STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of BNE Energy Inc. for a Declaratory Ruling for the Location, Construction and Operation of a 3.2 MW Wind Renewable Generating Project on New Haven Road in Prospect, Connecticut ("Wind Prospect")

Petition 980

March 8, 2011

SUPPLEMENTAL PRE-FILED TESTIMONY OF DAVID TIDHAR

Q1. Are birds color blind?

A1. Yes. Birds have highly advanced vision and some birds see within the UV spectrum. In terms of how vision of birds relates to wind turbine avoidance or collision risk, two hypothetical mitigation methods based on avian vision have been proposed to reduce bird collisions with wind turbines. Motion smear, in which the spinning action of the turbines may render the blades difficult for birds to see and avoid, may be reduced by painting blades with a color pattern that makes them more visible (Hodos et al. 2001; Hodos 2003). It has been hypothesized that towers and blades coated with ultraviolet (UV) paint may be more visible, making them easier to avoid. However, Young et al. (2003) compared fatality rates at turbines with UV coatings to turbines coated with standard paint and found no difference. Few data are available on the effectiveness of these and other potential methods for making turbines more visible to birds.

Q2. Are the eastern red bat and hoary bat listed or species of concern in CT?

A2. The Connecticut Department of Environmental Protection lists the Indiana bat as endangered, and the silver-haired bat, hoary bat, red bat and eastern small-footed myotis as species of special concern. The silver-haired, red bat and hoary bat occur are wide ranging long-distance migratory bats. These three species are thought to be among the most populous bat species in North America.

Q3. What is the impact (if any) of the met tower and its guy wired on bat feeding behavior?

A3. There is no evidence that met towers or guy wires affect bat foraging behavior. Deploying acoustic detectors at met tower locations is standard practice for pre-construction wind energy projects, for examples see Arnett et al 2006, Young et al 2007.

Q4. Would bats avoid the guy wires?

A4. As far as avoidance while foraging/commuting, we know of no studies or reasons to suggest they would. In fact, being novel elements in their environment, they may actually investigate the towers. This is supported by Horn et al. (2008) and Cryan (2008)

who suggested that bats may be attracted to tall structures, particularly during migration period.

As far as fatalities are concerned, while bird fatalities are sometimes noted at met towers, we are unaware of any bat fatalities recorded beneath met towers, though not all fatality studies include searches at met towers. Although bat fatalities at very tall towers have been noted in some areas (Crawford and Baker 1981), other studies have noted no bat fatalities. For example, Derby (2006) studied bird and bat fatalities at un-guyed, unlit cellular telecommunications towers, and noted few bird and no bat fatalities. Examples of fatality studies that have searched both guyed and un-guyed towers include Lempster, NH (Tidhar et al 2010), Mountaineer, WV (Kerns and Kerlinger 2004), Foote Creek Rim, WY (Young et al. 2003) and Mount Storm, WV (Young et al. 2009 and 2010). No bat casualties were noted at the met towers in those studies. In addition, the reductions in bat fatalities at curtailed vs. non-curtailed turbines in North America (Baerwald et al. 2009, Arnett et al. 2010) suggest that it is the rotating motion of the turbine blades that leads to bat fatalities.

Q5. At what heights to the silver haired bat and eastern red bat typically fly?

A5. Flight heights are dependent on the particular behavior of the bats. Given that both silver-haired and red bats have been reported as fatalities at wind energy facilities, it is clear that at times they fly at heights equal to the minimum and maximum distance above ground of the rotor blades (approximately 40-120 m for most modern wind turbines), and because both species undertake relatively long-distance migrations, migratory flight is likely to occur a heights with a minimum of obstruction (eg, above tree-top height). However, both species are readily captured in mist nets during surveys, and nets rarely exceed a height of 10 meters above ground. Barbour and Davis (1969) reported that red bats forage higher [no indication of how high] early in the evening, later feeding from a few feet above ground to tree-top level. Kunz (1982) reported that silver-haired bats forage in or near forested areas and along ponds and streams. This suggests that they do not typically forage at great heights.

Q6. Can the eastern red bat make calls above 43kHz**?**

A6. Red bats do, on occasion, produce some calls in sequence that exceed 43 kHz, but it is not typical, and even on occasions when some calls in a sequence approach 43 kHz, the sequence often will have started below 40 kHz. We do not extend MF to 43 kHz because while some red bat calls in a sequence may exceed 40 kHz, at least some generally fall below 40 kHz. In addition, extending MF to 43 kHz would defeat the purpose of having separate MF and HF categories because the species captured by the HF category (most of the Myotids as well as *Perimyotis*) typically don't have minimum call frequencies that exceed 43 kHz.

Q7. What is the range of the songmeter equipment?

A7. Given the physics of sound transmission in air, the range of song meter is likely to be similar to that of an Anabat detector, and will be subject to all the same sources of variance, including air temperature, relative humidity, and proximity and orientation of the bat relative to the detector. To state a definitive detection distance is to misrepresent

the nature of sound wave propagation produced by a variable source (moving bats) through a variable medium (air).

REFERENCES

Arnett,E.B., J.P. Hayes, and M.M.P. Huso. 2005. Patterns of pre-construction bat activity at a proposed wind facility in south-central Pennsylvania, 2005 BWEC Annual Report. www.batsandwind.org.

BARBOUR, R. W., AND W. H. DAVIS. 1969. Bats of America. University Press of Kentucky, Lexington.

Crawford, R.L. and W.W. Baker. 1981. Bats killed at a north Florida television tower: a 25-year record. J. Mammalogy 62(3) 651-652.

Cryan, P.M. 2008. Mating Behavior as a Possible Cause of Bat Fatalities at Wind Turbines. JWM, 72(3): 845-849.

Derby, C. 2006. Bird and Bat Fatality Monitoring of Six Un-guyed, Unlit Cellular Telecommunication Towers within the Coconino and Prescott National Forests, Arizona: 2006 Season Results. *Prepared for*:American Tower Corporation, Mesa, Arizona. *Prepared by:*WEST, Inc.

Horn, J.W., E.B. Arnett and T.H. Kunz. 2008. Behavioral Responses of Bats to Operating Wind Turbines. JWM 72(1):123-132.

Kerns, J. and P. Kerlinger. 2004. A Study of Bird and Bat Collisions at the Mountaineer Wind Energy Facility, Tucker County, West Virginia: Annual Report for 2003. Prepared for FPL Energy and the Mountaineer Wind Energy Center Technical Review Committee. February 14, 2004. Technical report prepared by Curry and Kerlinger, LLC., for FPL Energy and Mountaineer Wind Energy Center Technical Review Committee. Curry and Kerlinger, LLC. 39 pp. http://www.wvhighlands.org/Birds/MountaineerFinalAvianRpt-%203-15-04PKJK.pdf

Kunz, T.H. 1982. Lasionycteris noctivagans. Species Account 172, American Society of Mammalogists.

Young, D.P. Jr., W.P. Erickson, R.E. Good, M.D. Strickland, and G.D. Johnson. 2003. Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Windpower Project, Carbon County, Wyoming, Final Report, November 1998 - June 2002. Prepared for Pacificorp, Inc. Portland, Oregon, SeaWest Windpower Inc. San Diego, California, and Bureau of Land Management, Rawlins District Office, Rawlins, Wyoming.

Young, D.P., W.P. Erickson, K. Bay S. Nomani, and W. Tidhar. 2009. Mount Storm Wind Energy Facility, Phase 1 Post-Construction Avian and Bat Monitoring July – October 2008. *Prepared for:* NedPower Mount Storm, LLC. *Prepared by:* WEST, Inc.

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Date

David Tidhar

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