FILE

PUCO EXHIBIT FILING

Date of Hearing: November 14, 2012

Case No. 12-160-EL-BGN - Volume IV

PUCO Case Caption: In the Matter of the Application of Champaign Wind LLC for a Certificate to Construct a Wind-Powered Electric Generating Facility in Champaign County, Ohio.

List of exhibits being filed per Michael Settineri:

Company Exhibit Nos. 10, 11, and 12

Reporter's Signature: Maria DiPaolo Jones

Date Submitted: _____

11-14 V.4

INDEX

- - -

- - -

EXHIBITS

- - -

- - -

- - -

- - -

ARMSTRONG & OKEY, INC.
PROFESSIONAL REPORTERS
185 SOUTH FIFTH STREET, SUITE 101
COLUMBUS, OHIO 43215
614-224-9481

May 13, 2004

Ms. Megan D. Foley
Pope & Levy Co., LPA
903 Eastwind Drive
Westerville, Ohio 43081

In Re: Jeffrey L. Akers vs. Janet M. Nickell, et al.

Dear Mr. Foley:

Enclosed are the signature and correction pages to the deposition of Jeffrey L. Akers, taken April 23, 2004. Please insert these pages into your transcript.

Sincerely,

Armstrong & Okey

Enc.

cc:

MJ#1601-2

Company Ex. 10

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Champaign Wind LLC, for a Certificate to Install Electricity Generating Wind Turbines in Champaign County	)))))	**Case No. 12-0160-EL-BGN**

DIRECT TESTIMONY OF FRANK T. MARCOTTE

Q.1. Please state your name and business address.

A.1. My name is Frank T. Marcotte. My address is 1033 Tallokas Road, Crestview, Florida 32536.

Q.2. What is your present occupation?

A.2. I am an independent aviation air safety investigator specializing in helicopter accident reconstruction and analysis. I have 9,000 hours of helicopter service time in my career and have served as a captain, flight safety manager and heliport design consultant. I am affiliated with Williams Aviation Consultants of Gilbert, Arizona.

Q.3. On whose behalf are you testifying?

A.3. I am testifying on behalf of the applicant, Champaign Wind LLC.

Q.4. Would you please summarize your educational background and experience flying helicopters?

A.4. I graduated from the U.S. Coast Guard Academy in Connecticut in 1968. I completed my Navy flight training in 1970 and immediately began flying Coast Guard rescue helicopters. In 1973, I attended the first of my safety training at USC Los Angeles

and later at Arizona State University. My rescue flying was all-weather-no radar-no autopilot-no GPS in single engine amphibious Sikorsky helicopters.

I left the U.S. Coast Guard as a safety officer at Air Station Miami at the end of the Cuban Exodus to become the Director of Flight Safety for SFO Helicopter Airlines. I flew Bell 206 helicopters with FAA approved minimums of 300/2 day and night.

My EMS flying experience began in 1988 for REACH in Santa Rosa, California in the Augusta 109 single pilot IFR in the California coastal mountains. I retired from the cockpit in February of this year flying A-Star helicopters for Era Helicopters in the offshore oil industry. I have attached my curriculum vitae to my testimony.

Q.5. What documents have you reviewed in preparation for your testimony?

A.5. I have reviewed Staff recommended Condition 70 contained in the October 10, 2010 Staff report as well as Googled Earth map depictions of the area between Dayton and Columbus, Ohio, just east of Urbana's Grimes Field.

Q.6. Have you ever been involved in operating a helicopter as part of emergency medical care flights?

A.6. Yes.

Q.7. Please describe your experiences in operating helicopters in such emergency medical care flights.

A.7 I had ten years of experience flying Coast Guard rescue missions across the country and two years of dedicated EMS service at the Santa Rosa Memorial Hospital in northern California. While in the Coast Guard, I acted as Aircraft Commander Senior Duty Officer and Flight Safety Officer at two of the busiest rescue units in the country. These units made approximately 1,000 rescue responses annually. While in the Coast

Guard, I was engaged in true "all weather" flying involving site rescues and transport to the nearest hospital, airport or vessel. In both my experience with the Coast Guard and the civil EMS unit, I have transported every imaginable type of victims.

Q.8. When operating a helicopter as part of an emergency medical care flight program, what are your top priorities?

A.8. Safety is my top priority. One must be able to respond to the worst situations and do no harm to the victim or the first responders. While speed is important, it is not necessarily a priority once the rescue portion of an event has been completed by the first responders who have stabilized the subject victim in need of transport.

Q.9. Have you ever flown a helicopter near a wind farm?

A.9. Yes.

Q.10. Is it possible to safely operate a helicopter near a wind farm day or night?

A.10. Yes. Helicopter pilots already deal with flying around buildings, trees, power lines, and antennas that rise hundreds of feet into the air. Just as issues associated with flying near power lines are part of the safety training for pilots, flying around wind farms will also be added to EMS training programs.

From a technical aspect, it should be noted that there are large areas of undisturbed air immediately in front of and on both sides of each wind turbine. Helicopter pilots will find this undisturbed air quite usable. In addition, it should be recognized that there is a nearly 3,000 foot wide clear zone along the length of U.S. Route 36.

Technological advances such as GPS aircraft positioning and mapping equipment are tools that will allow pilots and flight following management personnel the ability to fly and track EMS flights near wind farms. The GPS associated obstruction hazard warning

systems will backup in-flight pilots. Onboard weather monitoring displays highlight areas of bad weather to avoid, particularly when the area around turbines is obstructed. The increased use of night vision goggles (NVG) will highlight the wind turbine area perimeter outline from many miles away allowing small and timely course deviations, if necessary, to avoid wind farm areas as well as the final approach and landing clearance precision.

Q.11. If there were a farming accident on a farm contiguous to a wind turbine, where would a pilot of a helicopter as part of an emergency medical care flight program typically land the helicopter?

A.11. It depends on the individual circumstances. The ideal situation is to land the helicopter as near to the on-scene first responders as possible, slightly down-wind and/or uphill from them if possible, as with any obstructed area such as forests or towns.

Q.12. Are there different aspects of operating a helicopter near a wind farm that distinguish it from operating a helicopter in other locations?

A.12. Yes, but my sense is that after proper training and testing, these rescue missions around wind farms should become routine as procedures are developed and formalized. The air disturbances around wind farms are not dissimilar to the conditions involved in landing helicopters on boats that are pitching, heaving and yawing on the surface of the ocean. Both can be done safely with proper training.

Q.13. Does the presence of a nearby wind farm delay the time it takes for an emergency medical care flight helicopter to arrive on the scene?

A.13. Not necessarily. During a flight with clear weather and high ceilings, there will be no delay. These helicopter operators are prohibited by their operations specifications

from flying at all when ceilings are below 1,000 feet. Any small delay would depend on where exactly the scene was in relation to the helibase and the wind farm. If the scene was on the east side of Urbana, a helicopter pilot can fly down U.S. Route 36 with only one antenna to avoid. At speeds of two and three miles each minute (120/150 knots) these helicopters respond quickly and small deviations become unnoticeable.

Q.14. Have you reviewed the October 10, 2012 Staff Report and particularly Staff recommended Condition 70?

A.14. Yes, I have.

Q.15. Staff recommended Condition 70 in the Staff Report requires that "The Applicant shall submit to Staff, for review and confirmation that it complies with this Condition, a medical needs service plan for construction, testing, and operation of this facility, in coordination with the local emergency life flight service, CareFlight. This plan shall incorporate measures that assure immediate shutdowns of any portion of the facility necessary to allow direct routes for emergency life flight services within the vicinity of the facility." Do you recommend that the Board adopt Condition 70?

A.15. No.

Q.16. Why not?

A.16. There are several reasons why the Board need not adopt Condition 70. Helicopter operators are already prohibited from flying over these wind turbines when the ceilings are so low as to make such a flight unsafe. The planned wind turbine setbacks along the highway (for example, from U.S. Route 36) allow for the high speed pass through by a helicopter to any scene. Even though the turbine blades are moving, helicopter pilots will

still avoid the entire disk area any way as they will not be affected by any wind turbulence because it descends and dissipates quickly. If it is necessary to land within the perimeter of a wind farm, it should be noted that the helicopter pilot will attempt to land into the wind (if possible) allowing clean air between or in front of the turbines on days when the prevailing wind is strong. If the wind is weak, then the turbines will be turning slowly or not at all and will not generate any wake and will need to be avoided just as one would avoid a tall tree or antenna. Given the high speed capabilities of the aircraft and the proximity to the area in question, it is neither practical nor desirable to require immediate shutdown of these turbines for emergency LifeFlight services. It would be more effective if wind turbine farm operating procedures were incorporated into training programs. Electric utility companies are not required to de-energize power lines so that helicopters can land; we helicopter pilots simply work around them instead. The same principle should apply to wind farms.

Q.17. Does this conclude your testimony?

A.17. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served upon the following parties of record via e-mail on this 29th day of October, 2012.

Jack A. Van Kley
Van Kley & Walker, LLC
132 Northwood Blvd., Suite C-1
Columbus, Ohio 43235
jvankley@vankleywalker.com

Christopher A. Walker
Van Kley & Walker, LLC
137 North Main Street, Suite 316
Dayton, Ohio 45402
cwalker@vankleywalker.com

Chad A. Endsley
Chief Legal Counsel
Ohio Farm Bureau Federation
280 North High Street, P.O. Box 182383
Columbus, OH 43218-2383
cendsley@ofbf.org

Jane A. Napier
Assistant Prosecuting Attorney
Champaign County Prosecuting Attorney's Office
200 N. Main Street
Urbana, Ohio 43078
jnapier@champaignprosecutor.com

Stephen Reilly
Devin Parram
Assistant Attorneys General
Public Utilities Section
180 East Broad Street, 6th Floor
Columbus, Ohio 43215-3793
Stephen.Reilly@puc.state.oh.us
Devin.Parram@puc.state.oh.us

Kurt P. Helfrich
Philip B. Sineneng
Ann B. Zallocco
Thompson Hine LLP
41 South High Street, Suite 1700
Columbus, OH 43215-6101
Tel: (614) 469-3200
Fax: (614) 469-3361
Kurt.Helfrich@ThompsonHine.com
Philip.Sineneng@ThompsonHine.com
Ann.Zallocco@ThompsonHine.com
Attorneys for Pioneer Rural Electric Cooperative, Inc.

G.S. Weithman
City of Urbana Director of Law
205 S. Main Street
Urbana, Ohio
diroflaw@ctcn.net

s/ Michael J. Settineri
Michael J. Settineri (0073369)

Francis T. Marcotte
Curriculum Vitae

Present

An independent aviation Air Safety Investigator and Expert Witness in private practice in Northwestern Florida, specializing in helicopter accident reconstruction and analysis. A 9,000 hour career helicopter Captain, Flight Safety Manager and Heliport Design Consultant.

Experience

1997- 2012 – Flying offshore in the Gulf of Mexico in support of the oil industry Captain and Lead Pilot, Mobile, Al for Industrial Helicopters flying Bell 206 Jetranger, Longranger and 407 aircraft until the Rotorcraft Leasing buy-out. In 2007 Era Helicopters assigned me to a TWIC and AMD (OAS) carded contract carrying USCG inspectors to some of the world's largest deep water oil and gas production facilities in the Aerospatiale AS-350 "Astar" helicopter. In 2010 when the BP Deepwater Horizon Platform exploded during the night I delivered the Coast Guard inspectors to the "site" at sunrise while it was still on fire before it sank. Accident free.

1988-90 – Captain (IFR) REACH, Redwood Empire Air Care Helicopters, Santa Rosa County, CA. Medical evacuations and transport under all weather, night instrument conditions, operating single-piloted, multi-engine instrument helicopters between accident scenes and San Francisco Bay area hospitals. Accident free.

1986-88 – Director of Marketing, Captain, Helicopters Unlimited, Oakland, CA. Implemented the first multi-engine executive charter helicopter operation in the Bay area, attracting regular clients including Bill Cosby, the CEO of AT&T, Bechtell Corp. and the Governor of California. Flight activity included a Fed Ex cargo contract as well as charter. Accident free.

1981-86 – Director of Flight Safety, SFO Helicopter Airline, Oakland – San Francisco. Established and directed the safety and security programs for one of the U.S. largest scheduled helicopter airline, operating a total turbine helicopter fleet between major air carriers at Oakland, San Jose and San Francisco international airports. Successful safety program management highlighted in excess of 35,900 revenue flights without a single accident while flying the line and charter flights daily.

1982 – Chosen by H. Ross Perot as Air Safety Consultant and Team Safety Manager for the successful helicopter global circumnavigation by the "Spirit of Texas". The record-setting helicopter with team photos that include me are on display at the Smithsonian Air and Space Museum, Washington, D.C. Personally designed the shipboard landing pad and fuel and firefighting systems and then directed the shipboard landing and refueling of Spirit of Texas off the northeast Siberian coast between the Alaskan Aleutian Islands and Japan.

1970-81 – Rescue Pilot-in-Command, and Flight Safety Officer, U.S. Coast Guard, Department of Transportation, operational assignments over 11 continuous years at rescue stations and shipboard deployments in Atlantic, Pacific, Gulf of Mexico, Caribbean Sea, Indian Ocean and Antarctica.

1979-81 – Flight Safety Officer, USCG Air Station, Miami, FL. Managed flying safety program for the Coast Guard's largest and most active rescue air units during the Cuban Exodus. In over 1000 missions, and

saving thousands of refugees on the high seas, the flight operations were accident free. Standardization and Evaluation (Stan-Eval) check airman and accident board president. Conducted helicopter accident investigations nation-wide, on assignment from USCG Headquarters, Washington, D.C.

1976-78 – Flight Safety Officer, USCG Air Station, San Francisco International Airport. Department Head and Safety Program Manager for largest west coast air unit, multi mission base with Sikorsky helicopters, Grumman and Lockheed aircraft. Check Airman, both operational and instrument (Stan-Eval). Aircraft accident investigation assignments by CG Headquarters.

1974-75 – Icebreaker & Helicopter Detachment Safety Officer, two consecutive Antarctic voyages, Operation Deep Freeze. Helicopter Safety Officer and Pilot-in-Command under south polar meteorological environment, managing specialized safety programs under extreme flying conditions and shipboard landings in relatively unchartered remote areas prior to the advent of satellite based GPS navigation and communication systems. Commendations from Commanding General, Argentine Navy and U.S. Naval Support Force Antarctica.

Education

U.S. Coast Guard Academy, New London, CT
1968 Bachelor of Science, Engineering

University of Southern California, Los Angeles, CA
1973 – Graduate of Flight Safety Officer's Course
1979 – Aircraft Accident Investigator's Course
Post Graduate courses, 28 credit hours toward MS in System Safety
2002 – Role of the Technical Witness in Litigation

Arizona State University, Tempe, AZ
1976 – Crash Survival Investigator's Course

University of California, Berkeley, CA
1986 – Airport Management Course

Professional Training
1970 – U.S. Navy Flight Training, Pensacola, FL., Designated Naval Aviator
1980 – USCG Senior Officer Leadership & Management Course, Yorktown, VA
1980 – USCG/USAF National Search and Rescue School, Governors Island, NY
1981 – USN Helicopter Crash Simulation & Underwater Egress Training, Pensacola, FL
1981 – Bell Helicopter factory training, Fort Worth, TX, BH206L Long Ranger
1986 & 87 – Augusta 109, factory training, Philadelphia, PA
1989 – MBB105 factory training (ground), Hayward, CA
1990 – Sikorsky S-76 flight safety instrument simulator, W.P.B., FL
1998 – Bell 407 helicopter factory training, Scott, LA
2001 – Eurocopters AS-350 initial qualification training, Houston, TX
2006 – Mountain flying ground school, Dallas, TX
2007 – Eurocopters AS350 requal, Lake Charles, LA
2007 & 10 - Marine Survival Training, University of Louisiana, LaFayette, LA

Flight Experience and Certificates

Over 9,000 flight hours of turbine helicopters primarily "over water" that include Sikorsky, Bell, Augusta and Eurocopters
1015+ hours of helicopter night, (actual) IFR, pilot in command hours logged
FAA Airline Transport Pilot, Rotorcraft, commercial airplane SEL, instrument ratings
Pilot-in-Command experience 25+ years, Air Carrier Helicopter, FAA Part 135

Noteworthy aircraft accident investigations conducted:

2011 - Hughes 369D high altitude departure crash/fire, fatal to 3
2008 - MD 500 power line strike in Utah, fatal to 1
2006 - Bell 206B Jetranger mountain ops/inflight loss of control, Jackson, WY
2005 - Bell 206L-3 mechanical failure/water crash, Gulf of Mexico
2004 - Bell 407 engine failure, water landing, Gulf of Mexico, fatal to 2
2004 - Robinson R44 inflight break-up, Gorst, WA, fatal to 2
2004 - Bell 407 hard landing, Rio de Janeiro, Brazil
2003 - Bell 212 main rotor blade delamination, Snelling, CA, fatal to 1
2002 - Bell 206L-4 tail rotor drive shaft failure, Taluca, MX, fatal to 6
2001 - Bell 206L Longranger crash and salvage, Lewellyn Glacier, Canada, fatal to 4
2000 - Garlick HH-1K tailboom separation in flight, Live Oak, CA, fatal to 1
1999 - Aerospatial 355 night EMS inadvertent IMC, Toledo, Ohio
1999 - Bell 222UT night EMS emergency landing, Rock Rapids, Iowa
1999 - Bell 206 Longranger in flight loss of control, Chicago, Ill, fatal to 4
1999 - Bell 206 Longranger offshore oil platform flight deck rollover, Gulf of Mexico
1998 - Robinson R-22 inflight break-up, Switzerland, fatal to 2
1997 - McDonald Douglas AH64 Apache night loss of tail rotor control, US Army
1996 - Eurocopter A/S 350 tail rotor pitch change link failure, Gulf of Mexico, fatal to 3
1994 - Bell 206 Jetranger engine failure/water crash, Mayaquez, PR
1989 - Bell 206 Jetranger power line wire strike, Martinez, CA, fatal to 3
1980 - Sikorsky HH52A amphibious operations rollover, Brooklyn, NY
1978 - Sikorsky H52 hard landing, Oakland, CA
1977 - Lockheed HC130H, aerial delivery tail strike mishap, off the Vancouver BC coast
1976 - Lockheed HC130B, landing gear separation of takeoff from San Francisco
1976 - Sikorsky HH52A power line strike, St. Louis, MO, fatal to 4

Investigated in excess of 100 other accidents, incidents and mishaps

Military and Civilian Rescue Awards

Credited with saving more than 200 lives in helicopter hoist rescues.
Awarded 30 "Sikorsky Helicopter Life Saving Awards", some signed by Igor Sikorsky himself

U.S. Coast Guard, 1964-1981, commissioned 1968, promoted to Lieutenant Commander
Continuous duty as a rescue pilot for entire career, no staff assignments

1033 Tallokas Road – Crestview, FL 32536
office 850-682-3954 850-689-0759 FAX
cell 850-826-2524

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Champaign Wind LLC, for a Certificate to Construct a Wind-Powered Electric Generating Facility in Champaign County, Ohio	)))))	**Case No. 12-0160-EL-BGN**

AMENDED DIRECT TESTIMONY OF DAVID M. HESSLER

Q.1. Please state your name and business address?

A.1. My name is David Hessler. I am a principal consultant and vice president of Hessler Associates, Inc., an acoustical engineering firm located at 3862 Clifton Manor Place, Haymarket, Virginia.

Q.2. What is your educational background?

A.2. I have a Bachelor of Arts Degree from the University of Hartford in Hartford, CT where I graduated in 1982, and a Bachelor of Science degree in Mechanical Engineering from the University of Maryland, College Park where I graduated *summa cum laude* in 1997.

Q.3. What is your professional background?

A.3. I have been employed as an acoustical engineer with Hessler Associates, Inc. for over 21 years. I am a licensed Professional Engineer and a member of the Institute of Noise Control Engineering (INCE). The firm is a member of the National Council of Acoustical Consultants (NCAC). Since its founding in 1976, the company has specialized almost exclusively in the prediction and measurement of noise from power generation facilities. Consequently, I have been the principal acoustical designer of hundreds of power stations all over the world; most commonly combustion turbine combined cycle plants along with coal, gas fired and diesel facilities. Typical projects

involve field surveys to establish baseline background sound level conditions - usually for the purpose of determining appropriate project design goals, computer modeling and the development acoustical design specifications. Follow-up surveys of completed projects are commonly carried out so the validity of the modeling and design can be verified. Over roughly the last 7 years, wind energy projects have emerged as one of the more dominant types of new power generation and throughout that period about 75% of my work load has involved performing noise assessments and operational surveys for wind farms. At this point I have worked on approximately 70 (usually large) wind projects all over North America. Based largely on my field experience measuring numerous operational projects, I have contributed to the professional literature with a number of articles and technical papers on the subject and have authored the chapter on measuring and analyzing wind turbine sound emissions in the recently published book *Wind Turbine Noise*[i]. I have attended all of the bi-annual Wind Turbine Noise conferences since the series began as a small gathering in Berlin in 2005. These important conferences bring together all of the top experts in the field, who are mostly from Europe, and essentially summarize the current state of knowledge on the subject.

Q.4. On whose behalf are you offering testimony?

A.4. I am testifying on behalf of the Applicant, Champaign Wind, LLC.

Q.5. What is the purpose of your testimony?

A.5. The purpose of my testimony is to summarize the results of the noise impact assessment I carried out with respect to the Champaign Wind (or Buckeye II) Wind Project.

Q.6. Please describe the history of your involvement with the Buckeye II Wind project and the studies that you and your firm undertook on behalf of the Applicant.

A.6. A field survey was carried out in November of 2011 to establish what the existing environmental sound levels were within the Buckeye II project area. The potential impact of any project is generally related to how much, if at all, its sound level exceeds the background level.

A pre-construction background survey for a wind project is unique in the sense that the noise source that the study is concerned with fundamentally requires moderate to strong winds in order to operate and begin to produce any sound emissions. When the winds are light at hub height the project is completely inert and silent. Consequently, the background sound levels that are of relevance to wind turbine projects are not the absolute quietest levels that occur during calm conditions but rather the sound levels that exist under the wind conditions associated with normal project operation. An apples-to-apples comparison is required. At the present time, no ANSI or ISO standard exists for this specific type of field survey for the simple reason that these test protocols were written with conventional, non-wind dependent noise sources, such as fossil fueled power stations or industrial facilities, in mind. Existing standards correctly limit measurements to low wind conditions because the operation of a "conventional" source is utterly unrelated to the wind conditions and, in fact, such sources are most apt to be prominent during calm and quiet conditions. In a wind turbine analysis, however, it is essential, almost by definition, to measure during moderately windy conditions. Therefore, standards, such as ANSI S12.9-1992/Part 2[ii], were followed to extent that they were relevant in the field survey but additional techniques and analyses, such as a correlation

between the measured sound levels and the concurrent high elevation wind speed, were required to obtain a sensible and meaningful result.

In brief, the survey measured a variety of statistical sound levels on a continuous basis day and night for 18 days at 10 positions distributed over the project area. These positions were selected to:

- be located at or near residences with the maximum proximity to proposed Buckeye II turbine locations
- cover the project area in a more or less uniform manner
- be located in open areas remote from any significant sources of man-made noise
- be located away from any reflective vertical surfaces

Over 2500 measurements were made in 10 minute increments at each position, resulting in over 25,000 measurements collected in a wide variety of wind and weather conditions. These sound measurements were then compared to the concurrent wind speed over each 10 minute period as measured by the highest anemometers, ranging from 58 m to 80 m (190 ft. to 260 ft.), on all 6 met towers then operational across the site area. Thus, the high elevation wind speeds that the turbines would see were directly related to the sound levels measured at the same time near ground level (where the local wind speed is often negligible) at typical residences and farms throughout the project area.

Q.7. Please explain why you used an evaluation threshold of 44 dBA as a relative design goal for operational noise levels at non-participating residences?

A.7. The wind speed and average (Leq) sound levels measured exclusively at night (10 p.m. to 7 a.m.) were compared to find the conditions when the project would theoretically be most audible relative to the background level. Substantially higher daytime sound levels were neglected. This critical wind analysis indicated that the nighttime

background level would be lowest relative to the project sound level at a wind speed of 6 m/s (at a standard reference elevation of 10 m). The mean nighttime Leq sound level measured under those wind conditions was 39 dBA. Moreover, a simple average of all the nighttime Leq sound levels measured throughout the survey at all positions *irrespective* of wind speed was also 39 dBA. Consequently, a 5 dBA relative increase due to the project would put the nominal noise impact threshold at 44 dBA. This design approach has been used since it is my understanding that the OPSB has approved a metric of Leq + 5 dBA for other projects in Ohio.

Q.8. Setting aside for the moment a relative increase of Leq + 5 dBA as a design basis, do you think a project design goal of 44 dBA is appropriate for a wind project in a rural area?

A.8. Yes. My experience conducting the field surveys of similar newly completed wind projects in very comparable settings indicates that the likelihood of complaints is quite small whenever the average project sound level is below 45 dBA, regardless of the actual background sound level, and we recommend a mean, long-term project sound level of 45 dBA as a regulatory limit for any new wind project in a rural environment. The relative limit of 44 dBA derived from the site-specific field survey performed for this project is consistent with, and even a slight improvement on, this recommendation.

Q.9. Has this recommendation been publicized in any way that is unrelated to a specific project?

A.9. Yes. Our suggestion of 45 dBA as a regulatory limit that fairly balances the interests of all parties first appeared in a peer-reviewed article[iii] in the January 2011 issue of the *Noise Control Engineering Journal* and was subsequently included in a set of best practices guidelines[iv] for siting new wind projects prepared under a federal grant for the

National Association of Regulatory Utility Commissioners (NARUC) on behalf of the Minnesota Public Utilities Commission.

Q.10. Please explain why you used an evaluation threshold of 50 dBA as a design goal for operational noise levels at non-participating property boundaries?

A.10. At the boundaries of the project, or, more specifically, at the property lines of adjoining non-participating land parcels, a relatively low project sound level is generally unnecessary because no one is usually permanently present at the fringe of a land parcel, particularly at night, to be potentially affected by noise. Consequently, an evaluation criterion of 50 dBA has been used as a reasonable impact threshold at property lines. In the rare instances where property line noise limits have been imposed on wind turbine developments (based on our experience with dozens of other wind projects), nothing lower than an absolute noise limit of 50 dBA has typically been used.

Q.11. What were the results of your modeling as to non-participating residences and non-participating boundaries considering only the Buckeye II project?

A.11. Initial modeling, with all of the units operating normally, showed that there were a number of non-participating residences with predicted levels slightly above the 44 dBA design goal. However, subsequent iterative modeling indicates that if certain units (16 out of the 56 total) are set up to operate in low noise mode (5 dBA lower than normal) at night, then a mean sound level of 44 dBA can be met at all non-participating residences. My understanding is that Champaign Wind intends to operate the 16 units identified as requiring low noise operating mode in the modeling study in low noise mode. Consequently, I expect that the mean project sound level will meet the design goal with respect to non-participating residences.

With this same restriction (16 of 56 units operating in low noise mode) it is anticipated that the assumed 50 dBA property line design goal will also be met in the vast

majority of cases, although in rare instances the predicted level in odd corners of various land tracts may exceed the goal by 1 or 2 dBA. Such a small overage has no tangible meaning in terms of audibility (i.e. 52 dBA sounds essentially the same as 50 dBA) and would not affect the probability of an adverse reaction due to noise.

Q.12. What were the results of your modeling as to non-participating residences and non-participating boundaries considering the cumulative impacts of both the Buckeye II and Buckeye Wind projects?

A.12. In general, the combined sound emissions from both projects would have an ostensible effect on the community that is similar to that of the Buckeye II project operating by itself in the sense that all non-participating residences remain outside of the 44 dBA sound contour (the nominal design limit) and the assumed design goal of 50 dBA is met at nearly all adjoining property lines. As with the case of the Buckeye II project operating alone, 16 of the turbines would need to be operated in low noise mode to achieve this result. In this or any scenario, low noise operation is not required from any of the Buckeye I turbines to meet the 44 dBA design goal.

Q.13. Do you believe that the Buckeye II project as designed will result in acceptable operational noise levels at non-participating properties?

A.13. Yes, for the reasons alluded to above where I describe our recommendation that a mean sound level of 45 dBA is a fair and reasonable regulatory noise limit for wind projects in rural areas. Our study of operating projects[iii] suggests that the rate of complaints for a project sound level between 40 and 45 dBA is about 2% of the total population (i.e. those within 2000 ft. of a turbine), meaning, inversely, that the apparent acceptance rate is on the order of 98%.

Q.14. Does this opinion remain the same if both the Buckeye II and Buckeye Wind projects are constructed?

A.14. Yes.

Q.15. Have you reviewed the Staff Report of Investigation issued in this proceeding?

A.15. Yes.

Q.16. On Page 59 of the Report, Staff recommends a condition (Condition 49) that in effect limits the project sound level to 44 dBA at night at non-participating receptors. Do you believe that the Applicant can comply with this condition?

A.16. As our modeling indicates, the mean project sound level is predicted to be less than 44 dBA (39 dBA plus 5 dBA) at all non-participating residences at the critical wind speed. Consequently, when measured over a period of days or weeks, as wind project sound levels typically are during compliance tests, I would expect the mean level to agree with the predictions. However, it is critical to understand that it is impractical for any wind project to maintain a sound level below a given threshold all of the time under all conditions. The actual sound level will vary above and below the mean predicted level due to naturally unsteady and uncontrollable wind and weather conditions with the result that there may be intermittent, short-term excursions, usually lasting no more than 10 to 20 minutes, that exceed 44 dBA by some amount. It is also important to realize that the models indicates that the mean project sound levels are predicted to be less than 44 dBA (39 dBA plus 5 dBA) at all non-participating residences at the critical wind speed. This means that at higher wind speeds, the project sound levels may be higher than 44 dBA, but they would be less than 5 dBA above the Leq for that higher wind speed. In fact, at 9 m/s, the mean nighttime Leq, without project generated sound, is 45 dBA. Consequently, while fully meeting the intent and spirit of Condition 49, the project would most likely be unable to meet a strict reading of the condition as it is currently, and probably unintentionally, written. As a concession to the simple realities of the situation, I would suggest amending the condition to read: "The facility shall be operated so that the facility noise contribution, other than during short-term excursions, does not result in

noise levels at the exterior of any currently existing non-participating residence that exceed the greater of: (a) the project area ambient nighttime L*eq* (39 dBA) plus five dBA; or, (b) the validly measured ambient L*eq* plus five dBA at the exterior of any currently non-participating residence. After commencement of commercial operation, the Applicant shall conduct further review of the impact and possible mitigation of all project-related noise complaints through its complaint resolution process." Note that this suggested revision more clearly defines the point of application as at 'non-participating residences' rather than at 'sensitive receptors', which is somewhat vague.

Q.17. Does this conclude your direct testimony?

A.17. Yes.

References

[i] Bowdler, R. & Leventhall, G. Editors, "Wind Turbine Noise", Multi-Science Press, Essex, UK, 2011, Chapter 7 *Measuring and Analyzing Wind Turbine Noise.*

[ii] *American Nation Standard Quantities and Procedures for Description and Measurement of Environmental Sound – Part 2: Measurement of Long-term, Wide-Area Sound*, ANSI S12.9-1992/Part 2 (R2008), Acoustical Society of America, New York, NY, 2008.

[iii] Hessler, D. M., Hessler, G. F., "Recommended noise level design goals and limits at residential receptors for wind turbine developments in the United States", *Noise Control Engineering Journal*, J. 59 (1), Jan-Feb 2011.

[iv] National Association of Regulatory Utility Commissioners (NARUC), *Best Practices Guidelines for Assessing Sound Emissions from Proposed Wind Farms & Measuring the Performance of Completed Projects*, Oct. 2011 (http://www.naruc.org/Grants/default.cfm?page=10).

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served upon the following parties of record via electronic mail on this 31st day of October, 2012.

Jack A. VanKley
VanKley & Walker, LLC
132 Northwood Blvd., Suite C-1
Columbus, Ohio 43235
jvankley@vankleywalker.com

Christopher A. Walker
VanKley & Walker, LLC
137 North Main Street, Suite 316
Dayton, Ohio 45402
cwalker@vankleywalker.com

Chad Endsley
Chief Legal Counsel
Ohio Farm Bureau Federation
280 N. High St., P.O. Box 182383
Columbus, Ohio 43218-2383
cendsley@ofbf.org

Jane A. Napier
Assistant Prosecuting Attorney
Champaign County
200 N. Main Street
Urbana, OH 43078
jnapier@champaignprosecutor.com

Stephen Reilly
Devin Parram
Assistant Attorneys General
180 East Broad Street, 6th Floor
Columbus, Ohio 43215
stephen.reilly@puc.state.oh.us
devin.parram@puc.state.oh.us

Kurt P. Helfrich
Philip B. Sineneng
Ann B. Zallocco
Thompson Hine LLP
41 South High Street, Suite 1700
Columbus, OH 43215-6101
Tel: (614) 469-3200
Fax: (614) 469-3361
Kurt.Helfrich@ThompsonHine.com
Philip.Sineneng@ThompsonHine.com
Ann.Zallocco@ThompsonHine.com
Attorneys for Pioneer Rural Electric Cooperative, Inc.

G.S. Weithman, Director of Law
City of Urbana
205 S. Main Street
Urbana, OH 43078
diroflaw@ctcn.net

/s/ Miranda Leppla
Miranda R. Leppla

Company Ex. 12

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Champaign Wind LLC, for a Certificate to Install Electricity Generating Wind Turbines in Champaign County	)))))	**Case No. 12-0160-EL-BGN**

DIRECT TESTIMONY OF CHRISTOPHER SHEARS

Q.1. Please state your name, title and business address.

A.1. My name is Christopher Shears. I am an officer of Champaign Wind LLC and Chief Development Officer and Senior Vice President of EverPower Wind Holdings Inc. which is the parent corporation of Champaign Wind LLC. My business address is 1251 Waterfront Place, 3rd Floor, Pittsburgh, PA, 15222.

Q.2. What are your duties as Chief Development Officer?

A.2. I am responsible for identifying and progressing EverPower wind farm projects across the USA. This includes overseeing all the key inputs into the development process which can broadly be categorized as managing land positions, assessing wind resource, electricity transmission, environmental studies and permitting, layout design, turbine selection and power sale options. Our core areas of activity are in Pennsylvania, New York and Ohio where we operate 189MW of wind farms and have 173MW under construction. We also have projects in Washington and Oregon. I currently oversee about 1000 MW of projects in the advanced stages of development and a further 1500 MW in earlier stages. To achieve all this we have a growing team of experienced professionals within EverPower covering all the key requirements for successful wind farm

development, construction and operation. We also use many experienced consultants to support our activities.

Q.3. What is your educational and professional background?

A.3. I graduated from Wye College, University of London, UK in 1994 with a Bachelor of Science honors degree in Countryside Management. After graduation I immediately got involved with the nascent wind energy industry developing wind farm projects in the UK for Renewable Energy Systems Ltd (RES). Before leaving RES in 2007 I headed up mainland UK wind farm development. I estimate I have been involved with the development of over 65 wind farm schemes, including periods developing projects in Poland and Australia. Many of these projects have been constructed and have been generating clean, sustainable energy for many years while others are still under development.

From May 2005 to June 2007 I was Chairman of the British Wind Energy Association which is the trade body for onshore and offshore wind energy as well as wave and tidal technologies in the UK. During this period I oversaw all areas of the industries representation to government and key stakeholders including a major UK energy review which resulted in the strengthening of government policy to support renewable energy sources as a key pillar of energy security and climate change policy. During, and before this period I provided expert testimony to UK government House of Lords and House of Commons Committees.

Q.4. On whose behalf are you offering testimony?

A.4. I am testifying on behalf of the Applicant, Champaign Wind LLC. Champaign Wind LLC is a wholly owned subsidiary of Everpower Wind Holdings, Inc.

Q.5. What is the purpose of your testimony?

A.5. I will address safety of the wind industry generally.

Q.6. For the numerous wind farm projects that you have been personally involved with since 1994 which are now operating, has the operation of any of those projects caused injury to any members of the general public as a result of ice throw, or blade failure?

A.6. No.

Q.7. From May 2005 to June 2007, when you were Chairman of the British Wind Energy Association, did you become aware of any incident where a member of the general public was injured as a result of ice throw or blade failure?

A.7. No.

Q.8. Given your 18 years of experience in the wind industry, do you believe that wind turbine technology is a safe technology?

A.8. Yes, in any form of human endeavor to find new sources of energy, there are always concerns and issues raised. But the operation of wind farms has far fewer safety related incidents even on a proportional basis then other means of obtaining energy such as the mining of coal or the drilling for oil. Safety is the wind industry's first priority and Champaign Wind has designed and will operate this project to ensure a safe operating environment for its staff and the general public.

Q.9. Does this conclude your testimony?

A.9. Yes it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served upon the following parties of record via e-mail on this 29th day of October, 2012.

Jack A. Van Kley
Van Kley & Walker, LLC
132 Northwood Blvd., Suite C-1
Columbus, Ohio 43235
jvankley@vankleywalker.com

Christopher A. Walker
Van Kley & Walker, LLC
137 North Main Street, Suite 316
Dayton, Ohio 45402
cwalker@vankleywalker.com

Chad A. Endsley
Chief Legal Counsel
Ohio Farm Bureau Federation
280 North High Street, P.O. Box 182383
Columbus, OH 43218-2383
cendsley@ofbf.org

Jane A. Napier
Assistant Prosecuting Attorney
Champaign County Prosecuting Attorney's Office
200 N. Main Street
Urbana, Ohio 43078
jnapier@champaignprosecutor.com

Stephen Reilly
Devin Parram
Assistant Attorneys General
Public Utilities Section
180 East Broad Street, 6th Floor
Columbus, Ohio 43215-3793
Stephen.Reilly@puc.state.oh.us
Devin.Parram@puc.state.oh.us

Kurt P. Helfrich
Philip B. Sineneng
Ann B. Zallocco
Thompson Hine LLP
41 South High Street, Suite 1700
Columbus, OH 43215-6101
Tel: (614) 469-3200
Fax: (614) 469-3361
Kurt.Helfrich@ThompsonHine.com
Philip.Sineneng@ThompsonHine.com
Ann.Zallocco@ThompsonHine.com
Attorneys for Pioneer Rural Electric Cooperative, Inc.

G.S. Weithman
City of Urbana Director of Law
205 S. Main Street
Urbana, Ohio
diroflaw@ctcn.net

s/ Michael J. Settineri
Michael J. Settineri (0073369)

Summary: Testimony Direct Testimony of Christopher Shears electronically filed by Mr. Michael J. Settineri on behalf of Champaign Wind LLC