STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of BNE Energy Inc. for a Declaratory Ruling for the Location, Construction and Operation of a 4.8 MW Wind Renewable Generating Project on Flagg Hill Road in Colebrook, Connecticut ("Wind Colebrook South")	**Petition No. 983**
	March 15, 2011

PRE-FILED TESTIMONY OF ERIC DAVISON

Q1. Please state your name, employer and your employer's address.

A1. My name is Eric Davison. I am employed by Environmental Planning Services ("EPS"), 89 Belknap Rd., West Hartford, CT.

Q2. What is your position with Environmental Planning Services?

A2. I am a wildlife biologist and wetland scientist.

Q3. Have you testified before the Siting Council before?

A3. Yes, I submitted pre-filed testimony regarding the BNE Energy, Inc. ("BNE") petition to site a wind project in Prospect, Connecticut in February 2011 and concurrent herewith have submitted pre-filed testimony regarding the BNE petition to site a wind project on Winsted-Norfolk Road in Colebrook, Connecticut. ("Wind Colebrook North"). I have also spoken before numerous inland wetlands, conservation and planning and zoning commissions throughout Connecticut on birds and other biological issues.

Q4. What is your involvement with this proceeding?

A4. EPS was retained by FairwindCT, Inc., Susan Wagner and Michael and Stella Somers to review the potential impacts of the proposed BNE Wind Colebrook South turbine

project on wetlands and watercourses, water quality, and bio-diversity. My particular area of responsibility is analysis of potential impact on birds.

Q5. What is your field of expertise?

A5. I am a wildlife biologist and wetland scientist. I have 15 years of experience conducting bird surveys in Virginia, Connecticut, Rhode Island and New York. I have a B.S. in Wildlife Conservation from the University of Massachusetts. My recent projects (2009-2010) include breeding bird surveys conducted in eastern New York for the Cary Institute of Ecosystems Studies, Millbrook, NY and for the National Audubon Society in southeastern Connecticut and Rhode Island. A copy of my current CV is attached to this testimony.

Q6. What did your initial review of this petition reveal?

A6. After reviewing the Petition and the supporting technical report by Western EcoSystems Technology, Inc. ("WEST") in Volume 3, Exhibit L (the "WEST Report"), it is my opinion that the survey design was inadequate to address the range of documented adverse impacts on birds and the methodology used to implement the design was flawed.

Q7. Please elaborate on that conclusion.

A7. Wind turbines can affect birds in three ways: (1) habitat loss, (2) disturbance and (3) mortality via collision. The WEST Report does not adequately address any of these impact types. The WEST Report is flawed in its design and in the methods used to collect the data. As a result, the study cannot adequately assess the potential impact of wind turbine development at Wind Colebrook North on birds.

The field methodologies were flawed as a result of the improper seasonal timing of the survey, improperly located data points, insufficient number of data points, and the lack of early spring, fall, or nocturnal surveys.

The primary study design goals, defined in the WEST Report as assessment of the abundance and diversity of the site's breeding birds, were not reached due to the flawed field methodologies employed. Moreover, the overriding study goal, inventory of breeding birds, does not address impacts to migratory birds, which has been identified in several studies as the greatest potential impact of wind turbines on birds (Erickson *et al.* 2001; Johnson *et. al. 2002*). As the National Wind Coordinating Collaborative noted: *"There is a need to conduct studies to identify migratory pathways, congregation areas such as staging and stopover habitats, and other areas of high concentration to aid in risk assessment and avoidance of high risk sites when developing windpower "(NWCC, 2010).* Audubon New York has recognized the need for comprehensive pre-development site assessment, stating: *"Assessing avian use of a site prior to wind turbine development is a crucial first step in preventing wind farm placement in high-risk areas. Pre-development surveys should include both field and radar surveys during, the breeding, migrating, and wintering seasons, should allow for adequate observation sample sizes (i.e., sampling days), and ideally would occur for more than one year* (source: http://ny.audubon.org/IssuesAction ConservationIssues WindPower Position.html).

Q8. Is there guidance / CT DEP standards / existing wind turbine siting guidelines available for review of wildlife impacts in anticipation of a project like this one?

A8. The state of Connecticut currently has no guidelines for pre or post-construction environmental assessment. The New Jersey Department of Environmental Protection and New York Department of Environmental Conservation have both issued guidance documents for review of wildlife impacts resulting from wind turbine developments. Both recommend that pre-construction bird surveys be conducted for a minimum of one year and should include inventory of spring and fall migrants, migratory raptors and breeding birds. These guidelines recommend that surveys be conducted from approximately March through November (spring through fall).

The WEST Report (Exhibit L, pg. 13) states: *"two-thirds of fatalities documented during post-construction mortality monitoring studies were assumed to be migrants* (NRC 2007)". Yet there was no data collected (e.g., mist-netting and radar surveys) on spring and fall migratory bird use, and this study in no way addresses the potential impacts of this turbine development on migratory birds. Furthermore, the report discussion makes no mention of the lack of migratory bird data as a limitation of this study.

Q9. Does BNE's petition comply with the commonly accepted mechanisms for evaluating the potential impact of a wind development site on bird populations?

A9. No it does not. In the absence of pre-construction survey guidance for Connecticut, due diligence would have dictated that the applicant follow either: survey guidelines available from other states (NY and NJ) OR generally accepted practices of avian survey. It is our contention that neither regional guidance documents nor generally accepted survey practices were followed. The NY guidance document Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects recommends breeding/migratory surveys be conducted once per week in May, June and September and raptor surveys be conducted March 1st - May 31st and again from August 15th - Dec 1st. The recommended survey periods for NJ are very similar to NY. WEST's surveys consisted of only three visits from late June to mid July. In the absence of local or regional guidelines, generally accepted practices would have dictated, at a minimum, that a breeding bird survey be conducted consisting of three visits beginning in late May and including early-mid June. However, WEST did not conduct surveys during late May or early to mid June, missing the primary breeding season. Furthermore, even if this minimum survey work had been conducted, it would be unable to document migratory bird use or nocturnal and highly secretive species which require the use of special survey techniques as discussed herein.

Q10. Please describe how the survey point locations and abundance conducted by WEST, Inc. is inadequate.

A10. The survey point locations and abundance of the WEST Report is inadequate as follows:

- Data points were not adequately located around the southernmost turbine. It appears based on the mapping provided (Exhibit L, Figure 2) that no survey points were located within 100 meters of the southernmost turbine and only one survey point (point C3) is located within 500 meters.
- In the Discussion section of the WEST Report, it states that at least one study (Pearce-Higgins *et.al.* 2009) determined that levels of turbine avoidance suggest breeding bird densities may be reduced within 400 meters of a turbine for non-raptor species and 250 meters for a raptor species (Exhibit L, pgs 13-14). However, the placement of the Breeding Bird Survey ("BBS") points around both the southern and northeastern turbines could not adequately assess bird usage at such a scale, and therefore the results cannot adequately assess the potential impacts of turbine avoidance at this scale.
- The study employed only 12 data collection points. This is a small number of data points for an 80 acre site. Using the 5-minute, 50-m radius protocol used in this study, an observer can typically collect data at 20-30 BBS points in given morning (ca. 5am-9am survey period). The collection of data at additional points would have provided a more robust dataset for statistical analysis. When fewer survey points are employed, it is less likely that a survey will record the presence of uncommon species (e.g., state-listed species), which occur at lower densities.
- No data points were cited to capture birds utilizing the beaver pond/emergent marsh portions of Wetland 1 based on the Exhibit L, Figure 2 which shows no data points

located in the vicinity of this habitat type. This is an uncommon habitat type in Connecticut capable of supporting rare species including the state-listed Northern Saw-whet Owl (*Aegolius acadicus*) American Bittern (*Botaurus lentiginosus*), as described below.

Q11. Please discuss how the timing and methods of the WEST survey were insufficient to capture either breeding or migratory bird use.

A11. This survey was conducted outside of the primary breeding bird survey period in Connecticut. Breeding bird surveys in Connecticut should begin in late-May and end in mid-late June (reference CT DEP Forest Interior Bird Survey Program http://www.ct.gov/dep/cwp/view.asp?A=2723&Q=325722). The period between June 1st and June 15th is generally considered to be the period when singing by territorial males is at its peak for the majority of species. This is a critical time to collect BBS data particularly in forested habitat when visual identification alone is difficult. Breeding birds vary in detectibility over relatively short time periods, and the best period for repeatable counts may be brief. Many warblers, for instance, sing for only a few days and then become much quieter once mated. At the same time, growth of vegetation can rapidly make counting more difficult in early summer (Bibby *et.al.* 2000). This survey effort included no late May or early-mid June surveys. The first survey date was June 29, 2010. Therefore, the peak song period for most species was not captured.

Q12. Please discuss how the breeding bird survey, as designed, is incapable of capturing rare species that could occur at this site.

A12. Point-count surveys are designed to capture early morning bird activity, primarily passerines (e.g., small, perching songbirds). They are not designed to capture species active at night (i.e., nocturnal species) or species that are highly secretive. No nighttime call-back surveys

(i.e., playing taped recordings to elicit responses) were conducted to inventory nocturnal species such as owls and nightjars. Two of these species, the Northern Saw-whet Owl (Aegolius acadicus) and the Whip-poor-will (Caprimulges vociferus) are state-listed species in Connecticut. The Northern Saw-whet Owl is known to occur in mixed and/or coniferous woods near large wetlands and the Whip-poor-will is known to occur in successional forests - habitat types which are present on this site.

No raptor-specific surveys were conducted at this site. Breeding bird surveys have limited application when studying woodland raptors. Raptor surveys require call-back surveys be conducted beginning in mid-March when raptor nesting begins. However, no spring surveys were conducted at this site. The site contains suitable habitat for one state endangered raptor known to occur in the Colebrook area, the Sharp-shinned Hawk (*Accipiter striatus*).

The American Bittern (*Botaurus lentiginosus*) is a state-endangered wetland-dependant bird species known to occur in emergent marsh/pond habitat in Connecticut's northwest highlands. Suitable habitat exists on the site for this species. Callback surveys, similar to those used for raptors, would be required to survey this species.

Q13. Please discuss how the WEST survey results inadequately address potential impacts.

A13. The survey results and discussion provide limited analysis of potential impacts to breeding birds and no analysis of impacts to migratory birds. Additionally, the results do not address impacts on specific suites of species that are likely to be susceptible to impacts of turbine development in forested habitat, such as forest-interior specialists. Additionally, the results do not quantify (i.e., in size or extent) the impacts of direct habitat loss at the turbine locations or impacts resulting from noise disturbance or behavioral avoidance zones that might surround the turbines.

Landscape-scale impacts to birds were not properly addressed. In the WEST Report's Discussion and Impact Assessment section, it states that: "wind energy development has the potential to cause.....indirect loss of habitat through behavioral avoidance and habitat fragmentation" (Exhibit L, pg. 13). The report cites the study by (Pearce-Higgins, et.al. 2009) which documented potential impacts on bird abundance reaching up to 400 meters for non-raptor species and 250 meters for raptor species. However, no discussion of potential impacts at this scale is provided.

The most commonly observed species was "unidentified passerine", with 46 observations during the three field visits. This is an unusually high number of unidentified birds and represents a data gap that significantly affected the statistical analysis. The high number of unidentified birds is likely due to the late timing of the survey (i.e., late June-early July), a period outside of the primary breeding season when there is a decrease in the number of singing territorial male birds.

The Discussion states that: "post-construction mortality studies conducted at 12 wind facilities throughout the nation indicate a national avian mortality rate of 2.3 birds per turbine per year" (Exhibit L, pg 13). It is assumed that this statement is intended to indicate that mortality rates are insignificant. However, rates of mortality resulting from collision will vary both seasonally and geographically. As noted above, these impacts can be far greater in areas of high concentrations of migrants, and this study provides no assessment of migratory bird use. Additionally, the report also notes that: "Data on the effect of wind-energy on birds within largely forested landscapes is not currently available for analysis" (Exhibit L, pg 13).

The site is part of a large un-fragmented forest block surrounding Flagg Hill. This forest block is of sufficient size to support area-sensitive forest-interior birds. Several species of forest-interior birds were confirmed on the site by the BBS (e.g., Scarlet Tanager, Wood Thrush). These species are highly susceptible to impacts resulting from forest loss and fragmentation, and

these impacts can extend as far as 100 m from the edge of any disturbance. However, no analysis of the potential impacts of the proposed activities on forest-interior bird habitat or populations was provided. This impact analysis should extend beyond the footprint of the turbine to include the area of avoidance described by Pearce-Higgins et.al. (2009).

The statistical analysis provided is potentially flawed for several reasons:

a. The most commonly observed bird was "unidentified passerine", recorded 46 times out of a total of 461 observations (10% of the total composition). This represents a significant "data gap" which affects both species richness and species diversity results.

b. The data set is small and may not be statistically relevant.

The WEST Report states that: "*for all bird species combined, mean use was highest at points 10 and 12" (Exhibit L, pg. 10).* These points appear to be the closest survey points to the proposed northwest turbine, yet there is no discussion of the impacts to birds by this proposed turbine location or of the pros/cons of moving the turbine away from this area of high bird use.

The Discussion and Impact Assessment section (Exhibit L, pg. 13, paragraph 2) states that: "*Common species such as red-eyed vireo and ovenbird comprised the majority of identified species observed at the site"*, suggesting that impacts from turbine collision are less significant due to the fact that these more common species are abundant on the site. However, the lateness of the survey period, late June-mid July as opposed to late May-Late June, would likely result in the percent composition of these two species being over-recorded, as these species, particularly the red-eyed vireo, have an extended song period throughout the summer when other birds have become more quiet (Bevier, 1994:292). Moreover, while these two species are common in Connecticut as stated, the ovenbird is currently considered a species of conservation concern due to regional, non-cyclical population decline.

It is stated in both the Executive Summary as well as the Discussion and Impact Assessment of the WEST Report: "*The results of the surveys were characteristic of forested and*

open grassland areas of central Connecticut". However, the subject site is not located in central Connecticut but rather the Northwest Highlands (a.k.a. Litchfield Highlands). The report results provide no regionally-relevant comparison of the bird diversity and abundance for this site.

Q14. Please describe how the results of the WEST Report do not provide analysis of impacts to species of conservation concern recorded at the site.

A14. The report indicates that no state-listed species were observed during the survey (Exhibit L, pg 13). However, the Broad-winged Hawk (*Buteo platypterus*) is a state-listed species of special concern observed on the site according to Table 4, "incidental wildlife observations". No discussion of potential impact to this species is provided.

The results of the WEST Report state that: "no sensitive species were recorded during regularly scheduled breeding bird surveys" (Exhibit L, pg 6). However, 14 of the species observed on the site are considered to be "species of conservation concern" by the CT Department of Environmental Protection and national conservation organizations. However, no analysis of impact was given for these species, which are listed below:

Common Name	Scientific Name	Conservation Status
Eastern Towhee	*Pipilo erythrophthalmus*	PIF Tier IIA, GCN
Indigo Bunting	*Passerina cyanea*	GCN
Scarlet Tanager	*Piranga olivacea*	PIF Tier IA, GCN
Wood Thrush	*Hylocichla mustelina*	GCN, PIF Tier IA
Black-throated Green Warbler	*Dendroica virens*	GCN
Chestnut-sided Warbler	*Dendroica pensylvanica*	GCN
Ovenbird	*Seiurus aurocapilla*	GCN
Baltimore Oriole	*Icterus galbula*	PIF Tier IA
Black-throated Blue Warbler	*Dendroica caerulescens*	GCN
Ruffed Grouse	*Bonasa umbellus*	GCN
Pileated Woodpecker	*Dryocopus pileatus*	GCN
Hairy Woodpecker	*Picoides villosus*	PIF Tier IIA
Eastern Kingbird	*Tyrannus tyrannus*	GCN
Black-billed Cuckoo	*Coccyzus erythopthalmus*	PIF Tier 1A

KEY – Species of Conservation Concern

GCN =
Species listed as "Greatest Conservation Need" (GCN) as described in the CT State Comprehensive Wildlife Conservation Strategy (CWCS)

PIF = Partners in Flight Designation (Area 09)

Tier I High Continental Priority
Species that are typically of conservation concern throughout their range. These are species showing high vulnerability in a number of factors, expressed as any combination of high parameter scores leading to an average score > 3 (the midpoint); total of 7 parameter scores will be 22, with AI 2 (so that species without manageable populations in the region are omitted).

Tier I A -High Regional Responsibility
Species for which this region shares in major conservation responsibility; i.e., conservation in this region is critical to the overall health of this species.

Tier II High Regional Priority
Species that are of moderate continental priority, but are important to consider for conservation within a region because of various combinations of high parameter scores

Tier II A High Regional Concern. Species that are experiencing declines in the core of their range and that require short-term conservation action to reverse or stabilize trends. These are species with a combination of high area importance and declining (or unknown) population trend

Tier IIC. High Regional Threats. Species of moderate continental priority that are uncommon in a region and whose remaining populations are threatened, usually because of extreme threats to sensitive habitats. These are species with high breeding threats scores within the region (or in combination with high non-breeding threats outside the region)

Source: http://www.partnersinflight.org/bcps/pl_09sum.htm

REFERENCES CITED

Pearce-Higgins, J.W., L. Stephen, R.H.W. Langston, J.P. Bainbridge, and R. Bullman. 2009. The Distribution of Breeding Birds around Upland Wind Farms. Journal of Applied Ecology 46(6): 1323 - 1331.

Bibby, C.J, Burgess, N.D, Hill, D.A, and S.H. Mustoe. 2000. Bird Census Techniques, Second Edition. Academic Press.

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Bevier, L.R. (editor). 1994. The Atlas of Breeding Birds of Connecticut. CT Department of Environmental Protection Bulleting 113.

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Wallace P. Erickson, W.P, Johnson, G.D, Strickland, M.D, Young, D.P.Jr, Sernka, K.J. and Rhett E. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States. Western Ecosystems Technology, Inc.

Gregory D. Johnson, Wallace P. Erickson, M. Dale Strickland, Maria F. Shepherd, Douglas A. Shepherd and Sharon A. Sarappo. Collision Mortality of Local and Migrant Birds at a Large Scale Wind-Power Development on Buffalo Ridge, Minnesota. Wildlife Society Bulletin. Vol. 30, No.3 (Autumn, 2002), pp. 879-887.

The NY Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources. 2009. Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects.

NJ Department of Environmental Protection. 2009. Technical Manual for Evaluating Wildlife Impacts of Wind Turbines Requiring Coastal Permits.

National Wind Coordinating Collaborative (NWCC). 2010. Wind Turbine Interactions with Birds, Bats, and their Habitats: a summary of research results and priority questions.

The statements above are true and accurate to the best of my knowledge.

March 14, 2011
Date

Eric Davison

ATTACHMENT

Exhibit 1 CV of Eric Davison

EXHIBIT 1

Eric R. Davison, CSS, CPWS

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EDUCATION

2000 **University of Massachusetts** **Amherst, MA**
New England Regional Soil Science Certificate Program

1998 **University of Massachusetts** **Amherst, MA**
Bachelor of Science, Wildlife Conservation & Management

WORK EXPERIENCE

2009-present **Cary Institute of Ecosystem Studies, Millbrook, NY**
Biodiversity Specialist

- Conduct biodiversity studies throughout Connecticut and New York
- Catalogue breeding bird species via visual identification and song
- Inventory amphibians and reptile species using field techniques including cover searching, minnow trapping, pitfall trapping and hoop-net trapping
- Describe and characterize upland and wetland wildlife habitats including dominant flora
- Compile all field data collected using GIS software; and create GIS maps and shapefiles of all field data collected

1998-present **Private Environmental Consultant, East Haddam, CT**
Wetland Scientist, Wildlife Biologist & Soil Scientist

Provided the following consulting services to clients:

- Wetland functions and values assessments
- Herpetological surveys including vernal pools
- Wildlife inventory and habitat assessment
- Breeding bird surveys
- GIS based environmental assessments
- Wetland delineation and soil mapping
- Local, state and federal wetland permitting assistance
- Wetland impact assessments
- Wetland restoration and mitigation plans
- Representation at municipal land-use hearings

2000-2002 **Northwest Park and Nature Center, Windsor, CT**
Naturalist -Land Manager

- Responsible for habitat management and wildlife monitoring on 473 acre town owned park, with a focus on early-successional habitat management and monitoring of rare and state-listed grassland and shrubland bird species
- Responsible for hiring and supervising interns
- Conducted public programs and special events
- Conducted conservation related public outreach
- Staff liaison for the Town of Windsor Conservation Commission

1998-2000 **Connecticut Department of Environmental Protection, Stafford, CT**
Park Maintainer

- Maintained all state park and forest areas within Shenipsit State Forest Unit
- Responsible for all facility and grounds maintenance
- Regular equipment operation included chainsaws, tractor with backhoe, loader, dumptruck, snowplow, skid-steer, mowers & woodworking

1995 **Smithsonian Institution, Quantico Marine Base, Quantico, VA**
Field Technician

- Mist netting and banding of neotropical migrant songbirds
- Radio telemetry of the Wood Thrush (*Hylocichla mustelina*)
- Vegetation surveys around wood thrush nesting sites

Certifications & Computer Skills

- Certified Soil Scientist (Society of Soil Scientists of Southern New England)
- Certified Professional Wetland Scientist (Society of Wetland Scientists)
- Proficient in GIS (ESRI ArcMap 9.3), Microsoft Word, Excel & Access

Relevant Projects

- Author, Audubon Important Bird Area Conservation Plan, Northwest Park, Windsor, CT
- Author, Audubon Important Bird Area Conservation Plan, Bent of the River Sanctuary, Southbury, CT (*in progress*)
- Field biologist and co-author, Haines Pond biodiversity study, Brewster, NY
- Field biologist, Eastern Westchester Biotic Corridor-Titicus Reservoir, North Salem, NY
- Field biologist and co-author, 2005 Natural Resource Inventory, Town of Windsor, CT

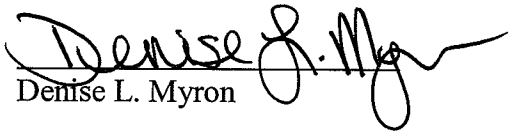
CERTIFICATION

I hereby certify that a copy of the foregoing document was delivered by first-class mail and e-mail to the following service list on the 15th day of March, 2011:

Carrie L. Larson
Paul Corey
Jeffery and Mary Stauffer
Thomas D. McKeon
David M. Cusick
Richard T. Roznoy
David R. Lawrence and Jeannie Lemelin
Walter Zima and Brandy L. Grant
Eva Villanova

and sent via e-mail only to:

John R. Morissette
Christopher R. Bernard
Joaquina Borges King



Denise L. Myron