County has no funds in place on turbines that are approximately five years old).
- "We had a decommissioning plan in place 4-5 years ago. We just re-did it a few months ago and it was 60% higher per turbine than our first plan which was all based on what wind project engineer says so either our County Board was naïve or just lazy. After all the hoops to get the wind farm in, the decommissioning just became an afterthought. We can see now, we may need a third plan so you better take it seriously."
 - "We reviewed about a dozen decommissioning plans. Some say there's scrap value so there's no need for money and others require six figures per turbine."
 - "We have a wind farm that's one-fourth of the way through its life cycle so it may become a much bigger problem for us 10-15 years down the road."
 - "Our County Board discussed it recently and we don't think our own plans are adequate."**
 -  "The problem with the scrap value provision is that scrap is not in any usable form. Towers may have to be cut down into three foot sections which escalates the labor cost. It's the same with copper – it's very valuable, but not when it's encased in a generator 300 feet up in the air." (14)
 - "Turbine blades are tons of carbon fiber and fiberglass. The EPA says some of it may be recycled but it may be a huge liability. Each county has to consider their worst case liability. I'll be happy to give anyone our new decommissioning plans." (14)
- "They do remove the concrete pads. They all have a (access) road removal plan subject to the landowner. They remove the foundation down to three feet. That's a problem because there's still a lot of concrete and cabling down there. Right now no one sees it as a problem, it could be a problem 10-15 years down the road." (14)
- How likely is it original owner will still own at decommissioning time?
"Utilities and financial investment firms are not always the ones who develop it, so always put something in decommissioning that addresses future owner." (9)

ROAD DAMAGE

- "Even using the crane mats, some roads still experience depressions in them as deep as six to eight inches so there is damage." (6)
- What are the pros and cons of pre-building versus post-building of the roads?
"You need a combination of the two. The issue comes up quickly with high volume roads. They decide which ones need the initial upgrades. There was one section that would cost \$3 million to upgrade where we advised the general contractor that it needed done, we didn't see it holding up. They refused and within one week of commencing, they had to tear it up." (6)

NOISE

- "Humans don't experience low frequency sound at same level as high frequency."
"A-Weighting is most common."
"It splits out to every band level – other states break it into one-third octaves (11)."
(Wind turbine manufacturers won't release frequency band data at the lowest unweighted hertz levels. At zoning hearings it is stated that studies have been performed using data supplied by the manufacturer. So the data given to prove compliance does not include the lowest frequency ranges which cause the most distress to humans.)
- "A certain radius in any direction is impacted but more is impacted downwind." (11)
- "The EPA ran out of money so their noise rules are a guideline rather than enforceable." (11)
***(There is no active enforcement at the IPCB (Illinois Pollution Control Board).
The cost to enforce noise regulations is incurred by the resident or the County.)***
- "Clearly not every sound is the same so maybe that's when special rules should come in to play."(11)
- "Agricultural ground is where all of this falls – is unlimited – unclassified." (11)
- "To some extent, ag is like an industrial zone, so it doesn't have the same protections as residential"(4)
(Both agricultural and residential land have noise limits – agricultural land with a home on it falls under the more restrictive residential noise regulations.)
- "So they apply rules to residential home, not the edge of the agricultural property or the setback would have to be increased." (11)
(IPCB rules states that sound measurements be taken from the property line, not from the wall of the residence as is being done by developers in order to take the yard for use as a noise buffer. This amounts to an unfair taking of property as it limits future use of that property for building or home expansion.)
- "It is hard after the fact to determine what's causing the problem." (11)
(This makes it difficult for homeowners harmed by noise to prove their case.)
- "The models give us nice outputs but sometimes real life readings are louder than expected." (11)
- "Stall controls fall outside of standard testing factors." (11)
- "There are correcting methods for the models, but you are introducing uncertainty at this point." (11)
- "Noise needs addressed up front instead of mitigating after the fact." (11)
- "Standard setbacks can't always apply due to differences in terrain, etc." (11)
- Explain the effects on residences depending on turbines being placed in linear or random pattern.
"When turbines are linear, they sometimes become too synchronized, they start beating at the same time and there is an amplification effect. It is highly individualized to each house." (11)
- "Sound intensity decreases further away from turbine but not in a circular pattern, more like a raindrop pattern – it depends on terrain, temperature and vegetation, it also can be funneled." (2)
- "Typically wind farms are put in noisy areas anyway" (2)
(In a quiet, rural setting nighttime noise levels are typically in the 25-35 db range)
- "The EPA, independent of wind project, says 55 db causes annoyance to most people
Taking noise from 30 to 40 decibels is a 100 times sound increase." (rhythmic scale) (2)
- "Noise behaves unpredictably." (2)

PROPERTY VALUES

- "There are several research reports on the back table . We have another one that is not out on the table in paper form—a grad. student took an extensive look at property values. That one is up on our website and I would encourage you to look at it." (1)
(Unlicensed individuals providing appraisal services to the public may be subject to fines and other punishment. J. Hinman is not a licensed appraiser, yet ISU puts her thesis out to give far-reaching value advice to the public and unsuspecting Boards.)
- "We didn't know that the property value issue would be so important so we asked them (developers) to do the studies for us." (4) **(County Boards use biased studies provided by experts hired by wind developers instead of hiring their own independent experts.)**
- "Several homes have entered into the agreement (DeKalb County Property Protection Value Guarantee Plan) but this one has filed the claim of no offer to buy it in the 180 days due to wind farm so they demand that the company buys it at the asking price. Now Florida, Light and Power wants to pursue a counter offer and dispute the appraiser opinion." (12)
- Do wind farms reduce property values and will there be more data over time that they do reduce property values? **(“Most recent anecdotal data from Illinois indicates that assessed value on farmland is dropping approximately 22-30% on farmland that is near where wind turbines have been placed. Also, the increased risk of getting sued for nuisance has a dampening effect on value.” (www.calt.iastate.edu)**
- "I not a fan of Property Protection Guarantee Plans because they're a solution to a problem which I don't see." (12)
(“It seems reasonable to offer a property value agreement.” Ben Hoen, author of DOE report.)
- "I can find no measurable effect on property values." (12)
(“Poletti does not attempt to measure to what degree, if any, homes can see the wind farm. Further, no effort was made to control for distance. By not properly controlling for view and distance, the study results are inconclusive.”) (Ben Hoen criticism of Peter Poletti).

(The report most heavily relied on to support the false claim of no property devaluation is the DOE/Berkley/Ben Hoen Report. Of 7,500 sales in 10 areas over 10 years,”
 - many of those were not immediately close to the turbines
 - we only had 125 data sets within one mile
 - we had a large data set outside the one mile so the margin of error inside the one mile is higher
 - the areas of Palm Springs and Riverside, CA, which have one mile setbacks, were omitted
 - This study contains homes only as close as .75 miles or 4000 feet. (Fenner)
 - Studies should analyze homes closer than 4000' and include variables for vista. (Fenner)
 - Of the 280 sales made after 1/1/01, 138 were within five miles of the turbines. (Fenner)
 - 28% of those homes could see a turbine (43 homes) (Fenner)
 - None of those homes were within 4000 feet of a turbine (Fenner)
 - “It underwent a type of peer review, but not an academic peer review”
(co-author Dr. Mark A. Thayer, expert witness testifying under oath at zba hearing 7/10))
- "Some home prices are higher, some are lower near a wind farm" (12)
(there is a “doughnut hole” effect in that as people abandon homes closest to the turbines and move away, there is a slight increase in prices farther away from the wind farm. The study area is enlarged to 10 miles, diluting the depressing effect on home values nearest the turbines.)
- The difficulty for the County Board is that when an expert such as Mr. Poletti says there is no difference in home values then other qualified experts say the exact opposite, 180 degrees, that's when the PVG may be an answer." (13)
(“If they won't guarantee that, they don't have a leg to stand on”) Ben Hoen on PVG

TAX ASSESSMENT LAW

- "Tax Assessor Wendy Ryerson took the lead in getting this statute." (1)
(Lee County has had a noticeable increase in the number of people requesting their property assessments be lowered due to wind farms depressing effect on real estate values)
- "2007 Public Act 095-0644 standardizes the valuation of wind turbines at \$360,000 per MW, Annually, adjusted for inflation and depreciation. In 2010, the law was extended through 2016." (1)
(Last year legislation was introduced making all wind farms in Illinois tax-exempt.)
- "Fair cash value is Trended Real Property Cost Basis minus Depreciation – Trending is tied to CPI – depreciation is 4% yearly over 25 years." (1)
(Functional and external obsolescence may further reduce the fair market value of the turbines – these factors can take the rate to zero at any time)
- "There is not a 1:1 correlation on the loss of state aid – reduction in state aid depends on PTELL and the foundation level, the flat grant effect is not the same for all districts." (7)
- "It benefits all taxing bodies – libraries, fire, community college, county (7)
(To gain revenue from wind farms, Boards have to raise property taxes.)

(“Each individual taxing body will have to decide on a tax levy. If levies remain at current levels, taxpayers would see the funds offset a portion of their current tax burden. That would not bring in extra revenue. Boards seeking more money will have to increase their levies to take advantage of the new assessment rules.” (Law Boosts Woodford Wind Farms PJS10/19/07)
- "How do you get State funding back as wind farm funding goes away?
"I'm retiring, so I won't be here." (7)
- "We've planned five years in advance, so we'll "make adjustments" (7)
(The maintenance agreement on the Bureau Valley School turbine increased \$35,000 in year six - after the initial five year maintenance contract expired.)
- What is the waiting period to get back in line for state aid?
"EAV used is three years prior to fiscal aid so there is a 2.5 year lag." (8)
- "How to you determine the trending factor?
"I'd send you to my Supervisor of Assessments to answer that." (4)

MORATORIUMS

- "It's appropriate to update a ten year old ordinance." (9)
- "Moratoriums are a new event in Illinois as more mature wind industry is here." (10)
(Three counties currently have moratoriums and many more are considering them)
- "There is nothing in state statutes about a moratorium, nothing in state law governing them." (10)
- What effect does a moratorium have on projects approved, but not built?
 - "There is no absolute rule to address it."
 - "It is not a requirement to grandfather in projects"
 - "On projects already built, there is no effect, they operate under "legal nonconforming use"
 - "Vested rights is common law. Courts don't interfere with legislative process but they do have equitable powers to use the doctrine of vested right. The test is if major expenditures have been made. It's difficult to satisfy the proof." (10)

COSTS TO CONSUMERS

- "The impact on local utility rates will be minimal because Illinois has a "rate payer protection" clause saying rates cannot rise more than 1%." (1)
(Applies only to residential rates, not business rates which is usually 40% of the cost of doing business. Those rates will be passed on. 2007 deregulation allows utilities Cost Recovery for additional costs related to purchase of renewables. Those costs are reflected on residential bills, not as electricity, but as Transmission or Delivery Service charges. A new FERC ruling mandates that the cost for new transmission lines be socialized and paid for by 12 states, allowing that cost to be passed on to consumers.)
- "The \$22 per MW tax credit is expiring only on new projects, it lasts ten years, there's confusion, it ends in the 11th year of the project." (1)
(Will they pay for escalating maintenance on aging turbines as federal subsidies are ending?)
- "The Center for Renewable Energy is funded by a US DOE Grant." (1)
(Why higher rates for non-government people to attend conference if it is federally funded?)
- "The instate preference (for buying Illinois' more expensive wind) expires this summer." (1)
- Cost of wind is comparable with NEW coal plant (1)
***(Per unit of power produced, wind is subsidized at a rate of \$23.37, coal at 44 cents)
(The cost of wind is substantially higher than cost of new nuclear or existing coal.)***

CONDUCTING A PUBLIC HEARING

- "A zoning hearing is an evidentiary hearing and is quasi-judicial. The rules of evidence are evidentiary and must limit the use of unattributed sources. Some try to bring in articles from The web – that sort of evidence can't be considered, the rules won't allow it." (5)
(Quasi-Judicial hearing rules state that strict courtroom standards do not apply and that Relaxed Rules of Evidence are to be used. Government reports, public documents and peer-reviewed studies are always admissible. This is an attempt to prevent the public from participating in the zoning hearing process and to limit opposing evidence from being entered into the public record. Citizens rights to due process must be preserved.)
- What is friendly cross? "You kind of know it when you see it." (4)
(McLean County changed hearing rules to limit public participation in the Bright Stalk hearing by preventing members of the audience who signed in on the same sign-in sheet from asking questions of each other during the hearing, regardless of the nature of those questions. It is a tactic used to quash fact-finding and prevent public participation in the zoning process.)
- How to you respond that public involvement occurs at the end?
"Under state law, we only have to notify of public hearing 15-30 days prior." (4)
- "We seldom use economic benefits as a standard, how much taxes they are going to generate are usually beyond the scope of the hearing." (4)
(Financial benefit is not a Standard of a Special Use Permit and should NEVER be used.)

GOOD NEIGHBOR AGREEMENTS

- "Good Neighbor Agreement spreads benefits to all – I support it." (11)
(GNA's are a contract. By legal definition, something is given up by both parties. The documents are appropriately titled, "Nuisance Easement Agreements" in Livingston County.)
- "Some use Good Neighbor agreements to compensate non-participants so they'll get some benefit too." (10)
(GNA's contain a clause, or gag order, which forces participants to forfeit their right to litigate future problems such as noise, shadow flicker or electrical interference)

LIENS

- ***(Liens are being placed on leaseholder's land in Horizon's Top Crop II wind farm, Grundy County, for nonpayment of contracted work on roads and gravel hauling. There is a bankruptcy in progress. Liens are placed on the entire farm, not just the tax ID parcel, preventing landowners from using the land as collateral for loans. This has also occurred in Bureau Co.)***
- ***(Mechanics liens were executed in New York for nonpayment of electrical subcontractors.)***

FARMLAND VALUE

- ***(DeKalb County farmland is valued 15% lower within 3 miles of a turbine than within 5 miles.)***

ENVIRONMENTAL DAMAGE

- "Indiana Bats are Endangered and get strict protection. There is criminal and civil liability – for habitat degradation as well as mortality." (2)
- "Potential impacts to humans include physical, economic, safety, and aesthetic features." (2)
- "Many wind farms have been found to be in environmentally sensitive areas after they were built." (2)
- The Golden Eagle Protection Act now allows bald and golden eagles to be killed if wind developers have applied for a "take" permit." (2) (effective 2-8-11)
- "The Soil and Water Conservation District recommends fixing the waterways before you install the access roads. Field tiles are damaged. There can be the need for erosion remediation and there is the need for Road Agreements – they do cross roads with huge cranes." (4)

FINAL THOUGHTS FROM THE SPIN ZONE

- The public perception is that the hazard is high but when you look at mortality from wind farms, in reality, the hazard is low." (3)
 - ***Agricultural Aviator Bill Tidwell killed hitting an unmarked meteorological tower in Texas. (July 2005.)***
 - ***Agricultural Aviator Stephen Allen killed hitting an unmarked met. tower in California. (1-10-11)***
 - ***Canadian pilot for John Body survived hitting an unmarked met. tower – Of 28 tower strikes in Canada, he was the only non-fatality. (Summer 2010)***
 - ***National Agricultural Aviation Association reports there are approximately 3,000 ag. aviation pilots in the U.S. – their mortality from wind farms in reality, is HIGH.)***

Quotes From Conference Speakers

- 1- David Loomis, Center For Renewable Energy, Illinois State University, IWWWG
- 2 – Karen Tyrell – BHE Environmenta, Senior Vice-President
- 3 – Neil Palmer – Wind Farm Consultant, former employee WIS Electric Power (now We Energies)
- 4 – Phil Dick – McLean County Zoning Administrator
- 5 – George Gordon – McLean County Board member
- 6 – David Winters – Livingston County Engineer
- 7 – Larry Dodd – Ridgeview School District Supervisor
- 8 – Jim Mathes – Illinois State Board of Education, Principal Consultant
- 9 – Matt Boss – Mainstream Renewable Power, Development Manager
- 10 – Jim Griffin - Attorney, AWEA member, Illinois Wind Working Group Executive Committee
- 11 – Chris Howell – Burns and McDonnell, Senior Environmental Engineer
- 12 – Peter Poletti – Poletti and Associates, Real Estate Appraiser and Consultant, Landfill Appraiser
- 13 – Paul Miller – DeKalb County Director of Planning, Zoning and Building
- 14 – Mark Pierson – Bureau County Board Vice-Chairman.

(Comments NOT made at the wind conference are in parenthesis.)

2-18-11

You know the saying: Ignorance is bliss. Unfortunately for the American taxpayer, when it comes to the wind turbine industry, ignorance is not as blissful as it is infuriating. According to a new report by the Investigative Reporting Workshop (in coordination with ABC's World News with Diane Sawyer and the Watchdog Institute), Obama can now add wind turbines to his growing list of failures within the stimulus package.

Renewable energy industry is growing; wind turbines are a key avenue of that growth. Obama has said he would like to be a leader in clean energy but that the United States is struggling to make this goal a reality. He's right, but that's only half the story. The Workshop reports that **\$2.1 billion in stimulus grants** have been given to wind, solar and geothermal companies to make good on Obama's objective but almost **80% of those went to foreign companies. A bankrupt Australian company nabbed the largest grant so far-\$178 million. With that, Babcock & Brown built "a Texas wind farm using turbines made by a Japanese company."**

Even Senator Charles Schumer (D-NY), hardly a foe of Obama's stimulus package, was disappointed with the news that **foreign companies were receiving-4 to 1-stimulus funds and jobs** on renewable energy-related projects. In an interview with ABC News he said: **"Very few jobs here, lots of jobs in China.** That is not what I intended or any other legislator who voted for the stimulus intended...It is fine that the Chinese make them. But why don't we use the stimulus money to start building up an industry to build them here, that was the very point of the stimulus."

Of the **80% of stimulus grants going to wind facilities**, the majority of those are turbines which prevail in popularity both with renewable energy advocates, professional and laymen alike. If the 4 to 1 ratio is frightening, never fear: According to StimulusWatch.org, several organizations around the country are receiving your tax dollars-I mean stimulus money-to fund large-scale wind turbine projects. **The National Science Foundation is receiving \$435,231 in grant money to work on a wind turbine project in Buford, Wyoming. Likewise, the Department of Energy received nearly \$25 million to "design, construct, and ultimately have responsibility for the operation of the Large Wind Turbine Blade Test Facility"** through the Massachusetts Clean Energy Center. According to the report, **no jobs are being created** through those projects.

While the stimulus funds for energy projects are creating little to no jobs in the United States, the number they produce overseas is maddening. Allow the numbers to illuminate: The Renewable Energy Policy Project did a study and estimated that **for every 1 megawatt of wind energy that is developed, 4.3 jobs are created.** There were about 1,219 turbines built by foreign-owned manufacturers which equates to 2,279.5 megawatts. If you crunch the Renewable Energy Policy Project's numbers, the **installation of these turbines may have created as many as 6,838 manufacturing jobs -- anywhere but here.**

Such news may cause taxpayers to pause and evaluate the cost-benefit ratio of the turbines. Estimates vary but some sources say it can cost **\$300,000 to transport the turbines** and a 2007 estimate by Windustry reported that a **commercial scale wind turbine cost \$3.5 million installed.**

If one wind turbine produces 1.8 megawatts of energy -- enough energy for 500 households per year -- and each household spends on average \$2,150 on their energy bill per year, the turbine saves \$1.75 million per year in energy. At a cost of \$3.5 million installed, a wind turbine will have earned its proverbial keep in two years.

While the math works out, the economics still don't. Turbines are only entirely beneficial if American taxpayer dollars were given to companies here to give to American workers here to construct them and if they worked like a charm once they were built. Unfortunately, therein, as the Bard would say, lies the rub.

In Minnesota, for example, a state which spent \$3.3 million on eleven wind turbines, but which regularly experiences cold, winter weather, discovered this year their turbines freeze up when it's freezing. Apparently the hydraulic fluid which propels the turbines was supposed to work in colder temperature but failed to. There's a plan in progress to heat the fluid but as Minnesota native Ed Morrissey of Hot Air reported: "That will drastically reduce the net energy gain from each turbine, depending on how much heating the turbine fluid needs to stop congealing in the winter. Since cold weather here lasts anywhere from 4-6 months, that makes it mighty inefficient as an energy resource."

Blame could rest on the shoulder of the state on one side, the manufacturer on the other, and obviously this is an isolated incident. But if each American family only saves a few dollars every month after the wind turbines run efficiently and after they pay for themselves but their tax dollars were sent overseas for others to build them in the first place, is there a true cost benefit besides the warm, fuzzy feeling that we're all utilizing clean energy? Like his stimulus package, Obama's ideas work only if the theory is put into practice.

Web link: Nicole Russell " (WINDACTION)

As the turbine blades turn ... March 1, 2010 by Jim Adams in Star Tribune - MN

When 11 wind turbines stood idle about a month ago, some in the Minnesota wind industry worried that the machines were generating something other than power -- bad publicity. At a time when wind power is getting federal energy grants, the fear was that people might question taxpayer subsidies and how effective wind energy is in Minnesota, which is one of top five wind energy producing states in the nation. The **stalled machines** were giving Minnesota wind energy "a black eye," said Todd McNurlin, of Private Energy Systems, of Oakdale.

The 20-year-old windmills were made in Denmark, and had operated on a wind farm in California before being bought by the Minnesota Municipal Power Agency (MMPA), a consortium of five metro and six outstate cities, with \$5 million in federal renewable-energy bonds. Last year, they went up in MMPA member cities -- Anoka, Buffalo, Chaska, North St. Paul, Shakopee and six outstate cities -- but weren't fully operating as of early February.

Now, after some upgrades, nine of the 11 are spinning, and the other two should be running by the end of this month, says Avant Energy, the machines' operator. Avant president Derick Dahlen said **that low temperatures that thickened fluids could have been a factor** in their troubled start, but he also pointed to the contractor hired to erect the turbines, Henkels & McCoy of Blue Bell, Pa. "Our people are doing work that should have been done by the contractor," he said. Henkels, in turn, stands by its work, saying it completed the installation it was hired to do.

Avant brought in enXco, the California firm that had refurbished the windmills. EnXco performed upgrades, including new control systems with heaters, Avant said. **When the machines languished, critics said the problem could be that they're too short and too old: 80 feet high (115 if you include the blade) with a 160-kilowatt capacity, compared with 2-megawatt models over 300 feet tall on southern Minnesota wind farms.** ADan Juhl, president of Juhlwind, which builds wind farms in southwest Minnesota, said he worked on Danish-made turbines like the **11 in Minnesota back in the mid-1980s, when they were installed in the Palm Springs, Calif., area.**

Juhl, who has worked with wind power in Minnesota for 30 years, said Henkels asked him early last year to help erect the 11 turbines, but **he declined after being told that their 20-year-old control systems hadn't been replaced.** He and McNurlin said the turbines' relative shortness also could make them less effective, especially in the metro area, which has relatively low wind speeds and high turbulence because of tall buildings, trees and homes.

McNurlin said publicity about the stalled windmills, including stories in the Star Tribune and the New York Times, might lead people to think wind power doesn't work well in Minnesota. "It has the potential to give the public the feeling that we are throwing all this money and stimulus out there from the public pocket," McNurlin said. "They want to know they are getting good value for that and doing good things with that money." They are, with properly sized and located turbines, he said.

Green power payoff?

A University of Minnesota official involved in wind energy said **he doesn't think the stalled windmills will hurt the industry, although they may cause agencies to be more careful about where they acquire turbines.** "I think wind energy is riding a crest," said Rod Larkins, associate director of Initiative for Renewable Energy and the Environment. Mean-while, Juhl said the **newly installed control systems will give the 11 windmills a chance to run. "But if you put 80-foot towers in town, you will have a hard time getting enough wind, and you'll need a lot of wind to pay off a \$417,000 turbine,"** he added.

Dahlen said Avant used historic weather data for computer wind modeling to select sites for the windmills. He said he **expects the turbines to generate enough power to pay off their \$5 million cost by the time the bonds mature in 15 years.** "We did an economic analysis on these pieces of equipment and we are satisfied it makes sense," he said. "I think they will be good and reliable units ... and will produce electricity for many years." Buffalo's windmill started spinning in February. City utilities director Joe Steffel, who watched the start-up, is optimistic. "I realize there are some challenges with any of this technology," he said. "But standing beneath it was a great moment. It tells us there are things we can do about our energy use."

Web link: <http://www.startribune.com/local/85786747.html?page=1&c=y> (WINDACTION)

For the sake of green or greed

February 27, 2010 in *The Observer*

In 2009, the U.S. Department of Treasury awarded \$546 million to Iberdrola from the stimulus program. Per the CEO of Iberdrola, the offshore parent company of Horizon and the developer of Antelope Ridge, they expect to receive another \$470 million in 2010.

Horizon's Elkhorn Wind Farm in 2007 and 2008 received \$11 million each year in tax credits from the state of Oregon. In addition, Union County gave Horizon a property tax deduction of \$331,680 each year for 2008 and 2009 which will continue for the next 10 years. The federal government also allowed in 2008 and 2009, a Production Tax Credit of \$5,518,500 each year wherein it will continue for 10 years which will amount to \$55,188,000. If you add up these numbers, it amounts to in excess of \$81 million over 10 years, which are political giveaways at taxpayers' expense. Just imagine what kind of jobs that could be created with this kind of money being addressed to private sector and infrastructure.

If the Antelope Ridge project is built and the county offers the same tax relief program as was given Elkhorn, we will be giving Horizon in excess of \$6.5 million in tax relief annually. In addition, there will be a Federal PTC of \$16.5 million allowed each year for 10 years for a total PTC of \$165,864,000.

X Wind farm owners have a strong incentive to sell off or abandon their projects once tax benefits have been captured (5-6 years for accelerated depreciation; 10 years for production tax credits), turbine performance deteriorates and/or operating and maintenance costs escalate. Economics may dictate abandonment of individual windmills or entire "wind farms" before the end of land rental contracts or current estimates of the useful life of the turbines. When and if this happens here, there will be no property tax revenue, jobs will disappear and landowner leases will be worthless since no revenue will be generated, then we will be stuck with the rusting skeletons.

In California with the impact of past mandates and subsidies, there are thousands of abandoned wind turbines that litter the landscape of wind energy's "big three" locations - Altamont Pass, Tehachapi and San Geronio. Across the wind farm sector there are 14,000 turbines that have simply been abandoned - spinning, post-industrial junk that generates nothing but bird kills.

Last year, as the national debt of wind-intensive European Union became unbearable, the bubble burst. What do they do with all this industry that they have been creating with subsidies that now is collapsing? The president of the Renewable Industry in Spain wrote a column arguing that " ... the only way is to find other countries that will give taxpayers' money away to the wind industry." That "other country" is the United States of America.

Wind-subsidy proposals being floated in Congress suggest that American political leaders have yet to understand that "green power" means generating electricity by burning taxpayer dollars.

In a recent news article and press releases from Horizon, it was stated that the Elkhorn project has generated \$664,000 in revenue per year and 40 full-time jobs that cannot be substantiated along with the employment numbers of 50 full-time jobs for the Antelope venture. In contacting Horizon for documents to support these claims, they refuse to respond. The number of full-time employees at Elkhorn per Horizon's own documentation indicates 14 with only two being Horizon employees. The rest are Vestas employees, who may or may not be permanent. Or, is there a serious issue with the project that is requiring constant repair and maintenance? Regarding jobs, it is interesting that in the proposal Horizon presented for the Antelope Ridge Wind Farm, they state that disruption to wildlife will be kept to a minimum since regularly scheduled turbine visits will be one per turbine every 6 months, so why will it require significant manpower?

The ARWF appears to have the blessing of the commissioners since it is clear that they are looking forward to spending whatever revenue they can from this project. To get 30 jobs, as one commissioner thinks would "be acceptable," is a huge price to pay for the total destruction of the east end of the county. It is most likely Horizon will combine the workforce of ARWF and Elkhorn, in which we may get 4-5 new jobs between the two farms. The city of Union will be surrounded by these gigantic wind turbines compromising the citizens' health and welfare not to mention their livelihood. They are fighting to save their community without the help of the county. In recent communication from Oregon Department of Energy, they were surprised how the city of Union has not been included in the county's communication regarding the project and stressed Union should be a part of every step of the process.

A rapidly growing grassroots organization, Friends of the Grande Ronde Valley, has been formed to stop the Antelope Ridge Wind Farm and to get the attention of the county officials along with the Oregon Department of Energy and the Energy Siting Council. Join the resistance and help stop this wind farm nonsense.

Web link: Dennis Wilkinson" (WINDACTION)

Summary

Tom Hewson of Energy Ventures Analysis, Inc. ("EVA") was hired by the citizen's group, Mountain Communities for Responsible Energy, to evaluate a Decommissioning Cost Report prepared for the Beech Ridge Energy Project - a 124-turbine project proposed for Greenbrier County, West Virginia. His summary below provides insight into what communities and permitting agencies should be looking for when evaluating decommissioning plans. Mr. Hewson's memo on decommissioning of the Beech Ridge wind facility, which was included in the public record before the West Virginia Public Service Commission on the project, can be accessed by clicking on the link below.

Tom Hewson of Energy Ventures Analysis, Inc. ("EVA") was hired by the citizen's group, Mountain Communities for Responsible Energy, to evaluate a Decommissioning Cost Report prepared for the Beech Ridge Energy Project - a 124-turbine project proposed for Greenbrier County, West Virginia.

The project wind developer, Invenergy, had argued that the scrap value of the wind turbines would far exceed the cost to decommission the wind project and thus, bonding only \$2,500 per turbine that would slowly escalate to \$25,000/turbine by year 16 would be more than adequate.

The applicant's consultant estimated that its salvage value credit would reach \$12.64 million (\$101,900/turbine) in their decommissioning fund study based upon application of general scrap factors and prices. This scrap value credit would more than offset their estimated demo costs (\$8.68 million: \$70,000/turbine).

EVA completed an independent assessment of the salvage value of the Beech Ridge Wind turbines by first contacting the major regional scrap yards directly and obtaining current scrap prices for steel, copper and transport. From these data, EVA developed a Beech Ridge project-specific salvage credit estimate of only \$2.63 million, i.e., \$10.01 million less than the original applicant study. They also uncovered several major flaws in the applicant study methodology and pricing. The developer not only used old scrap prices but failed to take into account costs related to transporting scrap to a yard. In addition, to obtain the posted scrap price, they would need to break down the tower into 3-4 ft length pieces else the quoted price would be significantly less. In addition, the copper materials must also have their insulation stripped and/or copper pieces separated to obtain their posted copper price. If not, their scrap value would be far less than the common posted price. Given the large drop in scrap prices in recent year (>40%), EVA found that scrap value would no longer cover decommissioning costs.

EVA also compared the estimated demolition costs to another decommissioning report for another wind project developer that had contained detailed cost breakdowns. The other study **estimated demo costs of \$97K/turbine** vs. \$70K/turbine by Beech Ridge. Using the demolition costs from the other wind turbine project decommissioning study would translate to a Beech Ridge demo cost of \$12.03 million, i.e., \$3.35 million more the applicant's \$8.68 million estimate. (Note: In another very recent project EVA had reviewed, the decommissioning costs were again severely underestimated by more than 50% by not taking into account recent crane rental rates, assuming extremely low earth moving costs, and assuming high productivity rates (6 turbines/wk).)

The bottom line is that even if the permitting agency allows the salvage credit, the total net cost of decommissioning the Beech Ridge project today would be \$10.4 million (\$83,900/turbine). EVA's analysis quantified the large scrap price and demo cost escalation risk being assumed by the local community. To protect the community, the permitting agency should require a bond of a minimum \$100/K per turbine (\$12.4 million) to capture demolition cost escalation risk. If the wind developer can convince the bonding company of the high salvage value, then they should be able to negotiate a lower rate for the bond. If they were right, there would be very little price difference for a larger \$12+ million bond. EVA encourages shifting the risk to the bonding company. The developer and bonding company should assume the price risk and not the community.

Attachment:

BeechRidgeEnergyDecommissioning.pdf

(WINDACTION)

Wind Energy's Ghosts

By **Andrew Walden** Bankrupt Europe has a lesson for Congress about wind power.

2-15-10

Wiwo...wiwo...wiwo.

The sound floats on the winds of Ka Le, this southernmost tip of Hawaii's Big Island, where Polynesian colonists first landed some 1,500 years ago.

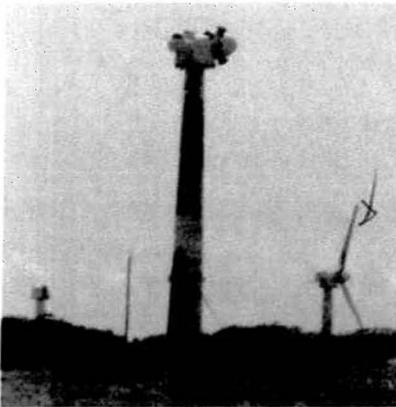
Some say that Ka Le is haunted -- and it is. But it's haunted not by Hawaii's legendary night marchers. The mysterious sounds are "Na leo o Kamaoa"-- the disembodied voices of 37 skeletal wind turbines abandoned to rust on the hundred-acre site of the former Kamaoa Wind Farm.

The voices of Kamaoa cry out their warning as a new batch of colonists, having looted the taxpayers of Spain, Portugal, and Greece, seeks to expand upon their multi-billion-dollar foothold half a world away on the shores of the distant Potomac River. European wind developers are fleeing the EU's expiring wind subsidies, shuttering factories, laying off workers, and leaving billions of Euros of sovereign debt and a continent-wide financial crisis in their wake. But their game is not over. Already they are tapping a new vein of lucre from the taxpayers and ratepayers of the United States.

The Waxman-Markey Cap-and-Trade Bill appears to be politically dead since Republican Scott Brown's paradigm-shattering Massachusetts Senate victory. But alternative proposals being floated by Senator Byron Dorgan (D-ND) and others still promise billions of dollars to wind developers and commit the United States to generate as much as 20% of its electricity from so-called "renewable" sources.



The ghosts of Kamaoa are not alone in warning us. Five other abandoned wind sites dot the Hawaiian Isles -- but it is in California where the impact of past mandates and subsidies is felt most strongly. Thousands of abandoned wind turbines littered the landscape of wind energy's California "big three" locations -- Altamont Pass, Tehachapi, and San Geronio -- considered among the world's best wind sites.



Built in 1985, at the end of the boom, Kamaoa soon suffered from lack of maintenance. In 1994, the site lease was purchased by Redwood City, CA-based Apollo Energy.

Cannibalizing parts from the original 37 turbines, Apollo personnel kept the declining facility going with outdated equipment. But even in a place where wind-shaped trees grow sideways, maintenance issues were overwhelming. By 2004 Kamaoa accounts began to show up on a Hawaii State Department of Finance list of unclaimed properties. In 2006, transmission was finally cut off by Hawaii Electric Company.

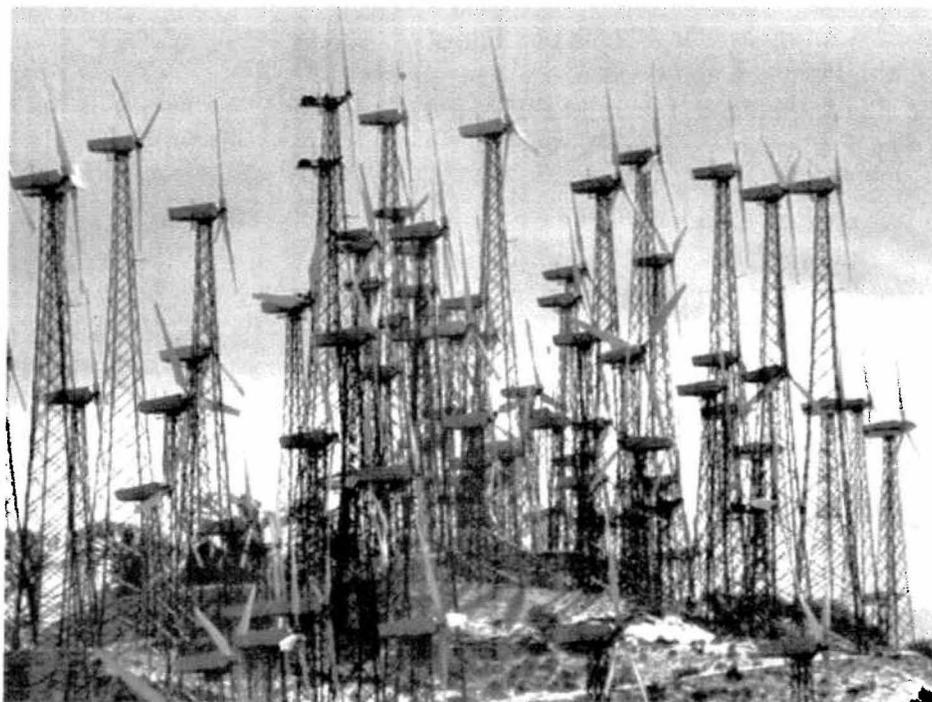
California's wind farms -- then comprising about 80% of the world's wind generation capacity -- ceased to generate much more quickly than Kamaoa. In the best wind spots on earth, over 14,000 turbines were simply abandoned. Spinning, post-industrial junk which generates nothing but bird kills.

The City of Palm Springs was forced to enact an ordinance requiring their removal from San Geronio. But California's Kern County, encompassing the Tehachapi area, has no such law. Wind Power advocate Paul

Gipe, who got his start as an early 1970s environmental activist at Indiana's Ball State University, describes a 1998 Tehachapi tour thusly:

"Our bus drove directly through the Tehachapi Gorge passing the abandoned Airtricity site with its derelict Storm Master and Wind-Matic turbines and the deserted Wind Source site with its defunct Aeroman machines. We also got a freeway-close glimpse of Zond's wind wall with its 400 Vestas V15 turbines, the former Arbutus site on rugged Pajuela Peak where only the Bonus turbines are still in service, and steep-sided Cameron Ridge topped with FloWind's few remaining Darrieus turbines before reaching SeaWest, our first stop.

"As we approached SeaWest from the desert town of Mojave, the old Micon 108s were spinning merrily, but the Mitsubishiis with their higher start-up speed were just coming to life. SeaWest and Fluidyne had done a commendable job of cleaning the Mitsubishiis of their infamous oil leaks for the tour's arrival."



Tehachapi's dead turbines

(image via [webecoist](#), [sky#walker](#); [Center for Land Use Interpretation](#); [Terminal Tower](#))

Writing in the February, 1999 edition of *New Energy*, Gipe explains:

From 1981 through 1985 federal and state tax subsidies in California were so great that wealthy investors could recover up to 50 percent of a wind turbine's cost. The lure of quick riches resulted in a flood of development using new and mostly untested wind turbines. By the end of 1986, when projects already underway in 1985 were completed, developers had installed nearly 15,000 wind turbines. These machines represented 1,200 MW of capacity worth US\$2.4 billion in 1986 dollars.

It took nearly a decade from the time the first flimsy wind turbines were installed before the performance of California wind projects could dispel the widespread belief among the public and investors that wind energy was just a tax scam.

Ben Lieberman, a senior policy analyst focusing on energy and environmental issues for the Heritage Foundation, is not surprised. He asks:

"If wind power made sense, why would it need a government subsidy in the first place? It's a bubble which bursts as soon as the government subsidies end."

After the collapse, wind promoters had a solution to their public image problem. Hide the derelict turbines. Gipe in 1993 wrote for the American Wind Energy Association:

Currently most of the older, less productive wind turbines are located within sight of major travel corridors such as I-580 and I-10. Many first generation turbines and some of the second generation designs are inoperative, and all turbines of these generations are more prone to mechanical failure than contemporary designs. Public opinion surveys have consistently found that inoperative wind turbines tarnish the public's perception of wind energy's efficacy."

Gipe then quotes a 1991 UC Davis study, which explains:

"Our research and that of others show that turbines' non-operation and public fear of wind farm abandonment is still a critical issue, and it therefore behooves the wind industry to return to the 'big three' wind farm sites (Altamont, San Geronimo, and Tehachapi) and to ensure that these areas are operating as efficiently as possible, and all turbine arrays which do not contribute significantly and conspicuously to power production are either replaced or, if necessary, removed."

Altamont's turbines have since 2008 been tethered four months of every year in an effort to protect migrating birds after environmentalists filed suit. According to the Golden Gate Audubon Society, 75 to 110 Golden Eagles, 380 Burrowing Owls, 300 Red-tailed Hawks, and 333 American Kestrels (falcons) are killed by Altamont turbines annually. A July, 2008 study by the Alameda County Community Development Agency points to 10,000 annual bird deaths from Altamont Pass wind turbines. Audubon calls Altamont, "probably the worst site ever chosen for a wind energy project." In 2004 the group unsuccessfully challenged renewal applications for 18 of 20 Altamont wind farms.

From its beginnings as a slogan of the anti-nuclear movement, wind energy has always been tied to taxpayer support and government intervention. Wind farms got their first boost with the Carter-era Public Utility Regulatory Policies Act of 1978 (PURPA) which encouraged states to enact their own tax incentives. PURPA also for the first time allowed non-utility energy producers to sell electricity to utilities -- the first step towards a bungled half-privatization of electricity supply which would come two decades hence.

In the 1985 book "Dynamos and Virgins" a San Francisco based PG&E utility heir tells the story of how he joined forces in the 1970s with lawyers from the Environmental Defense Fund. Together they worked for years to obstruct coal and nuclear power plants until utilities were forced to do business with wind energy suppliers.

Protest and litigation remain among the foremost competitive tools used by the now multi-billion dollar "alternative" energy industry. Reviewing the book, Robert Reich, a Kennedy School of Government professor who would later become Clinton's Secretary of Labor, wrote:

"The old paradigms of large-scale production, centralized management, and infinite resources are crumbling. We are on the verge of a new political economy."

The new paradigm created by the generation of 1968 is more political and less economy. Without government intervention, utilities normally avoid wind energy. Wind's erratic power feed destabilizes power grids and forces engineers to stand by, always ready to fire up traditional generators. Wind does not fit into an electric supply model made up of steady massive low cost "base load" coal or nuclear plants backed up by on-call natural gas powered "peaker" units which kick in during high demand. No coal or nuclear power plant has ever been replaced by wind energy.

Although carbon credit schemes often assign profitable carbon credits to wind farm operators based on a theoretical displacement of carbon emitted by coal or natural gas producers, in reality these plants must keep burning to be able to quickly add supply every time the wind drops off. The formulae do not take into

account carbon emitted by idling coal and natural gas plants nor the excess carbon generated by constant fire-up and shut down cycles necessitated to balance fluctuating wind supplies.

But with PURPA on the federal books, the State of California quickly created "Interim Standard Offer" (ISO4) contracts guaranteeing a purchase price based on utilities' "avoided costs"--launching the first "California Wind Rush". By 1982 turbines were sprouting from the dusty terrain of Altamont Pass, Tehachapi, and San Geronio. The ISO4 contracts were written with the assumption that fuel prices would continue to soar.

But that's not what happened.

By 1985 oil and natural gas prices were dropping. This changed the "avoided cost" calculations to the disadvantage of alternative energy producers. ISO4 contracts no longer guaranteed a price sufficient to attract investment in wind energy. Construction of new turbines stopped. As the old ten-year contracts began to expire in the late 1980s, renewals were pegged at much lower avoided cost estimates. As a result, many California wind developers quickly closed up shop, abandoning their turbines to moan out the one note song.

Then Enron got involved.

Building on the foundation laid by PURPA, 1992 Energy Policy Act (EPAct) began the partial deregulation of wholesale -- but not retail -- electricity. Reich in 1985 had lauded the "crumbling" of "large-scale production (and) centralized management". He got his wish. EPAct set the stage for Enron's California energy market manipulations which led to the 2003 recall of Governor Gray Davis (D-CA). The movement started by a PG&E heir led to the bankruptcy of PG&E. Perhaps this is why some call the children of the 1960s "the destructive generation."

Designed to create a renewable energy trading market, EPAct -- much of which took effect in 1997 -- created a combination of mandates, incentives, and tax credits. These included:

- laws requiring large wind producers to be allowed to tie into the existing utility grid
- "Renewable Portfolio Standards" forcing utilities to buy intermittent wind generated electricity.
- "Renewable Energy Certificates" tradable separately from the electricity itself to sell to companies needing to meet the portfolio standards.
- A 10-year "Production Tax Credit" that now equals \$.019/kWh
- Accelerated depreciation allowing tax write-off using an accelerated 5-year double-declining-balance method (40% per year).

Wind capacity had stagnated through the mid-1990s. But Enron in January, 1997 bought out Tehachapi-based industry leader Zond Corporation - launching the second California Wind Rush.

Four years later, Enron would implode. The company which gamed a government-crippled artificial marketplace was deconstructed as poster boy for unbridled capitalism.

But the tax credits, mandates, and regulations which made Enron possible did not die with it. Enron Wind's turbine manufacturing subsidiary was purchased by General Electric. Many of its wind farms went to Florida Light and Power. By 2009, the US Department of Energy estimates mandate-and-subsidy-driven wind capacity would rise to 28,635mw.

That much coal or nuclear "capacity" would power 28.635 million homes, but wind "capacity" is calculated assuming perfect wind 24 hours a day, 365 days of the year. At the best wind sites, such as Kamoa, newly installed turbines generate only 30-40% of "capacity". At most sites, the figure is 20% or less. After 30 years of development, wind produces only 2.3% of California's electricity.

And then there is maintenance. The turbines installed in the first wind rush were not very reliable. Some never worked at all. As the years passed and the elements took their toll, downtime climbed ever closer to 100% and production dwindled to negligible amounts. Developers often set malfunctioning turbines to "virtual" mode -- blades spinning without generating electricity -- in order to keep oil circulating inside the turbine drive. Of course this habit also gives passing drivers an illusion of productivity.

Wind developers claim that today's American and European-made turbines are more reliable and longer-lasting than their old-tech predecessors. But new Chinese turbine manufacturers of untested quality are crowding the marketplace Europe's subsidy-driven turbine meisters are chased from their home markets.

After the debacle of the First California Wind Rush, the European Union had moved ahead of the US on efforts to subsidize "renewable" energy--including a "Feed in Tariff" even more lucrative than the ISO4 contracts. EU governments provided government-backed securities to support utilities burdened by Feed-in Tariff costs. But last year, as the national debt of wind-intensive EU countries became unbearable, the EU subsidy bubble burst.

Wind maven Gipe proudly takes a page from the disastrous European playbook, crediting himself with "Almost single-handedly launch(ing) a campaign for Advanced Renewable Tariffs (electricity feed laws) in North America."

But addressing a Heritage Foundation seminar last May, Dr. Gabriel Calzada, Professor of King Juan Carlos University in Madrid explained what Feed In Tariffs and other wind subsidies did to Spain (as well as Portugal and Greece) got into debt:

"The feed-in tariff... would make (utility) companies go bankrupt eventually. So...the government guarantees...to give back the money in the future -- when (they) are not going to be in the office any more. Slowly the market does not want to have these securities that they are selling. Right now there is a debt related to these renewable energies that nobody knows how it is going to be paid -- of 16 Billion Euros."

In early 2009 the Socialist government of Spain reduced alternative energy subsidies by 30%. Calzada continues:

"At that point the whole pyramid collapsed. They are firing thousands of people. BP closed down the two largest solar production plants in Europe. They are firing between 25,000 and 40,000 people...."

"What do we do with all this industry that we have been creating with subsidies that now is collapsing? The bubble is too big. We cannot continue pumping enough money. ...The President of the Renewable Industry in Spain (wrote a column arguing that) ...the only way is finding other countries that will give taxpayers' money away to our industry to take it and continue maintaining these jobs."

That "other country" is the United States of America.

Waxman-Markey seems dead, and Europe's southern periphery is bankrupt. But the wind-subsidy proposals being floated in Congress suggest that American political leaders have yet to understand that "green power" means generating electricity by burning dollars.

Andrew Walden edits hawaiiifreepress.com.

http://www.americanthinker.com/2010/02/wind_energys_ghosts_1.html

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Misquoted? Tell the DEC, USFWS ...

October 8, 2010 in The Daily News - NY

In reply to Invenergy's current promoter of Stony Creek energy project, Michael Mulcahey, and his unfounded attack ("Facts about Stony Creek Wind Farm misrepresented," letter, Sept. 15) on "Selling out Orangeville?" (letter, Aug. 21) by Cathi Orr. Given that the state Department of Environmental Conservation and the Department of the Interior (U.S. Fish and Wildlife Service) were quoted verbatim ...

There is a harvest moon this warm September evening just breaking the eastern horizon, Mr. Mulcahey, dusk has arrived and as I walk out into the seemingly never ending fields, hills and endless unencumbered evening skies ... all I hear is the soft rustling of a pleasant breeze in the willows and the harmony of crickets, Canadian geese and the Orangeville nightlife ... and **no industrial wind turbines with their constant noise at decibel levels that the DEC guidelines on "noise" classify as "intolerable," noise that drives people away from their homes, and farms.**

In the minutes from the Aug. 12, 2010, Orangeville town meeting ... it is recorded that I asked Supervisor (Susan) May how the Town Board as lead agency was going to **deal with the inadequacies, missing data, and errors of Invenergy's Draft Environmental Impact Statement (DEIS) that had been mentioned by NYDEC, USFWS, and several other agencies.** Supervisor May received these letters in April and May 2010, addressed to her at the Town Hall, but she replied: "Right now it is in the experts' hands. The Town Board has not even seen any of this information yet. **That is why we hired an engineer (Stantec).**" (Remember, Invenergy is paying Stantec and used this same engineer for the High Sheldon wind energy project).

You can find several federal and state agencies' critiques and comments on the Orangeville DEIS at the Attica and Warsaw libraries, or check the CSOO website (www.csoo.info). These are also on file at the Orangeville Town Hall.

The Town Board of Orangeville as the lead agency in this industrial wind project should be interested to know what is in the DEIS prepared by Invenergy, and federal and state agency comments on the inadequacies of it. **Wouldn't Town Board officials find it very difficult to remain objective when their land leases with Invenergy might be in jeopardy if they didn't help facilitate the industrial wind turbine project?**

Orangeville is unique with its 14,500 acres of agriculture and forest which dominate the study area (USFWS). It contains some of the largest remaining blocks of forest habitat - 7,438 acres in total. Approximately 41 percent of the turbines would be built in forest habitat. **Roads, buried electric cable, and turbine pad installation within forests can result in reduced habitat quality, smaller forest patch size, and changes in vegetation structure, etc.**

So how could one figure that an industrial wind turbine project complete with all the negative impacts including Invenergy's statement in the DEIS that 163 Orangeville residents would be subject to noise, shadow flicker, etc., be beneficial to the environment?

Industrial wind salesmen offer to give communities just pennies back of their own money, over 50 percent of the citizens' own tax money goes to finance these wind projects. This money Invenergy talks about in the form of economic benefits is a trade-off for permission to destroy the very environment, they claim, they wish to save.

Mulcahey states, "Since operations (Invenergy's High Sheldon industrial wind turbine project) began more than a year ago, a vast majority of Sheldon residents have been extremely pleased with the results."

I would then ask Mr. Mulcahey: "Would these be the same Sheldon residents that have signed approximately 70 industrial wind turbine land-lease contracts? **And are these also the residents that have signed 'good neighbor' contracts (also known as gag, 'shut-up,' or confidentiality contracts)?**"

Consider the actual wording of an Orangeville landowner contract with **Invenergy: Owner shall not disclose the terms of this agreement to any parties other than its attorney or immediate family members** (pg. 6, 9.1). Is this Invenergy and the Orangeville Town Board's idea of transparency and ethical behavior? **How much do you think your property will be worth if you try to sell it tied to these stipulations?**

The contracted landowner also waives the right the right to sue. ("Owner also waives the right to institute summary proceedings in connection with this agreement including any action pursuant to New York Property Action and Proceedings. Law Article 7.")

And lastly, we the Orangeville residents will not rest assured that Invenergy is concerned about the environment based on past example. One such example is the **45,000 tons of slag that was ordered by Invenergy from the 100-year-old federal brownfield cleanup operation on the grounds of the former Bethlehem Steel plant site** ("Sheldon News," Nov. 18, 2008, vol.1, by Councilman Glenn Cramer). This slag is what remains from over 100 years of industrial steel production and pollution. Pockets of contamination can and do exist there. **This "iron slag" was hauled into Sheldon and subsequently dumped on Invenergy leased land, on agricultural fields of Sheldon, at depths of 4 feet deep and 32 feet wide. This done despite the fact that the Sheldon DEIS called for stone fill.**

In a letter dated Sept. 13, 2008, the state Department of Agriculture and Markets responded to an inquiry by the High Sheldon Wind Farm in regards to the use of "iron slag" on nearly 20 miles of new (access) roads needed for the new wind project. "It appears that the use of this industrial by-product may be acceptable as "structural fill" in an urban or industrial setting, however, the NYS Department of Agriculture and Markets does not support the use of any adulterated industrial by-product material (such as steel slag) as road base on, or adjacent to, agricultural lands used for the production of food and/or forage crops." This letter goes on to explain the reasons behind their position. (A copy can be found at the Sheldon Town Hall.)

The Sheldon residents will now be stuck with the future consequences of that nasty decision. **Can Invenergy be trusted not to use this "slag" on Orangeville agricultural fields in light of their questionable tactics?**

Therefore, Invenergy, when Orangeville municipal officers put their personal financial agenda and business dealings with a multinational million-dollar corporation, before the health, safety and welfare of the people of Orangeville, forming zoning laws that facilitate this very same business project that is located in Orangeville, that is what I, in my opinion, call the "selling out of Orangeville."

Ms. Orr is founder of the Clear Skies Over Orangeville Rural Preservation Coalition.

Web link: Cathi Orr"

Wind farm officials emphasize safety; Landowners meet with Bent Tree representatives

April 16, 2010 by Kelli Lageson in Albert Lea Tribune (MN-WI)

Safety was the main theme of a meeting Thursday for landowners involved in the Bent Tree Wind Farm project.

For instance, even **though some work will be done on landowners' private property, they aren't allowed on the construction site. If they call ahead and ask they may be allowed to see some parts.**

"This is your land and we respect that," said Bent Tree construction manager Tim Shugart. "You can be on public roads, but please **do not drive on access roads.**"

Crews will be digging large holes for foundations and want landowners to be aware of the dangers involved. "I just don't want anyone hurt," said Ted Francois, who deals with the developing of the project. "This is an exciting thing but there's many things going on."

The purpose of the meeting was to inform landowners of the changes they will see in the coming months. The meeting of **Alliant Energy** representatives, construction staff and landowners took place from 5:30 to 7:30 p.m. at the Albert Lea Senior Center at Skyline Plaza.

About 100 people attended the meeting. The main speakers were Shugart and Ted Francois. Francois emphasized that safety will be a big part of the project.

"Safety is absolutely key to this project," Francois said. **"We had almost no injuries on our last project."**

Francois also said that work has already begun and more work will start Monday. People may not notice the work being done because it is mostly moving dirt and delivering rock to access roads and the main site near Hartland.

"This is the kickoff," Francois said. "We've signed two contracts, and they will be out there digging before long."

Ames Construction of Burnsville got the contract for civil work. That includes moving dirt and making and changing roads. Boldt construction of Appleton, Wis., received the contract for the concrete needed for the foundations of the turbines. The other bids not awarded yet are for the erection of the turbines and for the underground cable work. "We're starting immediately," Francois said.

They hope to have 122 turbines up and working by March 2011. Francois said he wants landowners to know that Alliant, **Vestas** and the construction crews want to work with them to make it a better experience.

"We feel we're here as guests," Francois said. "Things will come up and please call us with problems."

Francois mentioned that any problems that will arise can be brought to any crew members and they will make sure things get taken care of. He also talked about road restoration and payment for crop damage.

"When we're done **we're going to make sure we get it back the best we can,**" Francois said. "We want to make people satisfied when it's all done."

Francois also let landowners know that **there will be an exasperating amount of traffic for the duration of the project. For each of the 122 sites, there will be about 55 trucks of gravel for the access road, 50 trucks of concrete and two semis of steel for the foundation as well as trucks hauling the pieces of the 11 cranes that will be used and parts of the turbines.**

Landowners and all travelers on Minnesota Highway 13 and Interstate 35 will need to have patience, he said.

Though **there will be an immense amount of traffic**, the project will have positive influences on the community as well, he said. While the project is being built, it will bring about \$40 million directly and indirectly to the community, as well as the taxes they will pay each year after the building is done, he said. There will also be 300 to 400 workers in the area for the duration of the project.

One question was about where people can apply for jobs related to the wind farm. Shugart answered that the best place to apply is with unions. They will not hire people at the construction site.

Another question was about **dust control** with all the traffic on gravel roads. Shugart said **at their last wind farm project they had about eight water trucks that stayed near construction areas. He said they will try their best to control the amount of dust but also that locals should expect some.**

Francois said the construction crews will start on the south side of Manchester and work their way north on both sides of Highway 13. One audience member asked why they're building a wind farm at the same time as major work on Highway 13.

"Well, we wanted to start last fall and it didn't get approved by the state," Francois said. "MnDOT did push back the project, but we don't want them to push it back any further."

Francois said he didn't think Highway 13 could wait any longer for an upgrade. He did mention that they would try to get a lot of their work done before MnDOT starts on July 12.

"I'm glad the old road will be there to bear the brunt of this project," Francois said.

He also said they are working with Freeborn County Engineer Sue Miller to make sure there are transportation plans for all trucks.

"We're committed to taking care of the damage we cause," Francois said.

Other questions were about whether crews would be working on Sundays. Shugart said they **usually** have a six-day work week with Sunday off, but **weather issues could cause them to work some Sundays and miss other days.**

Every day at the main site, crews have safety meetings and watch the weather. If there is a lightning strike within 30 miles or if winds are too blustery, they cannot work that day.

Francois said **most people don't realize how enormous these turbines will be when they are erect.**

"They're taller than a football field standing on end," Francois said.

He said a football field is about 360 feet total, including end zones, and the **turbines will be 397 feet tall,** which is also taller than the Statue of Liberty.

The **turbines are Vestas V82 and 1.65 megawatts.** This wind farm project will amount to 200 megawatts, which can power approximately 50,000 homes. **The total weight of each turbine is more than 350,000 pounds. There will be 26 miles of access roads built in the county.** Alliant Energy is investing more than \$400 million in the first phase of this project. The second phase - another 200 megawatts - has no start date yet as they are waiting for approval from Minnesota and Wisconsin.

Web link: <http://www.albertleatribune.com/news/2010/apr/16/wind-farm-officials-emphasize-safety/>"

Potential Road Damage from Loads Needed for Each Wind Turbine Tower

1-18-07 McLean County ZBA - Cross of Ken Davis - White Construction

Pg. 543- 573

Pg. 544

"The G.E. 1.5 megawatt turbines is on an 80 meter three section tower.

They require or the construction requires the following approximate quantities:

Earthwork - plus or minus 2,000 yards per turbine

Concrete - up to 350 yards per turbine

Re-steel, 23 tons per turbine what is anticipated in this area

Gravel or stone - from 2,000-2,500 tons per turbine

Craftsmen - 150 plus or minus

Man-hours for each turbine will run in the neighborhood of 2,000 Man-hours.

Steel - "The base section is 75' long and weights 128,000 lbs.

The midsection is 82 feet long. It weighs 81,000 lbs.

The top section is 98 feet long - 65,000 lbs.

You add that up, that's 137 tons of steel

Nacelle - 127,000 lbs on this particular GE unit - 64 tons +/-

Blades - 123 ft. approximately 6.5 tons apiece

"Currently White Construction has 5 wind farms under construction and 8 wind contracts under review from OK to PA. We also have a subsidiary co. in Toronto under the name of H.B. White-Canada."

"In IL, White Construction and Michel's group are the EPC constructors for the GSG wind farm near Sublette or PawPaw or Mendota area. White erected 33 wind turbines at the Crescent Ridge wind farm a couple years ago. We also have a small portion of the Twin Groves wind farm as we have been unloading or performing unloading activities for Lone Star trucking at the rail siting terminals."

"Perhaps we have overlooked one more decommission use for a wind turbine. It could be used as a grainery holding 18,000 bushel or corn and beans." Pg. 547

Chairman Rudolph - "I think you mentioned 6 wind turbine supplier companies. Where are they located? Are they in this country or are they all overseas?"

Davis - "The suppliers or the product?"

Rudolph - "I'm talking about actually the manufacturers of the turbines."

Davis - "Well, GE for the most part is here in the states. Vestas, they're across the continent. Clipper is an American machine at this time. It's a derivative. It's grown to that point. I'm not sure about Mitsubishi and where they are manufactured. I do know that most of the parts come in through the port of Houston: the bonus turbines likewise. The Gamesa units are both from across the way and also out of the State of PA. The State of PA has taken on an economic development pattern to encourage Gamesa to develop manufacturing facilities within their state, and they have done so. Suzlon units, it's an Indian company, and there again, they're coming through the port at Houston to the best of my knowledge." Pg. 549

Gary Lambert - "Do you have a commitment to only use legal residents in the US?"

Davis - "No, we do not, but we do have a national wind agreement throughout the continental US."

Rudolph - "I have to ask, what does that mean?"

Davis - "I think the gentlemen is referring to the fact of minority labor out of the south coming up here and building our wind farms. White Construction has been a union construction co. for over 57 yrs, and we pull most, if not all, of our craft people from the local union jurisdictions. The only thing we bring in from outside is our staff, our management staff, anywhere from seven to fifteen people. We cannot control the craftsmen that are sent to us by the union halls. We don't care what nationality they are. We pay them all the same, and we expect them all to work the same." Pg. 553

Bob Quandt - "You mentioned blade length of 123 ft was 6.5 tons. I believe that's the 77-meter diameter blade, although Mr. Link had mentioned the possibility of using the 82 ½ meter blade. Would you be familiar with approximate weight of that blade as compared to the 77?"

Davis - "I think it's about another 1,000-1,500 pounds."

Quandt - "Okay. As opposed to 6.5 tones each, it would be on the order of 7.5 tons?"

Davis - "Seven and a half tons; not more than seven and a half."

Paige Procter - "Would you care to estimate in today's dollars what it would take to remove what you just described a while ago in terms of steel and concrete?"

Davis - "I have previously given those numbers and the number I gave out was \$25,000 to remove the first five feet of concrete. It did not include the dis-erection of the turbine or the blades nor then tower because we believe the value of that equipment far exceeds the cost to take down."

Kevin Moore - "One of the previous gentlemen asked you about the decommissioning cost. Have you ever taken down a tower?"

Davis - "No sir. Do you know of anyone in the US that's taken down a tower?"

Moore - "If I answer that, would that be testifying?"

Davis - "Well, you seem to think I'm disqualified to take down a tower. My point is, to my knowledge, no one has taken one down in the US."

Moore - "Okay. That was kind of part of my point. If no one has taken one down, how do we know how much they cost? So you come up with a figure of \$25,000 to take down I believe you said five feet below grade exclusive of taking down the tower, the nacelle, and the blades. Do you have a figure that includes taking down the tower, the nacelle and the blades?"

Davis - "No, but how I do that is on a man-hour basis. I am in the business of estimating these projects, and if I'm capable of understanding how much it cost to put it up the first time, it's a pretty good bet it's going to take as much to take down."

Moore - "But you didn't include that in your \$25,000 figure?"

Davis - "Absolutely not, no."

Moore - "So you say you would just figure it out on a man-hour basis, so can you tell us how many man-hours it takes to set the tower, set the nacelle and the blades?"

Davis - "It's proprietary information with my company, and I'm not an officer. At this time, I'm not at liberty to give you that answer."

Moore - "I'm just trying to get an idea of how much it actually costs to take the whole thing down, not just take the concrete out of the ground, because obviously..."

Chair Randolph - "Ask another question then about that."

Moore - "Okay. Let's see, taking down the tower and the nacelle and the blades would require bringing the big crane back to the site, is that correct?"

Davis - "That's correct."

Moore - "And how much does that crane weigh?"

Davis - "Well, we use 4 different series of cranes, so we'd have the ability to change the crane from a 450-ton crane to a 600-ton crane. Obviously, we try to use the smallest crane needed for the work intended. In this particular case, the 450-ton range should take care of that, so that crane weighs about, I don't know, half a million lbs."

Moore - "450 tones: I can do that math. Are there any of those cranes available locally in central IL or would you have to bring that crane in from upstate or from the Chicago area or something? Does your company own those cranes or do you lease them?"

Davis - "One question at a time. We have currently 7 of those cranes working today, yesterday. We own 2 of the very large cranes, and we own most of the smaller cranes that go along with that, so we are re-renting a couple of cranes on a couple of our projects. Why are we re-renting? It cost money to break those cranes. Our cranes are up here at GSG in Sublette, and we really don't want to take them to OK so we will go to OK and find the large crane availability out there and try to work out a deal locally; the same way in PA."

Moore - "Your company has no contract to participate in the decommissioning of the White Oak project, is that correct?"

Davis - "That is correct. We have no contract either to build it."

Moore - "Oh, okay. That's interesting. I guess I'm still trying to get my head around the decommissioning of those towers, and I'm wondering are these 450-ton cranes available locally for the decommissioning or is that something that would have to come in from a great distance?"

Davis - "You're speaking of something that'll happen in 20 years in advance. I'm sorry, I can't testify to that."

Rudolph - "I don't think it's relevant, Mr. Moore, that last questioning about 20 years down. None of us has a crystal ball. I wish I did. I'd use it right now."

Moore - "In that \$25,000 decommissioning cost that you proposed, did that include bringing the crane back to the site?"

Davis - "Absolutely not. That is the removal of the first five feet of the turbine foundation from six inches about ground down four and a half feet, roughly a 16-foot diameter cylinder."

Moore - "Okay. So just the foundation, not the tower, not the nacelle, not the blades, and not the crane. Thank you very much."

Rhonda Baer - "You said \$25,000 to take out the first five feet of concrete, but Mr. Link stated last night or the night before that in McLean County, they were going to take out down to eight feet, so do you have an estimate for what that would cost?"

Davis - "Mr. Link must have a better bid."

Baer - "So no estimate on what that would cost. So \$25,000 for five feet is not in your opinion going to be adequate to take out the eight foot?"

Davis - "I did not say that; you did."

Baer - "I'm asking you if that would -"

Davis - "No. I'm not going to address that because I don't believe that's a probability at this time."

Baer - "So are you saying it doesn't cost any more to take out three more feet?"

Davis - "No. I'm saying I don't know whether we're going to take out one or a hundred and it would make a difference."

Baer - "If they were taking out 100 at eight feet down, would it be your opinion that the cost would probably be higher?"

Davis - "The possibility exists, yes, because that's 20 years down the road."

William Fleming - "I'm interested in the decommissioning of the concrete in the ground, I guess about 40 feet across roughly....how do you make the concrete lump, with epoxy or reinforced steel, so that way, you leave - in 20 yrs, there's still something potentially left, or it is all going to be chalked down?"

Davis - "I'll clarify that we do not use epoxy steel for wind turbine foundation....We use a Grade 60 bar, okay, which is better than most bars that have been used in the last 20 years. Once the concrete gets covered up with soil around it, it will not degrade in my opinion, and I'm not a professional civil engineer, but in my opinion, it will not degrade to the point where it loses structural capability."

Fleming - "Well, I've had experience contrary."

Roder - "Objection."

Nick Goloff - "How deep is the foundation? There's a sonar that's going to be out into the ground; is that true?"

Davis - "Most of the foundations today are octagon in shape, and they'll go down seven to eleven feet, depending upon the structural engineering analysis of the soil that we're building upon....basically, we will excavate the hole. We will roll that sub-base, and it has to pass or fail an engineering test....we lay down what we call a mud slat which is anywhere from 2-4" of neat or clean concrete, 2,500 PSI range. Then the basic foundation...will range from 4,000-5,000 PSI concrete above that point, and we have, it's not patented yet, but we have a forming system where we're forming and pouring the whole pedestal in one pour."

Goloff - "And so we have high strength concrete, and if you were to say this is varied....how long would you estimate that it is going to last? Are we talking about a thousand years, 10,000 years, or 20 years?"

Davis - "My knowledge, and I'll refer to the bridge building business, I've been taking out bridges for 30 yrs, and some of the bridges have been 74-100 yrs old and the concrete is still, even though back then concrete wasn't the quality that we have here, but still, the concrete is fairly tough."

Black Prairie Wind Farm ZBA Hearing Notes - 10-19, 10/20, 10/29/09 McLean Co - Cooksville Area Wind Farm

ERIC SCHMIDT - County Highway Engineer, speak to #4 102 S Towanda Barnes Rd, 61705 Bm

Phase I, II - same process, Road Agreement goes to the County Board same time SUP goes

Have agreement between townships and Horizon -last time had one agreement for all townships, went to board
Plan to bring to Board before construction permits are issued

? Did they do a good job in old phase? County roads, ours improved to 80,000 lbs.

Township roads - they have to rebuild roads, probably to a lesser standard

We had no input on that - we made suggestions

Some of problems discussed here are due to right of way acquisition.

Problems with that delayed the process, so they narrowed the road surface

Would you look at a different road agreement than 1st one?

Township and Horizon needs to, not us, should build better shoulders

There was one agreement with all 3 townships in TG I,II

? Opinions here that roads prior to wind farm had a better base level but the asphalt

On top lessened the quality

When you rebuild existing, you til up existing asphalt, put back to an A-3 surface,

That surface could be anywhere from 1.5-4" (existing surface they ground up)

It is put back as an A-3 which is blacktop of 1-1.5", comes back, it is thinner top level

The surface is thinner so it tears easier

? in your convo with twp, they do it on their own or do you give input?

In I,II we came up with an agreement then they used ours, ours was for a hot mix, structural overlay

But township roads are oil and chip, they tore them up when they added the rock

Was the damage done by construction or farm eqpt. or normal traffic? IDK

There was A-3 surface until after roads get reconstructed down the road

Sally? County Road Agreement has to be in place, do townships agreement have to be in place after CB
approval? Can go at the same time or can go later

Phil Dick-County Board does not approve township road agreement How many miles affected? In County 5-6

Young gal? if chipped roads, the top layer is smaller, over time will it be built back up?

When is that done? It varies by township, done with motor fuel tax money

Is done when they reseal - every 5-10 years, they cover their township

? Minimum design now is 73-80 on township road?

Design is based on 80,000 lb. design as far as structural strength

Most now have a spring posting and an 8 ton year around?

Similar to other wind farm we approved for Carlock? -

no Carlock is using a hot mix instead of gravel to bring up to weight,

4" of aggregate equals 1" of hot mix so as to not raise elevation to minimize the need

For right of ways

What is the cost difference? Is hot mix higher priced? Yes and can't put it over top?

Can put it over top but there is a higher cost for keeping it repaired

Can seal coat it but long term, there are probably more associated costs with hot mix

Drake? After done, are roads in better condition?

Structurally they are superior but with regards to safety, the shoulder width for safety is
lacking

7:20 Frank Miles

202 N. Center, Blm

? Did the township ask you to evaluate and you would again? Yes

? Kim Schertz - what are different loads if 100 foot taller turbines? Don't have that info

7:35 Aaron Wissmiller ?

Right of way problems? Process takes a long time, still working on post-construction From Phase I

Regrading ditches to 4" A-3 surface, adjusting ditch slope on county roads

So the township road problems are not being addressed, only county roads?

"we're on an advisory basis" So you can't do a whole lot? NO

Decommissioning - we research other agreements, will put in something to address it

Who pays for building up the road again after the first 1' coat? Township

I don't think that is addressed in their agreement

Heard testimony about asphalt peeling up on those 1" roads, in your opinion are they left in as good or better shape as contract states? "structurally improved, but A-3, over time, you build it up"

It's taken 50+ years to get to four layers of A-1 on some roads - "4" is better than 1" - better wear

7:36 Who pays for maintenance of Hot mix roads? The township

? Joe Wissmiller (ROAD COMMISSIONER)

Road agreement from TG I,II says shall be 2 foot shoulders and 3:1 back slope

Isn't it the developers cost to get that right of way? "I believe so"

If you don't have the right of way, it's the developers' job to get it (hasn't been done)

Chris Maurer 15461N 2400 E. NI

I live on 2400 E, it's normally a 33" right of way from center of a township road?

Varies significantly from township to township, one road to another

If the construction widens the roads, does the thoroughfare get increased?

My hedge row may be removed if they require right of way?

A lot depends on specific needs at that specific location

Who determines? Developers' engineers... Are they going to speak and address this?

Sally - they presented all their evidence before, you had chance to question then

7:40 Frank Miles ? All concerns from TG I, II can be addressed and your office is available to do that? Yes

Mike Scholl - safety, who determines the time frame? IDOT standards

If they ask us to look at roads, we can help them.

TIME FRAME to protect us, who foots the bill? That needs addressed in Road Agreement

9:34 Joe Wissmiller (ROAD COMMISSIONER - Cooksville)

Is 16' wide enough roads?,

2 dump trucks side by side with mirrors touching is 18" let alone meeting on a narrow road at 55 mph

Weight-wise, the nacelle is 120,000 lbs, 40-50,000 lb truck to carry is 160,000 lbs

How is road going to last when it's built to 80,000 lbs?

Right of way purchase - hasn't been done south of Route 9, contract has not been honored

It's a problem of enforcement, county would have to hire attorney to protect townships and that's a detriment to the counties

Concerns about Road Agreements - no worries, they have to be written before the county approves it

7:28 and Township has to have one before building begins (NOT OUR PROBLEM)

Kurtz - construction background, it says county would have to build it back to IDOT Standards,

I know if we build a road and it doesn't meet standards, we have to tear it out. I think the Road Commissioner has the final say after hiring qualified testing engineers

SO THERE ARE CHECKS AND BALANCES IN PLACE, if it's a poor job, it's the Road Commissioner's fault because he signed a bad agreement, he's the Road Commissioner

Question about the bond for roads? PHIL DICK - it's part of the road agreement

Drake-we WANT OURSELVES TO BE PROTECTED ON THIS, it's not just a 1-time payment up front is it?

PHIL - after completion, it's an ongoing fee DRAKE - is it a minimal amount, or is it substantial?

PHIL DICK - it's \$50,000 per year but NOT SURE HOW MANY YEARS? (TWO perhaps as that is what most standard road agreements cover)

Bureau County Republican (Princeton, IL)

January 13, 2010

Section: News

County board OKs landscape work for Soldiers and Sailors

By Donna Barker - dbarker@bcnews.com PRINCETON — The monument area at Soldiers and Sailors Park in Princeton will get a facelift come spring.

At Tuesday's meeting, the Bureau County Board approved the facelift project presented to the board in December by Princeton Boy Scout Troop 1068 member Ryan Jensen. The 13-year-old Boy Scout has developed the landscaping project as part of his work toward Eagle Scout designation.

In explaining the project, Buildings and Grounds Committee Chairman Kristi Warren told the board the landscaping work will include the removal of the existing green shrubs and replacing the shrubbery with several varieties of flowers, grasses and two dogwood trees, which are native to Illinois. The area around the monument will be paved, and two benches will be installed.

The Buildings and Grounds Committee met recently with Jensen to tweak his original plan, as presented in December, and recommended approval of the project, Warren said. The committee has been very impressed with Jensen, his plans and his ambition to accomplish the landscaping project, she said.

The estimated \$3,000 cost of landscaping project will be covered through community donations and sponsorships, spearheaded by Jensen, who will be assisted in the project by other members of his troop and expects to complete the project during three or four weekends in early spring, Warren said.

In other business at Tuesday's meeting, the board went into closed session for about 90 minutes to discuss a wind farm issue and personnel.

Coming out of closed session, the board voted to hire attorney Roger Bolin of the Boyle & Bolin law firm in Hennepin to work with Ottawa attorney Sheryl Kuzma, who has been representing the county in its conflict with **Iberdrola Renewables**, owners of the Providence Heights wind farm southwest of Tiskilwa.

After Tuesday's meeting, Bureau County Board Chairman Dale Anderson said the additional attorney was needed because Kuzma's law partner, who had been working with her on the county case, was killed recently in a car accident.

In October, the county board voted to take legal action to force **Iberdrola Renewables** to comply with its county road agreement. The board claimed the wind farm developers had refused to honor its contractual obligations to accept responsibility for its fair share of road damage.

A study by civil engineering firm Willett, Hofmann and Associates Inc. has assessed \$1.9 million in road damage near the Providence Heights wind farm, with **Iberdrola Renewables** responsible for a \$1.3 million portion of those damages. However, **Iberdrola Renewables** claims the Willett Hofmann's study overestimates the scope and cost of road damage near Providence Heights.

Comment on this story at www.bcnews.com.

Wind farm dispute may be on 'road' to court

September 18, 2009 by Lindsay Vaughn in News Tribune - Illinois

A growing dispute between Bureau County and the owners of one local wind farm may bring both parties to court if an agreement isn't reached soon.

According to county officials, **Iberdrola Renewables** - owner of the Providence Heights wind farm in Milo and Indiantown townships - **is in violation of its roads agreement with the county.**

County engineer John Gross said **18.5 miles** of pavement along Wyanet-Walnut Road, Kentville Road and Bradford-Putnam Road have been **damaged by heavy use during the construction** of Providence Heights. An independent engineering study conducted earlier this year by Willett, Hofmann & Associates **estimated Iberdrola's necessary repairs at \$1.3 million.**

According to Gross, **repairs need to be made prior to the onset of winter to prevent further degradation of the roads and to ensure the safety of Bureau County residents.**

Iberdrola this month received roughly \$295 million in grants through the American Recovery and Reinvestment Act, according to its Web site. Still, **the company continues to "low-ball" Bureau County on repairs,** county board transportation committee member Rick Wilkin said earlier this week.

"Iberdrola is getting a massive influx of taxpayers' dollars, yet is refusing to live up to the roads agreement in Bureau County and pay for the damage to our roads that was caused by their construction," Wilkin said.

According to Wilkin, it takes **20 truckloads of cement to create the base each turbine stands on. For the 37 turbines in Providence Heights, that's 740 cement trucks traveling over county roads that weren't built to sustain such consistent, heavy use.**

The county board held a special meeting last night to discuss its dispute with Iberdrola in executive session. During the meeting, the board received a letter from Iberdrola Renewables vice president of Midwest Development Dirk Andreas which Iberdrola also shared with News Tribune.

According to Andreas, Iberdrola insists it has not defaulted on the agreement but still wishes to reach an amicable resolution with the board. However, **the company is prepared to file a lawsuit against Bureau County** to protect its own interests, Andreas said.

Web link:

<http://www.newstrib.com/articles/news/nci/default.asp?article=EB97F6E881630FDBDDEBA166A275781C838E8E74D16B80BF>

(Windaction)

County to take legal action

October 14, 2009 by Neil Johnson in Bureau County Republican - IL

PRINCETON - The Bureau County Board and a wind farm company could be headed to court over road repairs the county claims the company is responsible for, following its work at Providence Heights wind farm in rural Tiskilwa.

Following a closed session Tuesday, the **county board voted to take legal action in an apparent attempt to force wind farm company Iberdrola Renewables to comply with a county road agreement.**

In a written statement Tuesday, the board claimed **Iberdrola Renewables "has refused to honor its contractual obligations to accept responsibility for its fair share" of road damage** - damage the county claims was caused by Iberdrola during the company's construction of the Providence Heights wind farm.

The board said an "independent, highly qualified engineering firm" already has determined the scope of road damage near Providence Heights, but that Iberdrola rejected a road repair "proposal" the board made last week. The board did not give details of that proposal.

"It is now apparent that this dispute will have to be resolved in court," the board's statement said, concluding **the county would "pursue all legal remedies and vigorously contest any claims asserted by Iberdrola Renewables."**

In a related action, the board voted Tuesday to pursue hiring an engineer to determine exact locations of each of Iberdrola's wind turbines.

County transportation committee chairman Steve Sondgeroth said due to pending litigation, he couldn't discuss details of the road agreement dispute. But Sondgeroth indicated that other wind farms in the rural Tiskilwa area have complied with county road agreements.

The county has previously said roads near Providence Heights wind farm also have been used by two smaller area wind farms - AgriWind and Crescent Ridge 1 wind farms.

Sheryl Kuzma, the attorney representing the board in the dispute, could not be reached for comment.

Web link: <http://www.bcrnews.com/articles/2009/10/14/64449723/index.xml> (Windaction)

Wind farm work leaves roads in bad shape

I was amused by some of the comments made by representatives of Horizon Wind Energy at the recent informational meeting that was held to discuss the expansion north of Route 9 of the eastern McLean County wind farm.

We live in the middle of the existing wind farm, and heard many of the same comments at our informational meetings a few years back.

According to the Aug. 19 Pantagraph article about the most recent meeting, Horizon's representative, Robert Yehl, claimed the company would improve local roads before, during and after construction of the wind farm. Concerning how the roads would be left after construction, Yehl was quoted as saying the roads would be "as good or better condition" than before.

Baloney! Roads were in terrible shape during construction of the original wind farm. And they are in worse shape now than before the original wind farm construction began.

Most people who drive 1300 North Road — one mile south of Route 9 — between the Saybrook blacktop and the Arrowsmith blacktop will tell you how poorly the road was put back together. The road is still in need of repair. So don't buy their line.

I would suggest people who live along the roads that will be impacted during this new project should insist that they get to "sign off" on and approve the condition of the road once the construction of the new wind farm is completed.

Steven A. Simms

Rural Saybrook

8-30-10 The Daily Pantagraph – Letters to the Editor

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Repairing a wind turbine

December 11, 2007

Credits: Weldon Hogie

(WINDACTION)

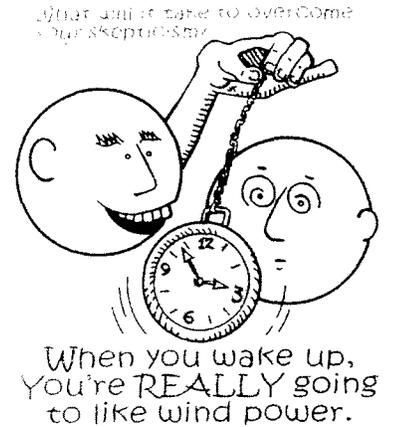
Technicians remove the blade assembly on Carleton College's wind generator as the gearbox undergoes repair. The two-month process of fixing it involved finding a crane tall enough and heavy enough to remove the giant blade assembly from the top of the 230-foot tower. The crane was on site almost three weeks, at a cost of \$5,000 a day. The wind turbine was erected in Sep 2004. <http://chronicle.com/blogs/architecture/1178/fixing-a-wind-turbine-no-small-matter>



Every wind farm lease includes the right to “maintain” the turbines...this gives them the right to bring the cranes back in for maintenance and repairs any time during the life of the 50+ year contract....who pays for the damage to the roads during that time? Who pays for the damage to roads during decommissioning? Cranes were brought back in at the Twin Groves project to change generators that were approximately 18 months old. Is the entire life of the project covered in the Road Agreement?

The Money is NOT enough!

We have said to each other (my husband and I), "The money is not enough!" They want to tear up your ground, break your tile, run power lines across it, under, and maybe above ground. Then they will erect a tower that costs \$4 million dollars and pay you \$9,000-\$13,000 per year - until they go out of business. And your renter will dictate what you do on your own property. Some leases don't even adjust for inflation until the tenth year. With that money you can't rent an apartment in Crystal Lake, Illinois. You're sitting on \$9,000/acre dirt and you will give up rights on the entire parcel forever. THE CONTRACT HAS NO TERMINATION DATE. I predict that the junk man with the big crane will take that farm off your hands when the EPA starts fining you or your grandchildren for having a leaking, hazardous machine on that land. I laugh about the school administrators whose pants are dancing because the \$4,000,000 properties will be assessed at \$720,000.



CROP INSURANCE:

There are only two options if you have a crop loss caused by prevented aerial application: 1) They will pay - and everybody's premiums will increase or: 2) They will not pay - you nor your non-participating neighbor. Your neighbor could compel you to pay for his loss. I would make sure that my turbines are placed at least a half mile from the nearest non-participating landowner's fence row. The crop dusters need a half mile to make the turns safely.

I spoke to some folks up in Grundy County as far as landowner issues are concerned:

The crane that does the "final lift" is just short of one million pounds. It is equipped with crawlers and they will not dis-assemble the crane to move it from turbine to turbine. It costs tens of thousands of dollars to rent (I have heard from \$25,000-\$40,000/day). They will move the machine on its own tracks ACROSS fields. It will crush tile four feet down.

Be on sight when they lay the cable and walk behind the machine to make sure all the cut tile are identified. They will hire a tiling contractor to do the work. Make sure the fellow replacing the tile is an actual employee of the tiling contractor and not just a laborer from the hall. The cutting in of the cables makes ridges in the field that will damage your combine. They will say they will level it off before the crop goes in but - really it doesn't happen unless you pay attention.

Foundations - The soil is compacted around the foundations in order for the foundations to support the heavy generators. At the Top Crop II wind plant, during wet conditions the clay compaction wasn't working so they brought in fly ash in truck loads to mix with the clay to dry it out. The workers were told that it should be rinsed off their skin immediately if they were exposed. They had to wear respirators. The material was not being handled properly by the bucket tractor and clouds of the stuff was disbursed. The neighbors were not warned that there would be any hazardous material in the air near their homes.

Number one problem is the road work. The ditches are too steep to mow. The roads are too narrow for vehicles to pass. THERE ARE NO SHOULDERS ON THE ROADS. During snowing conditions it is impossible to know where the edge is. They fear a school bus roll over accident or worse. The road is a foot and a half higher so you can't reach into your mailbox any longer. They are encouraged to contact Road Commissioner Mark Harlow, Highland Township Grundy County, for more information about the roads.

Road commissioners have much power. Advice for township road commissioner: Shut them down before they start leaving the area (maybe when 5 turbines are left to construct.) or they will say they can't do the work they promised. They will bring in new management at the end of the project so you won't be able to find the guys who made the promises earlier on. GET IT IN WRITING. What they say is not enforceable unless it is writing. If intimidation comes into play - walk away. David Winters is the highway engineer in Livingston County. He refused to sign off on work that was not done correctly. You need public servants that are deeply committed to the safety of the public and can't be bowled over by intimidation and misleading statements.

Landowners need to be thinking about the safety of their tenants and the tenants' equipment - also the neighbors. One couple was stranded in their home for three days because of the oil and chip work in front of their house. Notification about where they would be working was not timely. Often came at the end of the first day. School buses could not use roads.

Good Neighbor Agreement - If you find out after you sign that there is a problem and have to sue, you pay legal fees for both sides. Better not to sign. The Grundy turbines are often shut off because the substation would be overloaded. Transmission upgrades for wind will be very costly for all electric customers.

The anatomy of a sucker.... Or why smart people fall for stupid cons.

(Posted by Karen Datko on 2-22-10 Excerpts: this guest post comes from Pop at Pop Economics.)

It mystifies me that so many people can fall for the oldest tricks in the book- that is, until I fall for one. Then the excuses get rolled out. Even in hindsight, you try to convince yourself that you're not a sucker: There was no way you could have seen that coming. So why is it that we fall for these silly cons? Researchers at the University of Cambridge decided to figure it out and boiled down their findings to 7 principles that make us more prone to being tricked. I am simmering those down to four, because I found them the most interesting.

The distraction principle. *While you are distracted by what retains your interest, hustlers can do anything to you and you won't notice.*

In "The Wizard of Oz," what took Dorothy and her friends so long to notice the man behind the curtain? I bet the giant, green, booming head had something to do with it..the man was really nothing more than a high-tech magician. Set up a big distraction, and you'll keep their eyes away from where the real magic happens. The street performer holds your attention while a pickpocket works behind the crowd. A thief runs off with a woman's purse at the airport, and while you're in pursuit, the woman takes your luggage. It's often hard to distinguish between a real distraction and an illusory one. So my advice would be to assume that they're all fake, especially if you're a tourist. You'll get annuities sales-men trying to focus your attention on guaranteed returns, instead of high, back-end fees and surrender charges. Or maybe you'll get a car salesman who lures you in with a low base price, but shows you the "delivery charge" after you're already committed.

The herd principle. *Even suspicious marks will let their guard down when everyone next to them appears to share the same risks. Safety in numbers? Not if they're all conspiring against you.*

The "herd" is the group winning money in the street game you've stumbled upon. You think the game must be honest, because these guys win, right? Of course, it turns out that they're all in on the con. As a species, we get a lot of comfort in knowing that there are others succeeding or failing with us. Even if you think tech stocks are overpriced, if your neighbors are all making a killing in the sector, you're tempted to buy in. Yes, you're also jealous of their success, but if you fail, they fail. That feels good. It feels safe. Of course, the scammers take it a step further. Not only are they playing off that safety-in-numbers, prehistoric mentality, they're not actually sharing the risks.

The deception principle. *Things and people are not what they seem. Hustlers know how to manipulate you to make you believe that they are.*

One of my favorite scenes in "Casino Royale" is when a tourist throws James Bond his car keys, thinking he's the valet. I don't think I've ever questioned whether the man in uniform in front of the hotel worked there. Even if I did question it, I'd probably be too embarrassed to ask. The BBC tested a scam where they set up a fake ATM machine to see if pedestrians would be fooled and use their cards there...before they had even *finished building* the machine -- that is, even while the machine's back was exposed to the air -- people kept walking up and trying to use it. Talk about "blinded by familiarity." Ever see an ad proclaiming "8% yield! Better than a CD!" in big letters and "Not FDIC-insured" in small letters? The bringer of this great investment opportunity is lowering your guard with a comparison to something you're familiar with.

The need and greed principle. *Your needs and desires make you vulnerable. Once hustlers know what you really want, they can easily manipulate you.*

Find out what your mark wants more than anything, and then offer it to him. If your target is bankrupt, offer him money. If your target is lonely, offer him companionship. Afraid? Offer safety... people do stupid things when they need something desperately. And that's why even though we all roll our eyes when we hear about someone falling for the Nigerian prince scam, none of us are safe from it -- not if we were put into the right predicament. People are trying to sell you all the time, and even though it's not classified as fraud, oftentimes the sell works off these tenets.

Everyone's running a con. And knowing yourself goes a long way to stopping it.

Wind turbines, health, ridgelines, and valleys *1-26-10*

Mr. Peacock's letter of January 22, 2010 taking issue with Dr. Stan Shapiro's piece in the Rutland Medical Center's Heart Health News is off the mark and contains inaccuracies and misinformation.

It is a medical fact that sleep disturbance and perceived stress result in ill effects, including and especially cardiovascular disease, but also chronic feelings of depression, anger, helplessness, and, in the aggregate, the banishment of happiness and reduced quality of life. Cardiovascular disease, as we all know, leads to reduced life expectancy. Try and get reasonably priced life insurance if you are hypertensive or have suffered a heart attack.

If industrial wind turbines installed in close proximity to human habitation result in sleep disturbance and stress, then it follows as surely as day follows night that wind turbines will, over the long term, result in these serious health effects and reduced quality of life.

The question is, then, do they?

In my own work at Mars Hill, Maine, 22 out of about 33 adults who live within 3500 feet of a ridgeline arrangement of 28 1.5 megawatt wind turbines were evaluated to date, and compared with 28 people of otherwise similar age and occupation living about 3 miles away.

Here is what was found (**preliminary work cited here**):

82% of study subjects reported new or worsened chronic sleep disturbances, versus 3% in the control group. **36% reported new chronic headaches** vs 3% in the control group. **55% reported 'stress'** versus none in the control group, and **82% persistent anger** versus none in the people living 3 miles away. **Fully a third of the study subjects had new or worsened depression**, with none in the control group. **95% of the study subjects perceived reduced quality of life**, versus 0% in the control group. Underlining these findings, there were 25 new prescription medications offered to the study subjects, of which 15 were accepted, compared to 4 new or increased prescriptions in the control group. The prescriptions ranged from antihypertensives and antidepressants to anti migraine medications.

The Mars Hill study will soon be completed and is being prepared for publication. These preliminary findings have been presented to the Chief Medical Officer for Ontario, and will soon be formally presented to Health Canada. They have been presented to the Maine Medical Association, which followed up with a Resolution calling for caution, further study, and appropriate modification of siting regulations, where required.

There is absolutely no doubt in my mind, and that of other physicians who have reviewed the work, that **people living within 3500 feet of a ridgeline arrangement of turbines in a rural environment will suffer negative effects** at similar rates.

What is it about northeast USA ridgelines that contribute to these ill effects, and how can they be avoided?

Consider, the Northeast is prone to icing conditions. **Icing will increase the sound coming off of turbines by up to 6 dbA. As the icing occurs symmetrically on all blades, imbalance detectors do not kick on, and the blades keep turning, contrary to wind industry claims.**

Sound is amplified coming off of ridgelines into valleys. This is because the background noise in rural valleys is low to begin with, increasing the sensitivity to changes, particularly the beating, pulsatile nature of wind turbine noise, and sound **sources at elevation do not undergo the same attenuation that occurs from groundcover when noise sources are at ground level. The noise travels farther and hits homes and people at greater amplitude that it would from a lower elevation.** Even though this is not rocket science, it was conclusively proven in a NASA funded study in 1990.

Snow pack and ice contribute to increased noise transmission. Vermont valleys have both, I believe.

When pre construction modeling fails to take the pulsatile nature, propensity for icing, and ridgeline elevation into account, as well as a linear as opposed to point source of noise, problems can be expected. **What distance is safe? It depends on the terrain, the climate, the size of the project and the turbines themselves.** Accurate preconstruction modeling with safe targets in mind is critical. **The WHO says that 30dbA is ideal, and noise levels of above 40dbA have definite health consequences. At Mars Hill, where affected homes are present at 3500 feet, sound levels have been measured at over 52.5dbA.** The fiasco there has been acknowledged by the local wind energy company, and by a former Maine governor.

Vermont would do well to learn from the affected people in Mars Hill, and heed Dr. Shapiro's well-informed warnings. Be very careful about accepting at face value the A/CANWEA white paper referred to by Mr. Peacock, which seems an industry-funded exercise in dissembling and selective review. The parallels with the tobacco industry of the 1960's are striking.

References:

Technical Requirements for Rotor Blades Operating in Cold Climate
H. Seifert,
Deutsches Windenergie-Institut, 2003

Wind Turbine Acoustics
H. H. Hubbard, K.P. Shepard,
NASA Technical Paper 3057, DOE/NASA 20320-77, 1990

Editor's note: Dr. Nissenbaum piece responds to letters published in Vermont's Rutland Herald paper.

Web link: Michael A. Nissenbaum, MD"

(WINDACTION)

Study says wind farm is too loud

January 21, 2010 in East Oregonian - OR

The Willow Creek Energy Center is in **violation of state noise standards** for at least three nearby homes, its acoustical expert revealed at a planning commission meeting Tuesday night. Still up for debate, according to the other experts in attendance, is how much and how often.

The meeting amounted to a day in court for the neighbors of the wind farm - Dan Williams, Mike and Sherry Eaton and Dennis Wade - who began complaining about farm's noise and other effects last year.

According to Oregon Administrative Rule, **energy-generating facilities can be as loud as 36 decibels at adjacent homes - that's 26 decibels for background noise plus 10 for the facility.** In the analysis of the acoustical expert that Invenenergy hired, Michael Theriault of Portland, Maine, the noise at the Wade residence was usually less than 36 decibels. At the Eaton residence, it was usually less than 37 decibels. At the Williams residence, the noise "moderately" exceeded the noise code about 10 percent of the time, Theriault said.

Theriault also conducted a noise study at the home of another neighbor, Dave Mingo, and found that the noise was usually less than 37 decibels. "On overview, the facility is substantially in compliance with state rules," he said.

Kelly Hossainin - a lawyer for Invenenergy, the company that runs Willow Creek Energy Center - argued that the amount by which the wind farm exceeded the noise limit at the Eaton and Mingo residences, one decibel, is not perceptible outside a laboratory environment.

She said the times the wind farm exceeded the noise standards were unusual events, which would qualify for an exception under the rules.

Theriault explained some of his methods to the planning commission. For example, he **did not analyze the noise data that was generated while the wind was blowing more than 9 meters per second (about 18 miles per hour).** According to General Electric, the company that made the turbines, turbine noise does not increase after that point, he said.

Commissioner Pam Docken asked Theriault if he could speak to the health effects of turbine noise.

"Annoyance is a very complex phenomena," he said, referring to a recent wind-industry study that found no negative health effects of wind turbines except annoyance. "We know that in some cases, annoyance isn't even related to noise level. It can be related to whether they see the noise source and can change with the subject's attitude to the noise source."

Then Kerrie Standlee, a prominent acoustical expert - he works for the Oregon Department of Energy doing site certification reviews and was even hired by Morrow County to analyze the racetrack issue - began to speak for the Eatons, Williams and Wade. **He presented his own noise study, which showed that the noise at the Eaton's residence hovered just above the noise standard on a regular basis, and at the Williams residence it regularly went above 40 decibels.**

Standlee also analyzed Theriault's study. He pointed out that the wind farm consistently broke the noise rule at precisely the time when Theriault decided not to use the data - when wind speeds exceeded 9 meters per second.

When the data is analyzed in a wider range of wind speeds, he said, the wind farm was in violation of the rule 22 out of 37 nights.

"I'm not sure how someone can say this is an unusual, infrequent event," he said. "To me, 59 percent is not occasional or unusual."

Standlee's noise study also went beyond Theriault's in that he gave the residents a sheet of paper to log their experiences with time and date. He then overlaid those comments on the data and showed that **when the residents reported high noise, the wind was blowing from a particular direction or at a particular speed.**

Another acoustical expert, Jerry Lilly, spoke for Dave Mingo. He came up with results similar to Standlee's, but noted that the **Theriault study was also flawed because it did not measure noise at the residence's property line - as required by Morrow County noise ordinance - and it did not measure the noise inside the homes.**

The commission also heard heartfelt testimony from the residents themselves, who said that **their lives had been completely changed since the wind farm came.**

"A basic right in my life is to live in my beautiful home with my peace and quiet, and now I can't do that," Dan Williams said.

When the testimony ended, the planning commission agreed to wait until their next meeting to make a decision about whether - and how - the Willow Creek wind farm must mitigate the noise problem.

Web link:

<http://eastoregonian.com/Formlayout.asp?Formcall=30&SectionID=13&SubSectionID=48&ArticleID=102851> (WINDACTION)

Like Chinese water torture

January 19, 2010 in Caledonian Record - NH

There has been much discussion lately about industrial wind power on Vermont's mountains. The Lempster, N.H., turbine site is often used as an example of a typical wind tower site, especially after Green Mountain Power's Dec. 5 bus trip for Lowell residents.

I am a Vermont resident, but I have an insider's perspective of the Lempster site. I own two pieces of land on Lempster Mountain, one of which has been in my family for over 70 years.

There are **12 turbines** in Lempster, but because they are artfully sited on a mountain with a wide top, most of them appear to be tucked into the terrain instead of strung along a steep ridge in an intimidating line, like marching metal monsters from War of the Worlds. Because of how they are sited and the rolling terrain, it is difficult to see more than a handful of these towers from most viewsheds in Lempster.

I was in Lempster on Dec. 5 when Lowell area residents were visiting the site. During the entire time I was there, the **blades of the turbines were most likely free-wheeling** (not generating electricity) in the gentle breeze. **When a turbine is free-wheeling it hardly makes any noise, and the blade tips are only barely bent backwards**, such as was the case that day. I recently read a comment from one of the Dec. 5 bus riders, **expounding on how quiet wind turbines are, based on what he heard that day.**

Oh ... I wish it were true.

When turbine blades are spinning in an average decent wind, the tips of these blades are moving at about 180 miles per hour and are bent back severely because of resistance to the wind. This resistance to the wind, plus the high speed of the tips, causes turbulence, which creates noise. The noise sounds like that of a stiff wind when one stands only a couple hundred yards away from the towers. But when one stands at a spot 1/2-mile to over 2 miles away, the sound is a low, dull, penetrating, throbbing series of never-ending pressure waves - hour after hour, day and night, sometimes for days on end, like Chinese water torture.

The Lempster turbines have been operating for about a year now. While I was hunting there this year, I noticed that I didn't need a compass to orient myself in the deep, dark woods **2 1/2 miles away** so long as the turbines were throbbing.

On Dec. 5, I talked to two people who work for the town of Lempster. They told me that **people are grieving their taxes because of noise. They also told me that the wind company has turned from being Mr. Friend before the project to being Mr. Foe now. The company is contesting the town's assertion that the company's massively heavy machinery caused road damage.**

Will Vermont learn from the experiences of others? Not if people don't have the facts. I submitted this piece to the Burlington Free Press two times and they never even contacted me.

Web link: Justin Lindholm" (Windaction)

The most common complaint from neighbors or prospective neighbors of wind turbines seems to be the noise. "My biggest concern is the noise," said Goodhue resident Rick Conrad said. "I don't mind looking at them, but I worry that if I'm out in my yard I will be hearing these things."

Conrad owns 80 acres, works in town and rents his farm land to a neighboring farmer. "I'm not against wind energy at all," Conrad said. "I'm for alternative energies, but it doesn't need to be done with industrial turbines. I think we should be looking at solar facilities."

When Conrad was offered a wind lease, **he chose not to sign because he didn't want to "give up rights" to his property.** Several residents in Goodhue County formed a group called Goodhue Wind Truth in reaction to proposed wind farms near Goodhue.

Conrad said **developers have told people the wind turbines will sound similar to refrigerator, but Conrad describes the sound as a "modulated power hum."** "When you live out in the country, you live there because you want to get away from noise. You expect it to be quiet," Conrad said.

All three complaints filed to the Minnesota Public Utilities Commission about wind turbines statewide concerned noise, said Tricia DeBleeckere, an energy facility planner for the Public Utilities Commission.

In two of the cases, mechanical gears needed to be repaired, DeBleeckere said. The third complaint also involved noise, but the state found that the turbine was compliant with the state standards, she said.

State noise requirements vary depending on the time of day and the location of the turbine, but DeBleeckere said **most developments are held to a 50-decibel standard at a maximum, DeBleeckere said. Rural Harmony resident Brian Huggenvik believes the PUC should consider putting limits on low frequency sound emitted by wind turbines.**

Huggenvik's property borders the proposed 200-megawatt EcoEnergy wind farm west of Harmony.

A study called "Public Health Impacts of Wind Turbines" prepared by the Minnesota Department of Health Environmental Division has concluded that low-frequency noise from turbines does affect some people.

According to the study, common complaints have been annoyance, sleeplessness and headaches. The study said most available evidence suggests that reported health effects are related to audible low frequency noise and complaints appear to rise with increasing outside noise levels above 35 decibels.

The study found that low frequency noise from a wind turbine generally is not easily perceived beyond one half mile and that shadow flicker isn't an issue at most distances over three-fourths of a mile for most turbines.

Huggenvik has attended several public hearings in both the Harmony area and the Twin Cities regarding the project. "Our claim is that the setbacks just aren't enough," Huggenvik said. **"We think a 2,000-foot setback, similar to what has been adopted in Wisconsin, would mitigate almost all the problems with flicker and sound."**

He's also concerned that the wind farm could be unstable because it will be constructed in an area littered with sink holes. He plans to ask for an environmental review of the project during an upcoming hearing. "We're not out to stop the project," Huggenvik said. "We just want to make sure it's safe."

Wind turbines too noisy, internal Ontario government memo says

BY DON BUTLER, THE OTTAWA CITIZEN AUGUST 18, 2011



The wind turbines on Wolfe Island, standing prominently and giving a futuristic look on the flat landscape.

Photograph by: Linda Thomas-Fisher, The Ottawa Citizen

OTTAWA — Ontario regulations permit wind turbines to produce too much noise, says an internal memo written by a provincial Ministry of the Environment official who recommended a sharp reduction in allowable levels.

The April 2010 memo, written by Cameron Hall, a senior environmental officer in the ministry's Guelph district office, was obtained through Freedom of Information and released Monday by Wind Concerns Ontario, a coalition of 58 grassroots anti-wind groups in Ontario.

The memo concludes that the current limit of 40 decibels should be reduced to 30 to 32 decibels. In the opinion of ministry officers, that level of sound "would not cause or be likely to cause adverse effects" for residents living near turbines, it says.

Reducing noise standards to that level would require the province to significantly increase its current 550-metre minimum setback for turbines from surrounding buildings.

John Laforet, president of Wind Concerns Ontario, said Hall's conclusions were "based on scientific analysis and fieldwork done by the ministry. This isn't some wind opponent saying it."

But Jonathan Rose, a spokesman for Environment Minister John Wilkinson, said the 40-decibel standard is what the World Health Organization suggests as protective of human health.

“Our noise limit is tougher than California, Minnesota, New York, France, Denmark and Germany, just to name a few,” Rose said. “All this information was already examined by the Environmental Review Tribunal, an independent, quasi-judicial body which ruled that wind farm projects in Ontario are safe.”

Release of the memo marks the start of what Wind Concerns Ontario is dubbing its “WindyLeaks” campaign, a reference to WikiLeaks, the website that released hundreds of thousands of leaked government documents and e-mails earlier this year.

Laforet said FOI requests by his group have produced “1,200 pages of embarrassment” for the McGuinty government. Between now and the Oct. 6 provincial election, the coalition plans to release more damaging memos it has obtained, he said.

“We want Ontarians to know that this multibillion-dollar program is based on absolute lies,” Laforet said, adding that some of the documents will be released in “vulnerable Liberal ridings” to encourage voters to punish incumbent MPPs.

Industrial wind turbines, which have proliferated in Ontario thanks to the government’s green energy agenda, have emerged as a wedge election issue in rural parts of the province. Some who live near wind farms say the turbines are affecting their health, their property values and their enjoyment of their surroundings.

In his memo, Hall says Ontario’s current minimum setback for turbines was based on the assumption that the “sound contamination” they emit does not have a “tonal quality or a cyclic variation quality.”

But that “is not supported by our field observations,” he writes. Ministry officers at the Melancthon Ecopower Centre wind plant have confirmed residents’ complaints that the turbines produce a “blade swoosh” sound.

According to a 2008 ministry guideline, such sounds should trigger a five-decibel “penalty,” the memo notes, reducing the allowable maximum to 35 decibels. To take account of measurement errors, that should be further reduced to between 30 and 32 decibels, it says.

But Rose said the ministry already regularly applies a five-decibel penalty for any project with a transformer.

Hall’s memo also says the sound level limits used to establish the 550-metre setback “fail to recognize the potential quietness of some rural areas. As a consequence, meeting the minimum sound level limits may still result in significant sound contamination levels intruding into the rural environment.”

dbutler@ottawacitizen.com

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Turbines declared a nasty neighbour as secret buyout is revealed



Peter Rolfe, Sunday Herald Sun, 1-30-11 (New Zealand)

*Noel Dean and other residents believe the Waubra wind farms have caused medical problems.
Picture: Tony Gough Source: Herald Sun*

VICTORIANS who have endured health problems from a nearby wind farm have been gagged from talking in return for the sale of their land.

Spanish multinational energy company Acciona has been quietly buying farms adjacent to its site at Waubra, near Ballarat, as an increasing number of residents in the tight-knit community complain of the ill-effects of living near turbines.

Since the wind farm started operating in July 2009, about 11 houses in the area have been vacated by people complaining of noise problems.

Acciona has bought at least another seven houses, the purchase of two of which appear to have been prompted by the new State Government's threat to shut down the farm unless noise and permit conditions were met.

Locals in the tiny town of 700, 35km northwest of Ballarat, say the sales took place on the proviso landowners would not talk about the price of the purchase or negative health effects they blame on the wind farm.

Residents who refuse to move have accused the company of trying to buy their way out of trouble.

Noel Deans moved from Waubra to Ballarat 18 months ago because he could no longer stand headaches, tinnitus and poor health he believes are caused by high-frequency vibrations from turbines.

"The word is they're buying everyone out and buying some of the other properties nearby just to hush them up," he said.

"They know that we can't fight them. We can't win.

"They make you suffer so that you just want to get out of there. They know that it gets to you emotionally and physically."

Mr Deans refuses to sell his property because he does not want future generations to suffer like his family. He only returns to the farm when he has to -- about once a fortnight -- and says every time he does he gets head pain within five minutes that takes up to 10 days to go away.

Doctors' certificates seen by the Sunday Herald Sun back his claims.

"Once (the vibrations) get inside the house it bounces off the walls and makes you feel sick," Mr Dean said. "If you're exposed to it outside it goes into your inner ear and affects your balance. It's put tinnitus in my ears which stops me sleeping."

He has met the company to discuss his concerns, but said they would only take statements, not answer his questions.

"I said 'I don't want you to buy me out. I want you to fix the problem'," he said. "It's hell on Earth living out there. That's what it is.

"And there's nothing we can do about it. It's a bloody terrible thing.

"It's knocked us around. We're in limbo. We've lost two years of our life and we don't know where it will end. I've put nearly 40 years into that place. It's prime property that I was going to pass down to my son. What am I going to do? I can't work there without being ill."

Former National Trust chairman Randall Bell, now president of Victorian Landscape Guardians, said wind farm companies had a reputation for pulling out their chequebooks to make a problem go away.

"What they do is make people sign gag agreements which dictate that they can't speak about the sales or their health," he said.

"It's a way of shutting people up."

Acciona generation director Brett Wickham said there was no proof wind farms affected people's health, and the plant, which employed about 70 people, was generally well accepted.

He said the most recent two houses bought by Acciona were purchased in September and October last year, when noise levels detected on the property were in breach of the company's planning permit.

And he said confidentiality contracts used by the company were "standard practice for the industry".

"Most of the landowners have actually sought confidentiality agreements as well," he said.

"They are what they are."

But Karl Stepnell, who moved his wife and three children out of Waubra after sleepless nights, heart palpitations, ear pressure and nausea that began when the turbines started turning, disagreed.

"They have bought a lot more houses than seven. There are empty houses all over the place," he said.

"We're all for green energy, but there have to be more conditions on what the wind companies can do."

Planning Minister Matthew Guy, who has the power to shut down the wind farm if it does not comply with its permit, said the Government was watching closely to ensure that wind farm operators played by the rules.

"If they are not complying with their planning permit, I would close it down," he said.

"Just as someone who doesn't comply with a building permit or doesn't pay a parking fine would be in trouble, so will they."

A Senate inquiry into the possible adverse impacts of wind farms will be held later this year.

Web link: <http://www.heraldsun.com.au/news/victoria/turbines...> (windaction)

The abandoned homes are set back twice the distance of many homes in the U.S. which average one-quarter mile (1,320 feet) setbacks from the turbines. These are 1.5 MW turbines setback one half mile (800 metres) from homes.



For Those Near, the Miserable Hum of Clean Energy

Matt Melvin Residents living less than a mile from the \$15 million wind facility in Vinalhaven, Me., say the industrial whoosh-and-whoop of the 123-foot blades is making life unbearable. **TOM ZELLER Jr. 10-5-10 New York Times**

VINALHAVEN, Me. — Like nearly all of the residents on this island in Penobscot Bay, Art Lindgren and his wife, Cheryl, celebrated the arrival of three giant wind turbines late last year. That was before they were turned on. “In the first 10 minutes, our jaws dropped to the ground,” Mr. Lindgren said. “Nobody in the area could believe it. They were so loud.” Now, the Lindgrens, along with a dozen or so neighbors living less than a mile from the \$15 million wind facility here, say the industrial whoosh-and-whoop of the 123-foot blades is making life in this otherwise tranquil corner of the island unbearable.

They are among a small but growing number of families and homeowners across the country who say they have learned the hard way that wind power — a clean alternative to electricity from fossil fuels — is not without emissions of its own.

Lawsuits and complaints about turbine noise, vibrations and subsequent lost property value have cropped up in Illinois, Texas, Pennsylvania, Wisconsin and Massachusetts, among other states. In one case in DeKalb County, Ill., at least 38 families have sued to have 100 turbines removed from a wind farm there. A judge rejected a motion to dismiss the case in June.

Like the Lindgrens, many of the people complaining the loudest are reluctant converts to the anti-wind movement. “The quality of life that we came here for was quiet,” Mrs. Lindgren said. “You don’t live in a place where you have to take an hour-and-15-minute ferry ride to live next to an industrial park. And that’s where we are right now.”

The wind industry has long been dogged by a vocal minority bearing all manner of complaints about turbines, from routine claims that they ruin the look of pastoral landscapes to more elaborate allegations that they have direct physiological impacts like rapid heart beat, nausea and blurred vision caused by the ultra-low-frequency sound and vibrations from the machines.

For the most extreme claims, there is little independent backing. Last year, the American Wind Energy Association, a trade group, along with its Canadian counterpart, assembled a panel of doctors and acoustical professionals to examine the potential health impacts of wind turbine noise. In a paper published in December, the panel concluded that “there is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.” A separate study financed by the Energy Department concluded late last year that, in aggregate, property values were unaffected by nearby wind turbines.

Numerous studies also suggest that not everyone will be bothered by turbine noise, and that much depends on the context into which the noise is introduced. A previously quiet setting like Vinalhaven is more likely to produce irritated neighbors than, say, a mixed-use suburban setting where ambient noise is already the norm.

Of the 250 new wind farms that have come online in the United States over the last two years, about dozen or so have generated significant noise complaints, according to Jim Cummings, the founder of the Acoustic Ecology Institute, an online clearinghouse for information on sound-related environmental issues.

In the Vinalhaven case, an audio consultant hired by the Maine Department of Environmental Protection determined last month that the 4.5-megawatt facility was, at least on one evening in mid-July when Mr. Lindgren collected sound data, in excess of the state's nighttime sound limits. The developer of the project, Fox Island Wind, has contested that finding, and negotiations with state regulators are continuing. In the moonlit woods behind a neighbor's property on a recent evening, Mr. Lindgren, a retired software engineer, clenched a small flashlight between his teeth and wrestled with a tangle of cables and audio recording equipment he uses to collect sound samples for filing complaints. At times, the rustle of leaves was all that could be heard. But when the surface wind settled, a throbbing, vaguely jetlike sound cut through the nighttime air. "Right there," Mr. Lindgren declared. "That would probably be out of compliance."

Maine, along with many other states, puts a general limit on nighttime noise at 45 decibels — roughly equivalent to the sound of a humming refrigerator. A normal conversation is in the range of 50 to 60 decibels. In almost all cases, it is not mechanical noise arising from the central gear box or nacelle of a turbine that residents react to, but rather the sound of the blades, which in modern turbines are mammoth appendages well over 100 feet long, as they slice through the air.

Turbine noise can be controlled by reducing the rotational speed of the blades. But the turbines on Vinalhaven already operate that way after 7 p.m., and George Baker, the chief executive of Fox Island Wind — a for-profit arm of the island's electricity co-operative — said that turning the turbines down came at an economic cost. "The more we do that, the higher goes the price of electricity on the island," he said.

A common refrain among homeowners grappling with sound issues, however, is that they were not accurately informed about the noise ahead of time. "They told us we wouldn't hear it, or that it would be masked by the sound of the wind blowing through the trees," said Sally Wylie, a former schoolteacher down the road from the Lindgrens. "I feel duped." Similar conflicts are arising in Canada, Britain and other countries. An appeals court in Rennes, France, recently ordered an eight-turbine wind farm to shut down between 10 p.m. and 7 a.m. so residents could get some sleep.

Richard R. James, an acoustic expert hired by residents of Vinalhaven to help them quantify the noise problem, said there was a simpler solution: do not put the turbines so close to where people live.

"It would seem to be time for the wind utility developers to rethink their plans for duplicating these errors and to focus on locating wind turbines in areas where there is a large buffer zone of about a mile and one-quarter between the turbines and people's homes," said Mr. James, the principal consultant with E-Coustic Solutions, based in Michigan.

Vinalhaven's wind farm enjoys support among most residents, from ardent supporters of all clean energy to those who simply say the turbines have reduced their power bills. Deckhands running the ferry sport turbine pins on their hats, and bumper stickers seen on the island declare "Spin, Baby, Spin." "The majority of us like them," said Jeannie Conway, who works at the island's ferry office.

But that is cold comfort for Mrs. Lindgren and her neighbors, who say their corner of the island will never be the same. "I remember the sound of silence so palpable, so merciless in its depths, that you could almost feel your heart stop in sympathy," she said. "Now we are prisoners of sonic effluence. I grieve for the past."

Noise Measurements - Twin Groves Wind Farm - 4-23-07

Brüel & Kjær Type 2236

Precision Integrating Sound Level Meter Made in Denmark

Fulfilling IEC 651-1979 Type 1

IEC 804-1985 Type 1

ANSI S1.4-1983 Type S1

ANSI S1.43-199x Type 1 (Draft 9/9)

F LEQ (5-6 hrs batteries) (F Max L - Maximum Peak Level)

Wind Data: Predicted Winds 10-20/25 mph

Actual Winds at 6:15 p.m.

West at 14 mph (Bloomington)

West/Northwest at 9 mph (Peoria)

41.5 DBA 9:40 p.m. Corner of Route 9 and Ellsworth Road (tractor in field $\frac{1}{4}$ mile to S)

35.5 DBA Road 1060 - turbine noise

39.2 DBA 975 N

47.6 DBA Route 36 just south of a turbine running

48.9 DBA 950N, 3100 E - near 3 turbines running, one light out

41.7 DBA 10:10 p.m. House # 66, For Sale by Zavitz - turbine only sound

On Route 9

44.8 DBA 1000N, 100E (Route 36) 3 with no lites (now on 150E driving N)

42.0 DBA 3150E, 1025N gravel roads

36.9 DBA 3025E @ Y-intersection 1 running to W. gravel

35.6 DBA 1050N, 3025E 1 no lite

34.1 DBA 2850E, 1050N - 2 running nearby, in NW corner of entire project

28 DBA Intersection of 28 and 17, just North of Ellsworth

29.6 DBA Gravel set aside just N of intersection above - under 2 mills not running

30.2 DBA 1500N, 2850E, 1 mile N of Route 9 10:40 p.m.

62.0 DBA 1400N, 2850E, corner of Route 9 and Ellsworth Road (car - 65 mph?)

26.9 DBA 1400N, 2850E, corner of Route 9 and Ellsworth Road (no car) 10:45 p.m.

24.6 DBA Route 9, 2100 (red sign), mills to S not running

24.4 DBA 1400 (Route 9), 2500E, mill to S not running end readings 10:55 p.m.

Total 16 noise Readings in Ninety Minute Time Frame

Conclusion: Addition of Wind Turbines to Rural Night Setting at Twin Groves Wind Farm raises nighttime noise levels from 24.4 DBA to a range between 40-49 decibels.

Source: Jim Schertz 808 347, Hudson, IL 61748 309-726-1168 kdschertz@verizon.net

Living With the Twin Groves Wind Farm – Local Residents Speak Out

Ed and Nancy Knittel:

“...we would have never purchased the property had we known....we were told we'd never hear those generators....there are three to the north of our property...I can see the red flashing lights, and the whole visibility of them was extremely upsetting....”

...In five months, I tried to contact them (Bill Whitlock of Horizon) twelve times. We've had like two – two responses. And – and either somebody doesn't show up – it has been extremely stressful, extremely stressful – making contact....”

we saw the turbines...we heard the turbines....brushing my teeth, I could hear them in the house. We have the blade flicker on our fireplace through the windows in our home. We have it in the yard from the front part that's all cleared. We hear them. We hear them....And what do we see but flashing lights? We were never told about the red flashing lights. We were never told about blade flicker.

We were never told about the noise we could hear outside or inside. And it's totally devastating....I don't want this to happen to somebody else...It's not – it's not right. I know we were falsely misguided. Falsely misguided....I tried to honor and respect the company and work with them, truly...and I can't – I can't do it for the sake of those that are unaware of what happens...”

“...we have some personal friends who, because we haven't wanted – we don't bad-mouth the company, we haven't said anything to anybody else – they have said, hey earplugs work well at night. If you can't sleep because of the wind generators, just get earplugs. We can't sleep at night, we wear earplugs. Well, if people have to wear earplugs to sleep at night, that's a serious situation...we did go to the wind farm and we did go look at the wind farm up there. And until it's on your property, sitting behind your property and making noise on your property, it's –it's a whole different thing....we did go up there and were told that we'd see one to the southwest and we wouldn't hear them and we wouldn't see the other ones. Then you believe that. You believe that...this has been sickening for us...”

Ed and Nancy Knittel live on 25 acres of property south of Saybrook. This testimony is from Horizon Energy's Zoning Board of Appeals hearing for the Railsplitter Wind Farm in Logan County, IL on 6-28-08

Luke Taylor:

“... Mr. Whitlock testified under oath that it (Horizon Easement Agreement) had no confidentiality provisions in it. And then it was read to him and he acknowledged that it did have a confidentiality provision....noise will be an issue when...they are requesting that...landowners grant them a sound easement.”

“..so I guess you'd ask yourself why would this company want to pay people \$1,000 a year...if noise isn't going to be an issue, when in return they're asking for an easement...we give you an easement, we give you the right to do whatever you want to do – on, over – across our property at any sound level in excess of 50 decibels. You know, clearly there's going to be an issue with sound...”

Luke Taylor lives in the Railsplitter Wind Farm in Delavan and gave testimony at the ZBA hearing 6-28-08. He is an attorney practicing in Pekin, IL and is no relation to Rene Taylor.

The Case of Ed and Irma Lee Brown

"...you don't hear much dissent here like in Wisconsin because in Wisconsin there are no gag order on the leases like here—you usually don't get opposition up front, because they don't know about it.."

"I've heard of people being forced out of their homes —some lady named Irma Brown?"

"...Yes, due to the stray voltage... they hired an electrical consultant, I was at her house when they were testing... there was large amounts of high frequency electricity coming through because they live by the high tension lines."

"Is it right that she is out of her house? "Yes"

"What is the solution? What have they (Horizon) told her?"

"She has not gotten a fix from the developer"

"Are you aware of this happening anywhere else? "Yes, in Wisconsin, a dairy farmer"

"Can't this happen with other sources, not just wind energy?"

"No, not with coal or nuclear.... Electronics do create high frequency, it is not exclusive to wind, but wind is piling up and causing additional problems...."

"What are wind companies doing about it?"

"Irma couldn't get a solution, the dairy farmer was bought out."

Excerpts from radio interview on WJBC with Rich Porter, Illinois Wind Watch, on Global Wind Day 6-15-09

Rene Taylor:

"Living with turbines has caused us to change many things in our lives. We often have to close the windows during nice weather to avoid turbine noise in our home. This forces us to use air conditioning at times we would prefer not to. While we retain the use of our property, much of the time we are no longer able to enjoy it. We do what we need to do outside and hurry back inside, confined to our house to avoid the constant sounds from the turbines and substation. Even inside our home, we often still hear and feel the turbines... readings we were getting at the wall of our home were between 85 and 90 decibels... We have found the sound from the turbines to be loudest at night and they cause us the most difficulty when the wind is from the south at 20 mph or higher at the surface. We have experienced many occasions at night when no wind was blowing at the surface and the turbines noise was excessive because there were no surface winds to help mask the sound. When the winds are above 25 mph, we no longer hear the swish or thump of the turbine blades, but hear a loud roar like a train running across the back of our property. These sounds can clearly be heard inside our home... every member of our family has experienced difficulty sleeping, headaches, irritability, pressure in our ears and fatigue since the turbines closest to us began operation... Some in our family have also experienced heart palpitations. My youngest daughter tells me if feels like a hamster running inside her chest... the noise is most common at night and occurs often between 11 p.m. and 4 a.m. We are often awakened by the noise and find it very difficult, if not impossible to go back to sleep.."

Rene Taylor lives with her husband and children on a 4-acre homestead in rural Ellsworth, IL. The property is located near 3 turbines, one about 1500' from the North wall of the home. An electric substation is located about 870' from the East property line and about 1000' from the East wall of the home. Excerpts from testimony given before a Union, WI planning commission 5-28-08

Title: Rene Taylor testimony before Union, WI planning commission

Author: Lisa

Date: May 28, 2008 8:02:35 PM or Wed, 28 May 2008 20:02:35

Summary: Horizon Wind Twin Grove wind energy facility, McLean County IL

Body:

Rene Taylor of Ellsworth, IL details the story of how she and her family came to live within the footprint of a large wind energy installation and the impacts of the turbines on her family's health and general welfare. Ms. Taylor lives within 1500 feet of Horizon Wind's Twin Grove wind facility which at this writing consists of 240 utility-scale turbines.

Thank you for allowing me to submit testimony this evening. I live with my husband and children on a 4-acre homestead in rural Ellsworth, Illinois. Our property is located near three turbines, one of which is about 1500 feet from the North wall of our home, in the Twin Groves Wind Farm. In addition to living near turbines, one of the project's two electric substations is located about 870 feet from our East property line, and about 1000 feet from the east wall of our home.

We purchased our property in 2004. About two or three weeks before closing, the previous owner of our property contacted us to inform us he had received a letter inviting him to an open house for a wind farm that was coming to the area. He thought my husband and I might want to attend instead, since we were going to be purchasing the property.

We did attend the presentation, and though neither of us had heard of a Wind Farm before, we felt the project would be great for our area. We were told modern turbines made very little noise and it was very unlikely we would be able to hear them at all, especially above the noise of the wind. We were also told that shadow flicker would not be a problem and that it might occur for a few days a couple times a year when the sun was behind a turbine, but most homes would not be affected. We were actually excited that we might be able to view one or two turbines from our property. We had both seen turbines while traveling and thought they were kind of cool to watch.

The following year we received notice from McLean County that the zoning hearings for the wind farm would be held in early July, 2005. We were a bit concerned because the notice said Horizon was requesting a variance on the height of the turbines, at that time I believe there was a 200 or 300 foot limit, and also a variance that would allow turbines to be closer to several residences than the current zoning allowed.

At this point, we wanted to know exactly where the turbines would be in relation to our property and what other structures might be constructed near us. We contacted a representative of the wind developer in late June, 2005, to try and get an idea what would be around us so we could decide if we were going to raise any objections at the hearing. The representative told us there would be one turbine about 1500 feet from the wall of our home and that we would be able to see several others on the ridge north and east of our property. I asked if there would be any turbines in the field just west of our property and he said no. I then asked about the location of the electric substation and told him we did not want to live by that. I was told the substation would be located a couple miles east of us closer to the village of Arrowsmith. We were relieved but decided to attend all the hearings.

We did receive a neighbor agreement by mail to sign. Our family chose not to sign the agreement. The title of the agreement was "Memorandum of Wind Farm Neighbor Easement Agreement", and it stated, "Owner understands and accepts that operation of Generating Units may have some impacts on the Wind Farm's neighbors, including the Owners property." It went on to state that "Grantee wishes to obtain Effects, Sound and Shadow easements from landowners who are neighbors of the Wind Farm for the benefit of the Wind Farm and as an opportunity to provide Owner certain economic benefits to accrue from operation of the Wind Farm." The very things they had told us would not be a problem they were now asking us to accept by way of an easement in exchange for a small annual payment.

In March of 2006, we received another notice from McLean County for a hearing on a request to move the electric substation to section 12 of Dawson Township. Our property is located in Section 12. Again, we were concerned. We were totally unfamiliar with zoning laws and had no idea that if you receive a notice it's because your property is within close proximity to the area that will be affected by a zoning change.

We attended this hearing as well, and this time I asked several questions about the change. I asked how close property line to property line the substation would be from our property. The developer's representative answered that it would be about a ½ mile from our property. I also asked what kind of noise we could expect from the substation because we would likely have some noise from the turbines near us and now we'd have to deal with the substation too. We were told that it would be unlikely that we would be able to hear the substation.

With the information the developer had presented, we decided to raise no further objections to the proposed change. The village of Ellsworth is about ½ mile from our property, so we felt confident we could live with the change. The location change was approved by the zoning board.

Within a day or two of zoning approval, we noticed workers staking out an area near our home. It was very clear to us that this area was not ½ mile from us, so my husband and I took a measuring wheel and rolled off the distance from our east property line to the west line of the area that was being staked out. The measurement was about 870 feet, not the ½ mile we had been told.

At this point we no longer felt comfortable with anything the wind developer had told us. We contacted the county to see if we could object to the zoning change and we were told no, that we would have to wait for the County Board to vote on the matter and we could then file for an administrative review of the change.

Living with turbines has caused us to change many things in our lives. We often have to close windows during nice weather to avoid turbine noise in our home. This forces us to use air conditioning at times we would prefer not to. While we retain the use of our property, much of the time we are no longer able to enjoy it. We do what we need to do outside and hurry back inside, confined to our house to avoid the constant sounds from the turbines and substation. Even inside our home, we often still hear and feel the turbines.

This past winter, (which was our first winter), we experienced many days when we consider turbine noise excessive. On one occasion, we borrowed a Radio Shack sound meter to measure the sound level. Now we are aware that these sound meters are not extremely precise and we also know that we are not experts at taking sound readings, but the readings we were getting at the wall of our home were between 85 and 90 decibels.

We have found the sound from the turbines to be loudest at night and they cause us the most difficulty when the wind is from the south at 20mph or higher at the surface. We have experienced many occasions at night when no wind was blowing at the surface and the turbines noise was excessive because there were no surface winds to help mask the sound. When the winds are above 25mph, we no longer hear the swish or thump of the turbine blades, but hear a loud roar like a train running across the back of our property. These sounds can clearly be heard inside our home, though not as loud.

The noise issue has been most difficult for our 10 year old son. He has been diagnosed with high functioning Autism and is very sensitive to sound. At times he seems to fixate on the sound, often times noise the rest of us can't hear, and becomes fitful and hard to deal with. For lack of anything else to call it, he has uncontrollable tantrums and nothing we do, except taking him out of the area when it's bad, helps. As parents, we do everything humanly possible to ensure the safety of our children. You have no idea how heart wrenching it is to watch your child sitting on the floor with hands over their ears crying, saying "It hurts mom, can't you hear it, make it stop", and know there's nothing you can do!

Every member of our family has experienced difficulty sleeping, headaches, irritability, pressure in our ears and fatigue since the turbines closest to us began operation last May. Some in our family have also experienced heart palpitations. My youngest daughter tells me it feels like a hamster running inside her chest. My fourteen year old daughter has become very withdrawn, sullen and is very negative about everything. This is totally out of character for her as she was always happy and positive. We feel some of these symptoms are likely due to a lack of sleep and we do not experience them all the time.

As I stated earlier, the noise is most common at night and occurs often between 11pm and 4am. We are often awakened by the noise and find it very difficult, if not impossible, to go back to sleep. Our youngest children have begun to have nightmares that also wake them. Many of these symptoms do seem to occur at the same time we are experiencing noise from the turbines, but some do occur even when the turbines are fairly quiet.

Thank you again for allowing me to submit testimony. Please listen to the people of your Town and understand that some of them could be more profoundly affected than others.

Notes: Rene Taylor



**Horizon Energy's Railsplitter Zoning Hearing
Logan County, Illinois 6-28-08**

**Testimony from Residents Living Near Horizon's
Twin Groves Wind Farm in Ellsworth**

FROM THE AUDIENCE: Mr. Chairman, we are the Knittels and our name was mentioned a lot here tonight. We would like a chance to talk.

MR. PORTER: These are the witnesses that are not available Tuesday.

MR. KNITTEL: Again, we have no bone to pick. We're not being hired by anybody. We have nothing to-- Other than we would just like to say, since our name was mentioned so much -- we didn't want our name to be mentioned so much, but since it was mentioned so much, we would just like to make a little statement. My wife has something to say. I can't be here --

CHAIRMAN PRO TEM THOMPSON: That's fine.

MR. KNITTEL: I can't be here Tuesday, so if you can make it another day --

CHAIRMAN PRO TEM THOMPSON: Just a moment. We are working this out as we go along here.

MR. KNITTEL: Okay.

(Discussion out of the hearing of the court reporter.)

CHAIRMAN PRO TEM THOMPSON: We are not doing the closing statements tonight. We'll go ahead and take comments from the public. The public are not attorneys and they don't cross-examine, okay? So as far as asking questions of Mr. Whitlock, that's not possible. You can ask questions or make statements to the Board, okay, but you can't cross-examine as such. That's for attorneys. Okay. So I guess we are not going to do closing statements tonight and instead we're going to open it up to public comment. And let's see. We'll do this --

MR. PORTER: Mr. Chairman, could we possibly allow the witness to speak and not have to be called back?

CHAIRMAN PRO TEM THOMPSON: Yes, I guess that would be fine. If the Knittels would like to come forward and make their statement this evening, then we'll try to take others that absolutely cannot be here at the meeting next -- next week.

MS. KNITTEL: Good evening. I'm Nancy Knittel and I have --

MR. MILES: Are the witnesses going to be sworn? Are the witnesses going to be sworn?

CHAIRMAN PRO TEM THOMPSON: We haven't sworn in the other members of the public, so no.

MS. KNITTEL: I'm Nancy Knittel. This is my husband Ed. We're everyday people. I'm a schoolteacher at Gibson City Middle School. I teach math. And we've been married for 30 -- almost 37 years. And we had a dream and we kept books of a dream home what we wanted to build. And we have three children who are grown, educated. And as we looked at this, we found a piece of property south of Saybrook, Illinois, 25 acres, 16 wooded, 9 cleared. And that was our dream, our dream spot.

We're old enough to know we need to do our homework and we need to check things out and, before we bought the property, we went to find out information. We knew that Twin Groves, the wind farm, was coming. Ed made several visits to talk to Bill Whitlock, and I went on one occasion to look at the maps and to view it. And during those times, we were told that we would see one wind generator to the southwest and perhaps above the tree line. Because woods are to the north and go down both sides of the property, with the house sitting in that cleared area, was our -- our hope. Well, we would have never purchased the property had we known. We didn't have to purchase the property. We were looking. We saw the property and we went to find out and we were told that, and we were told we'd never hear those generators because of the density of the woods and the leaves on the trees. We're thoroughly disappointed, and I just really hope that you'll listen.

night, we wear earplugs. Well, if people have to wear earplugs to sleep at night, that's a serious situation. And they haven't talked to Horizon. They don't talk to anybody about it other than us. And we didn't tell them, hey, they need to go complain. That's their issues. So you need to be really careful.

And, again, we did go to the wind farm and we did go look at the wind farm up there. And until it's on your property, sitting behind your property and making noise on your property, it's -- it's a whole different thing.

MS. KNITTEL: And, well, due to elevations and -- and the proximity and where they are, if you--. We did go up there and were told that we'd see one to the southwest and we wouldn't hear them and we wouldn't see the other ones. Then you believe that. You believe that. And due to the elevations, they're above the trees. They're there.

MR. KNITTEL: And you don't hear them with the leaves on the trees. But when you think about the rest of the time, eight months of the year when the leaves or not on there --

MS. KNITTEL: We haven't been through the seasons yet to know. We moved in April 5th of this year. And on the windows, the blades flicker on the fireplace and it's just constant. You see that. As well as then to the south we see it. The generators to the east, we see on the west of the property and vice versa. It's -- it's--. I don't know what. I mean, this has been sickening for us.

MR. KNITTEL: Thank you.

MR. LASKO: Mr. Chairman, could I ask the Board to ask the Knittels to tell you how much money they told Horizon they needed for landscaping.

MR. KNITTEL: Sure, that's no problem. Horizon came to us and said -- we met in our dining room -- and said, hey, we're going to help you out here. We're going to be good neighbors. We're going to reestablish the good neighbor policy. Go see three or four landscapers and -- we're not

going to build you the Black Forest, but we'll take care of your problem. And so that's what we did. We went in, got landscapers. We tried--. We planted trees. And they were expensive trees, because we're trying to block the wind generators. These trees are 5- to \$600.00 apiece. Add those up and it adds up to -- it was \$386,000.00. And that's exactly. I don't mind saying that.

MR. LASKO: \$386,000.00?

MR. KNITTEL: Yes.

MR. LASKO: Thank you. I just thought the Board should know that. Thank you.

MR. KNITTEL: That's fine.

CHAIRMAN PRO TEM THOMPSON: Thank you.

MR. PORTER: Mr. Knittel, how much is the property?

MR. KNITTEL: How much is the property? How much it's worth?

MR. PORTER: Right.

MR. KNITTEL: Well, we --

MR. PORTER: Before the turbines.

MR. KNITTEL: Before the turbines?

MR. PORTER: Yeah.

MR. KNITTEL: We had \$750,000.00 in the property.

MR. PORTER: All right.

MR. KNITTEL: We are not landscaping just around the house. We are trying to landscape the front of the property, up the sides of the property. We are trying to stop the noise. They said just give us a number. They-- You know, that's what they did and that's what we did.

MR. MILES: How many acres do you have?

MR. KNITTEL: 25. We tried to landscape 10 acres of property with large trees. So if it was wrong, we were wrong. Sorry.

MR. PORTER: Thank you, Ed.

(Applause.)

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Taxpayers United of America

March 21, 2011

TAXPAYER ORGANIZATION CHARGES WIND TURBINE PROMOTION AS A SCAM AND STEALTH TAX

CHICAGO—"The promotion of wind turbines is a scam and stealth tax," charged the President of Taxpayers United of America (TUA).

"Wind turbines are far less efficient than coal-burning plants. Turbines have roughly 30 percent efficiency, while coal plants operate at 90 percent efficiency," said **Jim Tobin**, TUA President.

"Wind turbine companies receive massive taxpayer subsidies," said Tobin. "They receive federal subsidies of 66 percent of construction costs, and also receive more than \$23 per megawatt they produce. Conventional generation receives about \$1 per megawatt."

"For every million dollars wind turbine companies spend in construction costs, they get a check for \$330,000 from the federal government. The rest they must put up, but that is usually paid off in a very short term once they connect to the grid and begin generating tax credits, which are then sold to large companies to 'offset' pollution."

"Wind turbine lobbyists are pushing the EPA and the Federal Energy Regulatory Commission (FERC) to promulgate corrupt, anti-taxpayer regulations. Lobbyists have pushed the EPA to declare coal ash hazardous."

"A good example of this scam is in Illinois, where FERC is proposing to force Illinois electric consumers to pay \$1.3 billion to upgrade the national grid to connect wind machines. The Renewable Portfolio Standard (RPS), passed by Springfield politicians, forces utilities to buy high-cost wind energy and then to charge consumers extra to pay for it. It is a hidden tax on energy that drives up its cost."

A November 8 article in the *Wall Street Journal* stated: "Senators Henry Reid of Nevada and Jeff Bingaman of New Mexico, both of whom have big wind and solar projects in their states, pushed a Senate energy bill this summer that would have socialized ... transmission costs. That bill has stalled, so FERC -- supported by the White House and Democratic leaders -- may move on its own."

"I urge taxpayers to contact federal lawmakers and demand they immediately draft bills to block both EPA and FERC. Additionally, Illinois taxpayers should contact their state legislators and ask them to repeal the state RPS."

For more information, contact **Rich Porter** of Energize Illinois: An Energy Policy Group, at (217) 379-9007.

Founded in 1976, TUA is one of the largest taxpayer organizations in MidAmerica.

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Shepherds Flat wind farm: What's the cost to taxpayers?

Published: 3-12-11 By Ted Sickinger, The Oregonian

The Business Energy Tax Credit started life in the 1970s as a conservation and clean energy incentive, but the chief rationale has become economic development -- namely green jobs.

So just how much does a wind farm job cost taxpayers? The answer depends on the formula, and involves an implicit assumption that the jobs wouldn't exist without the subsidy -- questionable in the case of Oregon's large wind farms.

Either way, the simplest formula is to divide all public subsidies for a project by the number of permanent jobs it creates. For Shepherds Flat, with \$1.2 billion in subsidies for 35 permanent jobs, that equation delivers a cost per job of \$34 million.

Oregon taxpayers pay a share of the federal subsidies, but for simplicity's sake, consider the cost of the jobs based on the Oregon tax credits alone.

Shepherds Flat is pre-certified for \$30 million in state tax credits. At that price, the cost per permanent position is \$857,000

Bob Repine, director of the Oregon Department of Energy, says it's possible that Shepherds Flat might not get final approval for all three tax credits. **One tax credit would cost \$10 million, or \$285,000 a job.**

Critics of tax credits like to calculate how long it would take to repay the subsidies from personal income taxes generated by the resulting jobs.

Industry experts estimate that the 35 permanent jobs would pay an average of \$50,000 a year in wages. Assume each employee gets an annual raise of 3 percent. On that basis, **it would take about 46 years to generate \$10 million in tax revenues from the jobs created directly by the project, and 77 years to generate \$30 million.**

At a minimum, that's double the effective life of the wind turbines for the state subsidies alone.

Economic development officials say such analyses are too simplistic. When they analyze the potential return on an incentive, they factor in a **multiplier effect** that accounts for all the other jobs created **indirectly** as workers spend their wages and businesses buy local supplies.

That multiplier would be smaller for a wind farm than say, a manufacturer, as **wind farms don't buy as many supplies or raw materials, and the equipment installed is manufactured elsewhere.** But in the interest of conservatism, assume that the multiplier effect quadruples the number of permanent jobs created by Shepherds Flat. Then assume that all of the resulting jobs pay \$50,000 a year, with 3 percent annual raises, whether it's a grocery store clerk, a truck driver or the manager of a hardware store.

It's an economic development fantasy. But **under that scenario, it would still take 19 years to repay \$10 million in subsidies for Shepherd's Flat, and 39 years to repay \$30 million.**

Illinois Wind Watch

"Because Illinois Needs Responsible Energy Policy"
info@IllinoisWindWatch.com

<http://lifewithdekalbturbines.blogspot.com>

www.AdamsCountyWind.com * Windaction

www.informedfarmers.org Windwatch

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Properly Interpreting the Epidemiologic Evidence about the Health Effects of Industrial Wind Turbines on Nearby Residents

Carl V. Phillips, PhD
Populi Health Institute

July 19, 2011

*This is a preliminary draft of the following article in press:

Carl V. Phillips, "Properly Interpreting the Epidemiologic Evidence about the Health Effects of Industrial Wind Turbines on Nearby Residents," *Bulletin of Science, Technology, and Society*, vol. 31, no. 4 (August 2011), pp. 303-315.

Abstract

There is overwhelming evidence that wind turbines cause serious health problems in nearby residents, usually stress-disorder type diseases, at a nontrivial rate. The bulk of the evidence takes the form of thousands of adverse event reports. There is also a small amount of systematically-gathered data. The adverse event reports provide compelling evidence of the seriousness of the problems and of causation in this case because of their volume, the ease of observing exposure and outcome incidence, and case-crossover data. Proponents of turbines have sought to deny these problems by making a collection of contradictory claims including that the evidence does not "count", the outcomes are not "real" diseases, the outcomes are the victims' own fault, and that acoustical models cannot explain why there are health problems so the problems must not exist. These claims appeared to have swayed many non-expert observers, though they are easily debunked. Moreover, though the failure of models to explain the observed problems does not deny the problems, it does mean that we do not know what, other than kilometers of distance, could sufficiently mitigate the effects. There has been no policy analysis that justifies imposing these effects on local residents. The attempts to deny the evidence cannot be seen as honest scientific disagreement, and represent either gross incompetence or intentional bias.

Introduction

There is overwhelming evidence that large electricity-generating wind turbines (hereafter: turbines) cause serious health problems in a nontrivial fraction of residents living near them. These turbines produce noise in the audible and non-audible ranges, as well as optical flickering, and many people living near them have reported a collection of health effects that appear to be manifestations of a chronic stress reaction or something similar. However, many commentators (dominated by those who stand to profit from national government subsidies for building wind turbines, particularly energy companies and local governments) have repeatedly claimed that there is no evidence of risk. This appears to be widely believed by those unfamiliar with the evidence but who believe that turbines are an eco-friendly energy source (a claim that is subject to debate) and think that anything "green" must be harmless to people.

While it is typical for industries and their supporters to downplay risks and argue that the benefits make the risks worthwhile, the wholesale denial of the evidence by both business and government in this case is reminiscent of such claims as "there is no evidence that smoking causes cancer" or "Iraq has weapons of mass destruction". However, unlike most industry denials or *casus belli*, where critical thinkers know to exercise some skepticism before accepting the claim, the denial of the evidence of turbines seems to have produced widespread credulity among those who would be expected to know better. This may be because the epidemiologic evidence is complicated and the attempts to deny it sound like the language of science. In response to that abuse of science, the goal of this paper is to empower interested observers to understand the nature and quality of the epidemiologic evidence and the weakness of the common arguments used in attempts to deny it.

It is argued here that there is ample evidence that turbines cause a constellation of health problems, and attempts to deny this involve claims that are contrary to proper methods of scientific inference. Moreover, there is no basis for claiming that current regulations and recommendations are sufficient to avoid substantial risk, and those who claim otherwise do so without any basis. Indeed, ironically, what is often presented as evidence that there are no risks shows no such thing, but does demonstrate that most claims about what constitutes sufficient regulation cannot be scientifically. Moreover, the balance of the necessary ethical analysis seems never to have been performed. Given these observations and consideration of public policy ethics, it is difficult to see how most of the ongoing siting of new turbines can be justified.

A brief review of the epidemiologic evidence

For those not familiar with the term, epidemiology refers to the study of health outcomes and exposures in people for purposes of making assessments about population health. The critical feature is the studying of actual health outcomes in actual people, as opposed to other sciences (like toxicology or, most relevant in the present case, acoustics) which might help predict health outcomes but can be quite wrong about them. Those other sciences sometimes suggest possible effects that the epidemiology shows do not actually occur to a measurable degree and other times fail to predict the health effects that really do occur. Epidemiology is a quantitative science, though the quantification ("effect estimates") that is the preferred endpoint for most epidemiologic research is not always possible, as in the present case. Most, but not all epidemiology, focuses on whether a particular *exposure* (possible cause experienced by people) causes a disease outcome. While epidemiology often depends on observational evidence,

sometimes experiments can be done; clinical trials are the most familiar, but a different kind of experiment has been done in the case of turbines.

There are many different types of evidence that contribute to epidemiologic knowledge. While the majority of formal epidemiologic studies use only three or four study designs, there are numerous other types of studies and sources of information. As with any science, when engaging in a directed inquiry to answer a particular question, one uses what information is available and purpose-builds further information-gathering, and often such information and study design differs from the most common study types. Indeed, in the present case some information is available from the common study types, but the vast majority comes from other sources, particularly *adverse event reports* (a particular type of what are known as case studies, sometimes denigrated as "anecdotes", that generally report on the rapid onset of a disease which appears to be related to a particular exposure) many of which involve *case-crossover* experiments. Both of these are useful and well accepted sources of epidemiologic information, and since they are intuitively recognized by both experts and lay-people seeking to assess whether an exposure is causing disease outcomes, people have collected this information for years (though it is not clear that anyone working in the area had identified the established terminology and its established history in the science value before I pointed them out last year).

Large collection of evidence

Most of the adverse event reports are self-published by those concerned about the health effects experienced by themselves or family members in the interest of contributing to public health knowledge on the subject. Most of these are yet to be organized, although efforts are underway. Others have been collected more systematically, such as the WindVOiCe collection

from Ontario (Krogh et al. 2011), the scholarly book by Pierpont (2009), and in a paper by Harry (2007). Since several research groups and NGOs have collections that number in the three-figure range, it seems safe to conclude that the total number published or collected in some form is in the four-figure range, and it is quite conceivable that the total number of adverse event reports numbers in five figures.

Excerpts from three of these from my research group's collection appear in the Appendix to illustrate some of the points that follow. These three were self-published by the authors on the web and are fairly typical, though they were chosen because they were good examples, not because they are somehow perfectly representative of the collection. The reports have been abridged to remove information not presently relevant, and to reduce length.

In cases of emerging and unpredictable disease risk, adverse event reports are the cornerstone of public health research. Since it is obviously not possible to study every possible exposure-disease combination using more formalized study methods, just in case an association is stumbled upon, collecting reports of disease cases apparently attributable to a particular exposure is the critical first step. The most familiar examples of hazards revealed by adverse event reporting are infectious disease outbreaks or side effects from pharmaceuticals, but the case of turbines and health also fits the pattern. Pharmaceutical regulators rely heavily on clearinghouses they create for adverse event reporting about drug side effects (and often become actively concerned and even implement policy interventions based on tens of reports). The WindVOiCe report collection is an example of this same well-accepted kind of active-recruiting data collection system.

As explained in the next few sections, useful self-reporting of adverse events is only possible for particular types of exposures and outcomes, but exposure to turbines and many of the reported health effects are just those types of exposures and outcomes.

Reasons the adverse event reports are compelling

Adverse event reports are under-appreciated as a source of evidence. The main reason for this seems to be overgeneralization from cases where they are indeed uninformative by those who do not understand what characteristics exposures and outcomes must have for them to be informative. It is always possible to find a single case study of an exposure-disease combination because even if there is no relationship between an exposure and a disease, it is statistically inevitable that someone will have both by coincidence. Thus, when political activists dig up a story about one such individual ("here is someone who had that exposure, and look what happened to him!"), we should be skeptical. This is especially true when the disease in question occurs frequently in the population and it is not possible to simply "see" the exposure that triggered it, like common cancers or heart disease. Many people get those diseases (and thus it is not difficult to find a few examples), the exposures that trigger them are invisible, and we cannot identify the onset to associate it with a proximate exposure. The challenge is greater still when the exposure itself is vague and difficult to precisely define, like "lived near the chemical factory". In such cases, it is nearly impossible to learn much from reports of adverse events, and indeed claims about a particular cause of one person's case of the disease can almost never be justified, and so more systematic studies are needed.

The reports about the effects of turbines are not such a case. The sheer volume of reports elevates the evidence beyond the few coincidental cases that can usually be found. The quantity

further tells us that the effects go beyond a few rare individuals who are extremely susceptible. It is a legitimate limitation of adverse event reporting, no matter how voluminous, that it does not allow an estimate of what portion of the exposed population suffers health effects. There are undoubtedly similar effects among those who have not made the effort to publish the information, but we can only guess how common they are. It should be noted, however, that pharmaceutical regulators often make decisions based on exactly that guess.

Moreover, most reported health problems are similar across reports and are plausibly related to each other and the exposure. As illustrated by the examples in the appendix, there is a core list of symptoms – sleep disorders, headaches, mood disorders, inability to concentrate, tinnitus, vestibular (balance) problems – appearing in most reports. The commonly reported problems all exist at the border of the psychological and physical, and can all be caused by either of two very plausible effects of wind turbine exposure: stress reactions or vestibular disturbance. There are also a few reports of hypertension and other mortality-causing conditions, though since this is difficult for individuals to monitor themselves it would be unlikely to appear in most adverse event reports.

The Appendix examples also illustrate that some people attribute various other conditions they are experiencing to the turbines; this is not surprising, but the volume of reports lets us sort out rare coincidences (which can indeed generate misleading "anecdotal evidence" if a single story is treated as overly informative) from common patterns. We need not, and should not, simply accept the assertion of one individual or their clinicians about causation, assertions which appear in most of the adverse event reports. Rather, we focus on the consistent patterns of diseases that occur after exposure onset. (It is possible that mining the case reports more thoroughly will reveal apparent associations to diseases that were not previously believed to have

been caused by turbines; such research is ongoing.) If people were complaining only about a collection of seemingly unrelated ailments, without the core overlap, it would suggest that they were just blaming the turbines for all their coincidental problems. But that is clearly not the pattern that emerges.

Most important, in contrast with exposures like invisible chemicals and diseases like cancer, individuals are capable of recognizing both the exposure and outcomes. Local residents are quite capable of observing that they are detecting noise or other effects. Moreover, people are capable of detecting their own insomnia, mood disorders, inability to concentrate, etc. Even more importantly, they are capable of detecting the *incidence* (i.e., onset) of these problems as well as when they cease, and while these problems are fairly prevalent in the population at any given time, their incidence is relatively uncommon and very often has a proximate cause.

For a relatively common condition, if we only had *prevalence* measures (i.e., how many people have the condition at any point in time), then in order to conclude that those living near turbines have a higher rate of the condition we would want to compare their rates to that of similar people not living near turbines. Similarly, if we were talking about cancer (where epidemiologists refer to the diagnosis as the incidence for convenience, but actually have no idea when the cancer initially began growing) we would want such a comparison. But for something that is very rare (e.g., not *having* a pattern of severe insomnia, which is not rare, but having that pattern *start a particular week*, which is) we can conclude the incidence rate is elevated without an explicit comparison. For example, many people have headaches at any given time, but if you have one that started at the time you suffered a trauma there is a good chance the trauma caused it because the probability of a headache starting at just that minute by coincidence is very low. Thus, people are quite capable of determining that incidence of these health problems occurs

after exposure to moving wind turbines begins, unlike claims about what caused a particular cancer where such observations are not possible. Some supposed experts who have merely memorized a few simplistic rules of thumb from first-year epidemiology classes are unlikely to understand this, but the knowledge of that incidence and its timing is compelling evidence of causation even without a formal comparison group.

The above observations alone show that the adverse event reports are strong evidence for a causal relationship. The fact that many of the published adverse event reports include case-crossover observations and experiments push the evidence beyond a hint of plausible doubt.

A case-crossover study is one of the most compelling sources of epidemiologic data. It consists of observing whether someone's outcomes change as their exposure status changes. This is often not possible because the outcomes only happen a single time as a result of long-term exposure (e.g., cancer) or the exposure cannot be changed. But the observed effects of turbine exposure lend themselves perfectly to such studies because the exposure is transient and the effects, while not instantaneous in their manifestation or dissipation, are generally transient over a period of days or weeks at most. Thus, unlike a case of a lifelong exposure or non-transient disease, where we can only make one observation about disease and outcome per person, the effects of turbines allow multiple observations by the same person, including experimental interventions.

The case-crossover study design was first formally documented as a method for epidemiologic inquiry by Maclure (1991) though undoubtedly it was recognized as extremely useful for drawing conclusions about health effects from before the time our ancient ancestors achieved the rank of *H.sapiens*. A case-crossover study is the most natural form of scientific inquiry: "I ate that and my stomach hurt; I did not eat it again for a while and had no problem; I

ate it again and my stomach hurt again; I think I there is a causal relationship here". This natural understanding of scientific inference is why such a large portion of the adverse event reports include crossover data. People observe, and report, that the exposure stops when the wind is not blowing or the subjects remove themselves from the area for a while, or especially when they relocate, and they observe whether the health problems abate. Some of these crossovers are observational (the change in exposure status was unplanned) but many are experimental (people intentionally avoid the exposure for a while to see if their health problems abate). Most of the reported crossover data confirms the causal inference that comes from the initial crossover from unexposed to exposed, the start of operations of the nearby turbines, which would be the only observation possible if it were impossible for exposure status to change again (as it is with such exposures as "ever smoked", "received a high dose of radiation", or "got older"). The examples in the Appendix include several of the common versions of crossover data, including complete relief upon relocating, the ability to sleep well when staying somewhere other than the subject's own home, and reactions to whether the wind was blowing through the turbines at any given moment.

An additional feature of the data in this case is *revealed preference* information about individuals' conviction regarding the causal relationship and intensity of costs inflicted upon them. Many people report expending substantial resources – retrofitting their houses to reduce noise, selling their properties at a loss, or even abandoning their homes without being able to sell them – in order to try to reduce the health impacts. (The Appendix includes examples of such revealed preference.) Thus, rather than just claiming they were confident about the causal relationship (perhaps thanks to personal case-crossover experiments) and describing the intensity of their suffering, they "put their money where their mouth is" and endure great expenditure,

demonstrating great confidence in their assessment and that the magnitude of the suffering warrants such expenditure. Similar revealed preference can be found in the inability of owners of property near turbines to be able to sell it at a price comparable to other homes or land that is not near turbines. It is sometimes claimed that few people believe there are harmful effects or that they would experience them if they lived near turbines, but property values and sales collapse only if almost everyone is uninterested in living there. If merely a few people believed the claims that there were no problems, and were willing to intentionally relocate to live near turbines, then they would take advantage of the bargains and move in; alternatively, speculators – perhaps the energy companies or local turbine proponents – would snap up the bargains. This is apparently not happening, suggesting that no substantial number of people, even those making the claims, genuinely believe that the turbines are harmless.

In sum, the present situation lends itself perfectly to having useful adverse event data, in terms of exposure and outcome that are easily identified, incidence times that are easily identified, the possibility of case-crossover data, and the possibility of revealed preference. The empirical reality is that we have an enormous volume of data, the outcomes reported are plausibly related, many people have performed case-crossover experiments that support the conclusions, and there is indeed revealed preference data.

This still leaves the inherent limitations of this type of non-systematically gathered data: Because the data does not have known sampling properties from a well-defined population, it does not itself tell us how many others might have reported adverse events had they experienced them, but did not. This information is the denominator that would be required to calculate the portion of all exposed people who experienced the adverse events. We have some information that lends itself to estimating that figure, from a handful of systematic studies and using

estimates from where there was a focused effort to collect all local adverse event reports, but not as much as we would like. The data we have also offers limited opportunity to estimate how much the risk changes with characteristics (in particular, that means we do not know how far away turbines need to be from residences to reduce the risk below some particular level).

Nevertheless, in terms of demonstrating that there is a substantial risk of serious health problems, the adverse event reports are more compelling than any small number of systematic studies could be. Moreover, the sheer volume of data makes it possible to mine it for some information that is normally only available from systematic studies, like the effectiveness of crossovers at eliminating the health problems and the dose (distance) response; such mining is underway.

Systematic epidemiologic evidence

While not providing as much information as the adverse event reports, the few systematic studies (with data gathered from a defined population, allowing calculation of outcome prevalence), offer the reassurance that different sources of information support the same conclusions.

There is a small collection of systematic studies from Europe by Pedersen and colleagues (2004, 2007, 2009, 2010). These studies suggest that some substantial portion of exposed individuals experience harms, some of which constitute health problems by any modern definitions of health. The studies have various limitations, but they provide a quantification of a nontrivial number of cases. Phipps (2007) also tends to support the claim. Nissenbaum et al. (2011: personal communication) was the most effectively purpose-built study to date. It surveyed residents living near turbines about most of the above-mentioned health conditions and

compared them to similar people living further away. The results (unpublished at the time of this writing) appear to support most of the widely-stated hypotheses about the health effects of nearby turbines. Importantly, there do not appear to be any systematic studies whose results suggest conclusions contrary to those we draw from the adverse event reports. In particular, there is no evidence to support the claim that the relevant health problems are similar in unexposed and exposed populations.

Attempts to deny the epidemiologic evidence, and their fundamental flaws

Because of the revenue that is at stake from government subsidies to wind power producers (including to land owners and local governments), there are wealthy organized interests who would prefer everyone doubt that the observed health problems exist. There also appears to be some "not invented here syndrome", with some acousticians and clinicians resenting the fact that they cannot explain the observed health problems, and thus seeking to deny the epidemiology. Whatever the motivation, there has been a pattern of anti-scientific claims aimed at denying the evidence. While there is individual variation, a pattern has emerged within the denial tactics (and that word choice is intentional: it is difficult to see these as anything other than directed efforts to secure a particular goal). The following divides these into three categories and explains why each of the common arguments is groundless. While this does not cover every single argument anyone makes, it is comprehensive in the sense that I am aware of no common or potentially-credible argument against the validity of the epidemiologic evidence that is not addressed here.

1. Pretending that there is no evidence of health effects

Many pro-turbine reports sponsored by industry or government simply ignore all of the adverse event reports. Any reader limiting himself to those supposed summaries of the evidence would not even be aware of the majority of the evidence. Obviously this is blatantly anti-scientific conduct. It is perfectly legitimate to argue that the ostensible evidence against your claim is uninformative or wrong, but anyone pretending it does not exist is attempting to mislead their readers and is presumably not confident their claims can stand up to the evidence.

When turbine proponents acknowledge the evidence and seek to deny its usefulness, they are more honest, but no more convincing. Many such denials translate roughly into, "we do not recognize the informative value of adverse event reporting and case-crossover studies, and therefore we are going to declare they are not informative." In practice this differs little from simply pretending there is no information – no one ever admits, "there are thousands of case studies that report crossover data that correspond to the causal claim", before going on to argue that we should not believe them. But it bears separate mention because it is common, particularly among the epidemiologists from consulting firms that industry likes to hire. Their claims are not merely that some types of evidence are more useful than others when answering a particular question (which is true) or that there is some rigid epistemic hierarchy wherein one type of study always trumps another (which is false, but is commonly believed by non-experts who know a bit about the subject), but sometimes that there are only two types of epidemiologic studies.

These authors' limited understanding of epidemiologic methods may stem from the fact that most of their work is defending against claims of cancer and other diseases that have the characteristics described above, where it is difficult (but not impossible) to learn much from anything other than one of those two types of studies. What they do not seem to understand is

that exposures and diseases are often not epistemically similar to chemical exposures and cancers. The evidence that is most useful depends on the question being asked. (For more on these points and others in this section about how to interpret epidemiologic evidence, see Phillips 2011.)

So, to pick a recent example, if many people gathered in a North African city started sending out messages that government forces are shooting into the crowd, it is very good evidence that shooting is happening. Yes, we could do a controlled study to find out if the number of gunshot wounds treated at hospitals was higher that day than the same day the year before. But it is possible that such a study could miss the effect – it could sample from the wrong hospitals, or the government could act to suppress the information, or the study could suffer from any number of problems. It is true that some systematic survey, rather than individual reports, would be necessary to quantify the toll. But the event reports coming from eyewitnesses would be the most definitive source that the event was occurring, and if they were provided in enough detail by enough people they would be systematic enough to be the best way to estimate the toll. To claim that we know nothing about those events until we have multiple systematic studies (what some turbine industry proponents have argued) requires a willful suppression of normal human reasoning. This example is not meant to be a cartoon; it is actually a reasonable analogy. In terms of witnesses' ability to detect the exposure and outcome and the potential limitations of more systematic studies, turbines are much more similar to gunfire than they are to the effects we normally attribute to noxious facilities.

The other common method for trying to claim that the adverse event reports are not informative (again, typically coupled with trying to imply there are only handful of them, failing to acknowledge the quantity) is to note that they are not "peer reviewed". It seems likely that

most people repeating this claim do not even understand what peer review does; if this is not the case then they are pretending not to understand. At its best, peer review by health science journals provides a cursory review to make sure that a study follows some basic guidelines, and occasionally (very rarely) corrects an important error. Reviewers rarely comment on the quality of analysis methods, let alone the data being analyzed, because they do not even provided with the statistical programs or data. Reviewers see nothing more than what eventually appears in the journal, which almost never allows the reader to know critical features of the study design, let alone assess whether they were carried out adequately. And that is the best case scenario; more typically peer review in the health science does more to censor politically incorrect evidence and discourage innovation than it does to improve what is published. It is easy to get an absolutely terrible study published, so long as the authors jump through particular hoops, stick to simple methods, and do not reach a conclusion that is controversial (the conclusion need not follow from the data, however). It is quite difficult to publish a high-quality innovative study that engages if more complex analysis or demonstrates something new – e.g., the present analysis or WindVOiCe. Moreover, peer review has drifted from being a minimal but useful gatekeeper to primarily being a method for university employees to keep score for their annual reviews.

That is all it is, and treating it as more fetishizes it, in both of the technical senses of the word: It is treated as some kind of magical process, and it has become a stand-in for the phenomenon (good and accurate research whose essential elements have been assessed and improved by multiple experts) that it is supposed to represent. While it may be necessary for casual readers with absolutely no expertise in a field to defer to rules of thumb like "only look at the peer reviewed literature and 'expert' reports" to avoid falling victim to the worst quackery, that merely means that it provides some filtering, not that the rule is a useful guide for serious

scientific inquiry. A debating society or a grade school term paper needs rules to structure the artificial exercise, and so can just as easily choose "peer reviewed references only" as any other rule. There are also arguments to be made for (and against) the use such rules of evidence in liability trials and other formal processes that need some rules of conduct. But there is no justification for legalistic rules of evidence when engaging in scientific inquiry and its extension, science-informed policy making.

Moreover, even though value may be added from peer review of the best kind (which usually takes the form of circulating a paper among colleagues, not relying on the triage system of the journals to add much value), no peer review can vouch for the accuracy of data without actually reviewing the data collection method. This means that adverse event reports, which consist of someone reporting their data as best they can (we can ignore the authors' own analyses and conclusions and focus just on the events data), would not be improved by peer review. That is not to say that the adverse event reports will never be represented in the peer reviewed literature; they will almost certainly become the data for analyses in journal articles, but will not be rendered any more accurate as a result of that.

Indeed, eventually most of the useful information on a topic is referenced somewhere in journal articles, and at that point relying only on those articles alone does not cost us too much information, but we are currently far from that point for this topic. For supposed experts, acting as consultants or otherwise writing "expert" reports, the fetishization of peer reviewed literature is basically a concession by the authors that they are not really experts in either the relevant scientific methods, the subject matter, or both. Actual experts are the ones who can look at something and assess its usefulness; after all, being an expert means being capable of performing the peer review rather than relying on someone else's assertions.

Moreover, until there is a sufficient body of literature, the adverse event reports will continue to be more compelling than the formal studies. Anyone who is familiar with epidemiology knows that it is easy to design a study that, as reported in the cursory description of methods that peer reviewers ever see, reads like it is solid and would detect the phenomenon of interest if it exists, but is actually almost guaranteed to find nothing. Consider how easy it would be to conduct the study, "I searched the apartment for my keys but did not find them", in a way that would likely fail even if the keys were in your apartment (e.g., search for only five seconds; search the neighbor's apartment instead of your own; keep your eyes closed; put the keys in your back pocket before you start). Designing a study to fail to find a health effect from turbines would be equally easy, and it is actually a bit surprising that the industry has not done this already.

It is also quite possible to design a study that is likely to "detect" a phenomenon that does not exist. This is a bit trickier than intentionally finding nothing, and sometimes requires detectable subterfuge like defining-down the phenomenon studied to something common and unimportant but then reporting the result as if it were dramatic (e.g., asking "have you ever noticed turbine noise while trying to fall asleep" and then reporting "our results show turbines cause sleep disorders"). Setting aside the details and the direction of likely bias, the general lesson is that in an advocacy situation, opaquely complex studies of the type published in health science journals can easily be gamed by a researcher without even violating the rather weak norms in the field, while gaming thousands of adverse event reports would require massive fraud.

Finally, it can be argued that those who seek to deny the evidence are making an implicit promise to believe the evidence of health effects as soon as it appears in peer reviewed journals,

and they should be reminded of that implicit promise in the future. Most people reading this paper will do so after it has the imprimatur of "peer reviewed publication". That means that the adverse event reports contained in the Appendix are peer-reviewed journal publications. Does that make them any more valid than when originally published by the author? Of course not. The reviewers had no way to assess the accuracy of the report, just as reviewers of health science papers can never vouch for the accuracy of the data that underlies an analysis. But those who protest that lack of peer review is the reason for not believing much of the evidence are now obliged to accept the report in the appendix as fact.

2. Trying to claim that theory and historical guesses outweigh the evidence

If no one could figure out any way that turbines could possibly affect people's health then we would have reason to seriously question whether the epidemiology was correct. But we know that noise and light effects from turbines impact people's senses and otherwise affect their bodies, and so there is a plausible causal pathway from the turbines to diseases. Furthermore, we know that some of the impacts create distressing awareness which causes stress reactions, which might or might not explain many of the observed health problems, but it plausibly could explain them. There are also more complex theories about pathways that are the subject of debate by those who are expert in the biophysics.

Thus, it is not yet clear which of the hypothesized pathways play a significant role in health effects. But it is clear, given the list of plausible candidate pathways, that there is no legitimate basis for claiming it is impossible for turbines to cause health effects. Yet that is exactly what some commentators have claimed. Generally this takes the form of someone proposing one pathway by which noise might cause health problems, probably the one he has

studied, and offering a single model for assessing whether the outcome is likely to occur. When his model cannot explain the problems, he concludes that there are no problems.

The flaw in this reasoning should be obvious, though it is remarkable how convincing some people apparently find it. Sciences like toxicology and, in this case, acoustics can help predict whether an exposure might cause a health problem before we have actually observed whether it does so. But the epidemiology trumps the predictive evidence. Acoustics and other science still have an important role to play in helping figure out *why* the turbines are causing health effects, but their role as predictive sciences is over: we now have epidemiologic results which the other sciences apparently failed to predict. Continuing to rely on predictions about whether the exposure might cause disease once we have seen that it does cause it is like trying to figure out whether it is raining right now by looking at last week's weather forecast for today.

A particular observation takes the form of claims like, "there are health effects associated with living near a turbine, but the physical sciences show there are no *direct* effects." These assertions about "no direct effects" are presented as if the phrase has some scientific meaning, and thus the reader should be impressed. But anyone with expertise in studying causation will realize that the statement is vacuous because there is no such construct as "direct effect". It is always possible to insert an intermediate step in between two points in a causal pathway, or remove all the intermediates from consideration, and thus it means nothing to call an effect either direct or indirect. Moreover, though this is generally a component of strained arguments that are attempting to deny the evidence, it should be recognized that those making this claim are saying "the physical effects caused by the turbines impact people's bodies, but it is only when some biological or psychological process is caused by that impact that the diseases we observed are then caused". That admission that the turbines are causing health problems is certainly an

accurate statement, just as it is accurate to say that cigarettes do not "directly" cause lung cancer because the cancer only happens when their impact on the body, interacting with other factors, triggers a complicated biological process that eventually causes a tumor.

There is one key lesson we can take from the inability of the physical modelers to agree about why the health outcomes occur, and the fact that there are steps in the pathway that we cannot yet be sure about: It is currently impossible to know how to change the exposure to mitigate the health effects with much confidence, other than by separating people and turbines by a great distance. The existing epidemiology does not answer this question either. Yet some proponents of turbines argue that the regulations that have been created in this state of ignorance must be sufficient to protect people. It should be obvious how absurd this claim is. Those regulations are a hodgepodge of different rules that are generally based on old recommendations that predate the recognition of the health effects and which, to the extent they were based on any science at all, were based on the science that incorrectly predicted that there would be no problem. Even if one believes that the regulations were as well thought-out as they could have been, the epidemiology shows that people suffer health effects when the regulations are adhered to.

A variation on this theme is to claim that the health problems exist only when current regulations are not met, or even when the original regulations under which the turbines are operating are violated. It is certainly reasonable to condemn operators and regulators who allow the violation of the regulations, a fairly common occurrence according to the adverse event reports. However, since those making the argument that current regulations should be adhered to do not seem to be offering such condemnation or conceding that turbines do sometimes cause health problems, it is difficult to accept their implicit assertions that adherence to current

regulations is genuinely the difference between causing health problems and not doing so. But the argument that some set of more stringent regulations is sufficient to eliminate the health problems (or that it will be obeyed) is no better supported by science than the claims that previous regulations were sufficient. Moreover, there is no shortage of aphorisms about how unwise it is to believe someone who is telling you "we were wrong, or perhaps even lied to you, about the previous regulations being sufficient, but trust us when we assert, in exactly the same way, that everything will be fine with new regulations." This is especially true when they still do not even admit that the previous regulations were insufficient.

In any case, regulatory choices and guidelines are decisions that, at best, are science-based, but offer no scientific information in themselves. It should be clear that believing last week's government decree about what the weather should be today is even less useful for figuring out whether it is raining right now than would be looking at last week's forecast. Unless, that is, we are in an Orwellian world where the language is redefined to make government decrees always correct. Some of the tactics for denying the evidence of health effects actually seem quite similar to that.

3. Claiming that the observed health effects are not really health effects

Failure to understand how to draw scientific conclusions and myopia about a single method for modeling physical health effects are problematic, obviously. But they are not so clearly reprehensible, from an ethical standpoint, as telling people that their suffering does not really "count" for some technical reason.

A common claim is that the health outcomes do not constitute a "disease" because there is no officially recognized labeled disease along the lines of "wind turbine syndrome". But even

if we set aside that the individual diseases people are suffering, like chronic stress and sleep disorders, are often well-defined (they are just not defined in terms of a specific cause), and the fact that the term "disease" is quite broad in practice, this would still only be a semantic point. There is no epistemic significance to the health outcomes in question having or not having a label.

Sometimes the denial takes the form of saying that people are just suffering "symptoms" but not a "disease", which is nonsense since in this context the word "symptoms" is shorthand for "symptoms of a disease" and, moreover, can roughly be defined as "those manifestations of a disease that are (in addition to mortality) what people actually care about". Another semantic game says that what people are suffering is not "disease" but "annoyance". The jargon used in the noise and health literature refers to effects of noise that are apparently psychologically mediated (i.e., most everything other than hearing damage) as "annoyance". The rhetorical game is to try to confuse readers into thinking this has the natural language meaning of "mere annoyance". However, the jargon meaning of annoyance includes everything from "mere annoyance" up through a life-ruining source of severe distress. Moreover, even "mere" annoyance can itself have severe health consequences when someone is forced to exist in a chronic state of annoyance.

Another somewhat common pseudo-argument is that we should dismiss the health effects because they are all "subjective". This is not actually true since, for example, insomnia can be objectively measured by looking at a clock and even long-term stress itself can be measured via hormone levels. The authors seem to be confusing "subjective" with "psychologically mediated", which most of the observed effects might well be (though there are hypotheses about non-psychological pathways).

But being subjective or psychologically mediated does not mean these effects are minor or less real. Indeed, there is a case to be made that such diseases, which include everything from transient headaches to chronic pain and depression, account for the majority of the total burden of disease in our society.

A recent addition to the rhetoric that the effects are of no consequence are assertions that effectively assert, "the problems are caused by the victims' own psychology, not the turbines." It is claimed that perhaps people fear the turbines, as people are known to irrationally fear toxic chemicals, and it is fear, not the noise or light, causing all the problems. This is a variation on the theme that was popular a year ago (though it can still be found) where it was claimed, based on one study that found a correlation between people's attitudes toward the turbines and their reported health effects, that attitudes were causing the problems. These claims sound more scientific than some of the other rhetoric, but are easily shown to be wrong.

First, the assertions themselves are rather weak. The fact that there is a relationship between suffering health effects from an exposure and disliking the exposure hardly comes as a surprise. If those who were trying to deny the evidence had read the adverse event reports, they could have found much more compelling evidence supporting this point (the feeling is apparent even in the Appendix examples despite the abridgements focusing on outcomes rather than judgments); however, in most cases it is clear that the people's dislike of the turbines was a result of their physical effects, not vice versa.

We do know that people have irrational fears of invisible hazards like radiation or "toxins", but it is difficult to imagine why someone would find a fairly simple object and exposure (metal, tower, fan blade, motor/generator mechanisms, wind, noise, flashing lights) to invoke the irrational fears that often result from invisible spooky exposures. If someone were to

try to make a plausible claim along these lines, a better case could be made that that sensitization to the serious effects of turbines is psychologically contagious; that is, once some people start to suffer serious health problems, those around them are more likely to suffer distress reactions that lead to serious health problems. This is still a speculative hypothesis, though unlike the purely speculative claims about irrational fears, one that is supported by some evidence (as illustrated by one of the examples in the Appendix, serious health problems that are attributable to turbine exposure tend to run in families, which might be due to their similar genetics or exposures, but might be a contagion effect).

But whether or not contagion or fear occurs to some extent does not excuse the turbines. This is not a case, like some commentators have tried to portray, that is similar to many people working in a building getting sick, apparently due to mass hysteria since no contamination or infectious agents are found. Unlike a single building, people with no knowledge of or worry about the health effects from other turbines, and who have never known anyone who experienced those problems, have discovered they are having health problems when turbines were built near their homes. Moreover, everyone suffering health problems does detect and usually complains about the sensory effects from the turbines, so it is clear that their entire experience is not imaginary. It is, of course, possible that some personal characteristic sensitizes them to be more bothered by the sensory effects, increasing any psychologically-mediated effects. But it is inevitable that some personal characteristics will be *causal cofactors* (factors that, along with the turbine, are part of the necessary constellation of causes for there to be a disease effect). This is true for every exposure-disease combination: Some exposed people get the disease and some do not, and sometimes we can identify other differences between the two groups. None of this changes the fact that the turbines are causing disease, and are the one of the many causes that we

refer to as "the" cause in a legal or ethical sense. Compare: If someone is killed in a robbery, the cause of death was the assailant, but the death was also caused by the victim being at the wrong place at the wrong time, and perhaps because those around him were not skilled medics and that he was frail. However, the murderer's blameworthiness is not diminished by (inevitable) existence of causal cofactors.

Some commentators who are unfamiliar with causal analysis in epidemiology seem to believe there is something unusual about personal characteristics being correlated with the outcome. They then compound their error by declaring that if there is something psychologically different about the people who suffer disease, then we can "fix" them with counseling. This has been presented as being a reason why we should not worry about the observed health effects, even though the usefulness of counseling is a purely speculative hypothesis (there is no evidence it has ever been successful in these cases), and one that is built on speculation about there being a "treatable" causal cofactor that is a necessary component of the causal pathways. To return to the lung cancer analogy, someday we will invent a drug that keeps the injured lung cells from turning into cancer, which would mean that smoking would no longer cause lung cancer among people who took the drug, but that is obviously not an argument that smoking is not really causing such harm now; indeed, we would probably still consider the propensity of smoking to trigger lung cancer as consequential even if the hypothetical drug were available.

Moreover, the fact that we have no reason to believe we can actually counsel away the suffering caused by turbines is only part of the problem with such claims. Even if the counseling were useful at reducing the health effects, causing people to need counseling (a substantial cost in their lives even if it is completely successful) can hardly be considered a harmless and ethically inconsequential act. It has complicated ethical implications that evoke the Orwell's

teaching someone to love Big Brother, and at a more prosaic level it would not eliminate suffering from the moment of first exposure. We have counseling methods that can reduce the long-term damage that someone suffers from being a victim of sexual assault, after all, but its existence does not change the fact that the assault does damage, let alone does it cause us to decide to allow the assaults because the damage can be undone.

Any claim that might stick

It is worth pointing out the dishonesty inherent in presenting many of these claims together, as is often done. It is a legitimate tactic for a criminal defense attorney to argue that the prosecution has failed to show that his client was at the scene of the crime, and that the evidence showed that if he was there it was after the crime was committed, and also that he was just along for the ride and did not know anything about his friend's plan to commit a crime. However, this is not a legitimate tactic in scientific analysis. Proponents of wind turbines have claimed, often simultaneously, that the physical models show there is no possible problem, that there is no problem if some particular rule is obeyed, that there is no evidence of health effects, that the reported evidence of health effects does not count because it is in the wrong format, that there is evidence of effects but they are not real diseases, and that the diseases are really the victims' own fault. They also sometimes argue that the benefits outweigh the costs, the point taken up in the final section below.

We can perhaps excuse lawyers who work for the industry for making this contradictory mélange of arguments, assuming that we think it is acceptable for industry to act as selfishly as a criminal defendant is expected to act, and that it is up to others to make the opposing case. But there is no such defense available to consulting scientists who are supposedly writing reports as

independent experts, or to government officials. They should be conducting the best possible scientific analysis. If one of them really believes that, for example, we should not worry about the health effects because people can and should be counseled to get over them, then they are still obliged to recognize the enormous number of adverse event reports and point out that acoustical theories predicting no effects are apparently wrong, before then going on to argue that the effects are something that is easily fixed. Similarly, someone who genuinely believes that there is not evidence that people are suffering cannot also argue that this non-existent suffering has characteristics that make it less important. Some arguments can legitimately be made in combination, of course. But even honest activists, let alone honest scientists, do not use the approach of throwing every claim that could possibly be made in support of their position against the wall to see what sticks.

Ethical policy decision-making

Public policies often impose substantial costs on people. We generally try to prevent a large share of the burden from falling on a small number of identifiable involuntary victims (e.g., people living near the site of a new noxious facility), but sometimes this is not possible. Generally in such cases it is considered ethically mandatory to compensate the victims. But even setting aside tricky questions of just compensation, there is the simple principle that the total social benefits should outweigh the costs, which include the health costs. There is currently no evidence to support the claim that this is true for the installation of new industrial wind turbines in populated areas.

It is beyond the present scope to even rough out such an analysis, but it is possible to provide the steps that are necessary and point out how nothing remotely sufficient exists. First

the net costs and benefits from a purely industrial standpoint (the resource cost to install, maintain, and decommission the turbines and transmission lines compared to the value of the electricity generated) need to be calculated; this is presumably negative since the industry depends on subsidies of various kinds. A common claim is that this negative value is more than outweighed by the net benefits of pollution reduction, though there is substantial debate about this point. Before there is any possible justification for inflicting involuntary health risks on people, whatever their magnitude, it is incumbent upon the industry to present a convincing analysis that shows there are substantial net benefits when all benefits and costs – apart from those imposed on local residents – are considered. Only such net benefits could justify impose the local costs.

It does not appear that this has ever been done, but for purposes of the exercise assume it has and the result is indeed positive. Then the health and other local impacts need to be quantified and compared to that benefit. While there can be no perfect quantification of such effects, estimates are possible employing well-used straightforward methods. The first step is to admit that there is a problem, which might be made easier by dropping any disagreement about whether the suffering constitutes health effects, since all costs to the local community, health and otherwise, should be identified and quantified. If there are indeed methods for mitigating the damage, and if particular regulatory standards can substantially reduce it, then this should be demonstrated and then implemented to lower the costs. These costs, lowered as much as possible, should then be compared to the other benefits

Many of us have guesses about how this comparison will come out, but the main issue right now is that it has never been done. No one has even taken a rough cut at the numbers, and so there is simply no basis for claiming that the benefits justify the costs. Indeed, this may

explain why many proponents of turbines insist on making the extreme and obviously incorrect claim that there are no health effects at all. Once some numbers are estimated, we can begin to discuss whether the tradeoffs are justified, how to offer justice, and other policy questions. In the meantime, it makes no sense to take expensive largely irreversible actions, rather than exercising some easily reversed prudent delay until we better understand the situation.

Conclusions

It is always possible that further research will reveal that, under certain circumstances, turbines can be sited near people's homes with minimal health risk. Such is always possible for any exposure, given the nature of science (open to additional information) and changing technology. But our current knowledge indicates that there are substantial health risks from the existing exposure, and we do not know how to reduce those risks other than by keeping turbines several kilometers away from homes.

Similarly, it is quite possible a public policy case could be made for the claim that the costs are justified by the benefits. But the key is that the case must be made, including a quantification of the impacts on local residents, which has not been done. Those who pretend that there are no serious impacts on local residents cannot contribute any useful analysis. Moreover, it seems unlikely that it will ever be considered ethically acceptable to force susceptible individuals to suffer serious health problems, to say nothing of the non-health complaints and effects on communities, without much greater and more reliable compensation than has been offered to date.

Dismissal of health effects cannot be seen as honest disagreements about the weight of the evidence. Honest disagreements about scientific points are always possible. But when

proponents of one side of the argument consistently try to deny the very existence of contrary evidence, make contradictory claims, appeal to nonsensical and non-existent rules, treat mistaken predictions as if they were evidence of actual outcomes, play semantic games to denigrate the reported outcomes, and blame the victims, then they are not being honest, scientific, or moral. They are preventing the creation of optimal public policy and damaging the credibility of science as a tool for informing policy. Moreover, since their lack of plausible arguments suggests there are no defensible arguments to be made on that side of the issue, their persistence in making implausible arguments is directly responsible for hurting significant numbers of people.

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Appendix: Excerpts from three adverse event reportsCase 1, first person report by male, 2007

....

The first 2 turbines were operating in may 2004. One was 4000ft from our home, the second 4700ft. A 120 day trial period was required to monitor their productivity. We could hear them well and ..., my wife was experiencing ringing in her ears. Visitors would comment that the one 4000ft away seemed really close. Some neighbors were complaining they were bothered by them at night.

....

February, 2005 the windfarm was fully operational, 17 wind turbines. The windmill 4000ft away seemed far off compared to the one 1000ft from our home. They are loud. They've been compared to jet engines, a plane that will not take off. There is no gentle swoosh, it is a whoosh noise. They grind, they bang, they creak. The noise is like surround sound, it's omnidirectional. It feels like there's this evil thing hovering above you and it follows you everywhere, it will not leave you alone. This noise will not allow you to have your own thoughts, the body cannot adapt, it's a violation of your body. It is a noise that the human body cannot adapt to even after more than a year of exposure. As time progresses the noise becomes even more unbearable.

Our 5 year old son ... was afraid and unable to sleep in his own bed for more than one year. He would get in our bed or in his brother's bed. We would put him to bed at 8:30 and many nights at 11:00 he would still be awake. Finally he would fall asleep wrapped up in the blankets in the fetal position with his head covered and with a fan at his head. we had to create more noise to mitigate the windfarm noise. The body can adapt to the fan noise. In the morning he would get up tired and cranky. In september 2005 he started school and he was not getting enough rest. He began getting more and more aggressive with his friends. He was very defiant We knew he was suffering terribly. He's had throat infections and often had a fever and not feeling well.

....

We abandoned our home February 21st, 2006.

Since the move [aforementioned son] has been doing much better. He sleeps in his own bed every night. He sleeps partially covered with his arms and legs spread everywhere. It was only ten days after the move while he was having his back rubbed in bed he said "it's nice to be able to go to bed and sleep". He is much less defiant. He has become the kind gentle little boy he was before the windfarm nearly destroyed his life.

Knowing what we know now we should have moved a year before.

Our 9 year old son ... was sharing a room with [5-year-old]. He was also very sleep deprived. He would get up in the morning very tired. We would send him to school tired. He was tired and

unable to concentrate and his school work suffered. He was also unable to concentrate on his homework. He began to withdraw within himself. He also began getting aggressive. [He] seemed to be always angry. His teacher asked us what was the problem with [him] because his change in behavior was something she would never have expected from him. [His] ear drum burst while we were there in 2005. He's had many throat infections and many headaches. He has developed allergies. He's the only one of 6 children that has allergies.

Since the move [he] has improved so much in his school work and his behavior and participation in class that the teacher says she cannot believe that he's the same child. He has not been aggressive with his friends. He's so kind and caring for everyone. His headaches are less frequent and less severe.

Our 13 year old daughter ... had dramatic behavioral changes. She became withdrawn and was spending too much time alone in her room. She dropped her friends and lost interest in school work. She was also angry. She dropped all sports (basketball, volleyball, soccer, badminton). [She] always had headaches. She became very defiant.

Since the move [she] is doing better in school. Her behavior is steadily improving. Her health is improving and she is socializing. She is feeling better about herself.

[...reports on other family members omitted for length...]

As for myself I always felt a sensation in my chest which was very discomforting. On extremely rare occasions when the windfarm was off I could sense they were off without seeing them. The noise was just a relentless attack on our bodies. Every time the blades passed the towers I could feel it within my body. I was unable to concentrate well enough to read in my bed.

Since the move I don't have that sensation in my chest but it returns when I spend a few hours at our house.

These physical and psychological effects develop gradually and sometimes it seems silly to associate them with a windfarm until you learn that others experience the same thing under similar conditions.

If we would have had absolutely nowhere to go, if we would have been forced to stay in our home, I hate to think what kind of physical and mental state we would be in now.

During the months that the sun is low in the sky we get a flickering in the morning and late afternoon as the sun passes behind the turbines. This induces headaches quickly to those who are more susceptible to them. When the full moon rises and passes behind the turbines the flickering is intense.

We are devastated, we are broken because we have lost the home we built with our own hands and we have lost the land which has been in the family for generations.

Our house is now unsellable. There is nobody in the community that wants to live there because of the windfarm. Nearly everybody supports us privately but they are afraid to speak out publicly.

We are a community of 2000 people and I did a survey of 216 people and 96% said the windfarm was too close to [their] house. Also 89% said the windfarm was too loud at [their] house and 78% said that they felt they were not properly notified of the impact this windfarm would have on the community.

Case 2, first person report by female, 2009

....

My home now sits among huge, massive turbines. Sixteen turbines surround me, all within a 3 km radius of my home. The closest is 400 metres from my back door. People often ask me what my problem is with the turbines. ("They are not very noisy," I am told.)

The noise is constant, some days louder than others. It is not noise I enjoy or choose to be around. It is noise I cannot escape.

....

I live with the movement of shadow flicker created by the rotation of the turbines, coming through my dining room window as I drink my coffee in the morning. I have developed a sensitivity in which now I cannot even tolerate the movement of a small ceiling fan.

The skies where I live are no longer clear but dotted with blinking red lights marking the height of the turbines. When the turbines are down, a constant buzzing noise is emitted from the motionless structures. I have developed tinnitus [sic] in my ears. I hear and feel the pulsating of the turbines and buzzing in my ears. I also feel the pulsating in my throat and chest.

Two homes have been abandoned where I live because of health reasons related to the effects of the turbines. One of these properties is host to 2 turbines. Many properties are for sale. In fact most of the properties where landowners reside on premises are for sale.

Real estate sales in my area are significantly less than other [similar places]. Some real estate brokers will not touch a property adjacent to a turbine for fear of future law suit. Nothing is selling in Turbine Town. Land value has decreased significantly because of the turbines.

....

I have:

- nausea (often) & dizziness (often)

- significant hearing loss
- itchy eyes
- high blood pressure (recently, an immediate and intense elevation to 180/118, causing severe headache and complete dysfunction)
- heart palpitations
- achy joints
- short term memory loss
- severe sleep deprivation on a regular basis

Results of a sleep study I had done showed 214 interruptions in a 6 hour period (note: 6-8 is considered normal; 214 is comparable to someone who has attention deficit disorder). I have very little if any regenerative sleep periods. I have been told that I have developed a sensitivity that does not leave my body when I leave the vicinity of the turbines. The term used was "toxic" -- my body is in a toxic state.

I have an ulcer in my nose that does not heal. I am awaiting an appointment in November with an ears, nose and throat specialist (otolaryngologist).

I often have blood in my urine (never was a problem in the past). I am having problems with my lymph nodes. I have been anaemic because of excessive blood loss. Blood work and other tests do not indicate changes which may cause this haemorrhaging. I have spent time in the emergency room at the hospital because of this.

I once thought my degenerating health was part of the natural aging process. I did not believe the turbines could be the cause of my health issues. I questioned myself as to whether or not it was all in my head. I now believe exposure to the turbines accelerate these processes as well as create other health problems.

I am angry, helpless, and disappointed our government would let something like this happen. I am appalled at their ignorance and lack of compassion. It saddens me to watch my family and friends suffer from the same effects of the turbines.

It is also very saddening for me to see my dogs suffering. I cannot imagine the distress they must be enduring because of their sensitive hearing. I have not figured out what to do about it.

I spend as much time as I can away from my home, away from my son who is also sleep deprived and moody. We are exhausted and miserable. I often seek refuge with friends, often falling asleep minutes after I arrive. They are very understanding

....

Case 3, first person report by male, 2010

I am an abutter to ..., a 1.65MW Vestas 400 foot tall goliath. Since it went into operation in early 2010, quite a number of us abutters have suffered serious medical detriments and a gigantic loss of quality of our lives from the noise impact of this machine.

My own home is 1662 feet from the turbine, and the effects of the sound on me have caused

-anxiety

-stress

-nervousness

-sleep deprivation

-hypertension

-migraines

-dizziness

-blurred vision

-palpitations

-irritability

-anger

-upset stomach

-depression

These ailments are well documented by my medical providers.

....

The noise these turbines make is unlike regular noise. It is not the loudness of the noise but a characteristic to it that gets in your head and becomes entrenched. The sound can go on for days,

or it can be absent, or it can be intermittent. When it is not there, one listens for it and is fearful of its return.

The garden that was a sanctuary to me for 30 years is now more like a torture chamber. Some of the abutters have started using the term "turbine torture." When the turbine first went into operation in March 2010, and then through April, I tried to acclimate myself to live with this thing.

After dropping into a three-month depression, I finally avoided my own home for the month of August, and pulled out of the depression. I returned on Labor Day weekend to find that after ten minutes of hearing the turbine, my anxiety and panic condition were returning. At least two persons have thought of suicide while this issue drags on through the creep of political process.

....

Anyone out there whose town or neighbor is proposing a wind turbine, I recommend for you to do your homework now before the machine is up and running, and you begin to plan to sell your home. I have been told, by the way, that if you are trying to sell and a turbine is visible from your home, your potential buyer list will drop by 50%.

