WILDLIFE

A. REVIEW CRITERIA

12 MRSA §685-B *(and 10.24, Land Use districts and Standards)*

4. Criteria for approval. In approving applications submitted to it pursuant to this section, the commission may impose such reasonable terms and conditions as the commission may consider appropriate.

The commission may not approve an application, unless:

A. Adequate technical and financial provision has been made for complying with the requirements of the State's air and water pollution control and other environmental laws, and those standards and regulations adopted with respect thereto, including without limitation the minimum lot size laws, sections 4807 to 4807-G, the site location of development laws, Title 38, sections 481 to 490, and the natural resource protection laws, Title 38, sections 480-A to 480-Z, and adequate provision has been made for solid waste and sewage disposal, for controlling of offensive odors and for the securing and maintenance of sufficient healthful water supplies;

B. Adequate provision has been made for loading, parking and circulation of land, air and water traffic, in, on and from the site, and for assurance that the proposal will not cause congestion or unsafe conditions with respect to existing or proposed transportation arteries or methods;

C. Adequate provision has been made for fitting the proposal harmoniously into the existing natural environment in order to ensure there will be no undue adverse effect on existing uses, scenic character, and natural and historic resources in the area likely to be affected by the proposal;

D. The proposal will not cause unreasonable soil erosion or reduction in the capacity of the land to absorb and hold water and suitable soils are available for a sewage disposal system if sewage is to be disposed on-site;

E. The proposal is otherwise in conformance with this chapter and the regulations, standards and plans adopted pursuant thereto; and

F. In the case of an application for a structure upon any lot in a subdivision, that the subdivision has received the approval of the commission.

The burden is upon the applicant to demonstrate by substantial evidence that the criteria for approval are satisfied, and that the public's health, safety and general welfare will be adequately protected. Except as otherwise provided in Title 35-A, section 3454, the commission shall permit the applicant and other parties to provide evidence on the economic benefits of the proposal as well as the impact of the proposal on energy resources.

B. LIST OF KEY EVIDENCE

- Development Application DP4886; Narrative Section 12, 13,14, 19 and Exhibits 12A & B, 13A, B, & C, 14, 19
- Applicant Testimony & Correspondence: Pre-filed and public hearing testimony and rebuttals
- IF&W Agency Review Comments, Correspondence, and public hearing testimony
- Intervenor CCRHC Testimony: Pre-filed and public hearing testimony and rebuttals
- Applicant rebuttals to Intervenors and Public Comments
- 'Bull Hill' Procedural Order 6: Post-Hearing Responses by the Applicant and IF&W to questions and requests for information by the Staff & Commissioners
- Intervenor CCRHC response to Procedural Order 6 rebuttal
- Applicant BSE Final Brief
- Intervenor CCRHC Final Brief

C. WETLAND DELINEATION AND WETLAND HABITAT

SUMMARY STATEMENT:

LURC staff reviewed the applicant's Wetland Report, the project engineering plans, and any wetland related comments by the review agencies and the evidence indicates that there are no identified wetland impacts associated with construction components of this project including turbines, roads and crane paths, O&M building, and all other project features.

SUPPORTING NOTES:

- Wetlands within the project area were delineated in 2009 and 2010 by the applicant's consultant, Stantec, and the delineation was expanded on the margins of the project in response to IF&W's request to review entire areas within 250 feet of all project features.
- The project contains a total of 111 delineated wetland areas.
- There are also 14 streams, 3 of which are perennial.
- Of the 111 wetlands, 21 are P-WL1 *Wetlands of Special Significance* due to containing Significant Wildlife Habitat or their proximity to a stream.
- Wetland delineations were plotted on the application's project area resource maps, and are also shown on the turbine site and road plans included in Exhibit 1-A.
- A complete wetland and stream report is included in Exhibit 12-A of the application.
- There are no temporary or permanent wetlands or stream impacts proposed in association with construction and operation of the project.
- The collector line system will be placed underground within the road network, so no clearing of wetlands for a corridor, or permanent or temporary fill will be required for the line.
- A pre-constructed bridge will be utilized in the one section of newly constructed road for the crossing to span approximately 1,300 sq ft of forested wetland that would have otherwise been impacted by the road.

SELECTED COMMENTS:

CCRHC Intervenor Consultant Nancy O'Toole:

'The applicant's Vernal pool and wetland assessment is incomplete and therefore suspect. In their report summaries we find gaps in critical data. In reading the wetland and vernal pool field assessment forms I am concerned about the timing of the mapping, its completeness and the number of significant wetlands and vernal pools in the project footprint. Exhibits one through four in the Narrative section of the application show numerous vernal pools and wetlands adjacent to proposed road and tower pads. With no geotechnical analysis at the present time, how do we know the roads, conduit ditching and turbine pads will not impact these natural resources, both during construction and over the long haul?'

BSE Pre-filed Rebuttal by Dale Knapp of Stantec regarding O'Toole's Wetlands Testimony

Ms. O'Toole's comments are addressed below. First, Ms. O'Toole raises numerous concerns regarding the timing and completeness of the vernal pool surveys. Through the use of maps and integrated Global Positioning System grid transects, our field biologists covered the entirety of the proposed Project, in seasonally appropriate conditions, to locate and properly evaluate vernal pools and wetlands.

Ms. O'Toole states that the Maine Association of Wetland Scientists (MAWS) Vernal Pool Survey protocol "is designed to provide an efficient and consistent method for conducting vernal pool surveys in Maine." We agree; Stantec biologists were key drafters and reviewers of the MAWS protocol and all such protocols were followed in identifying the vernal pools located in the Project.

D. VERNAL POOLS

SUMMARY STATEMENT:

The evidence indicates that the proposed project will not cause impacts to any vernal pools, whether significant or not. This is best supported by the following final review statement made by IF&W wildlife biologist Richard Bard in testimony at the public hearing, and summarized in his response to the post-hearing Sixth Procedural Order to summarize IF&W's position on the project's impacts to vernal pools, as follows:

"IF&W has reviewed the additional survey forms and information provided by the applicant on May 16, 2011. The applicant has provided all the necessary information and has sufficiently avoided or minimized impacts to Significant Vernal Pools (SVP) and Potentially Significant Vernal Pools (PVP). Impacts to all SVP and PVP buffers will be less than the 25% threshold (see #4 for a discussion of the one exception), so no further recommendations or mitigation are necessary."

IF&W's comment above discusses that the one significant vernal pool in question has existing impacts and is under the Right-of-Way control of Bangor Hydro. IF&W only calculated the impacts that are on property under the control of the applicant. Minor additional impact for road upgrading would then be a fraction of the allowable 25% of the buffer zone. The closing statement by IF&W on this vernal pool is:

"'IF&W does not consider impacts to SVP 34CF-N to be unreasonable and we are not suggesting any form of mitigation".

SUPPORTING NOTES:

The following is summarized by staff from the applicant's Exhibit 13-A Wildlife Habitat Report:

- Stantec's Wetland Delineation of the project area identified 53 vernal pools, of which 18 are naturally occurring. Of the naturally occurring pools, 7 were determined to be significant vernal pools, and therefore jurisdictional under MDEP's NRPA rules.
- Field determination of the significant vernal pools was conducted in accordance with IF&W's specified criteria, and meets the NRPA definition of a Significant Vernal Pool.
- At IF&W's request, all significant vernal pools identified were registered with the IF&W by required submission of GPS/GIS location mapping, department field data sheets, and photography.
- All vernal pools, whether significant or not, were avoided, any construction impact to buffers was minimized, and setbacks were established to maintain the resource buffers.
- Project design and proposed construction will follow IF&W-accepted BMPs for forest operations and development activities in proximity to vernal pools and significant vernal pools.
- Note: Five pools are not naturally occurring but they meet the significance criteria of the NRPA and are more likely to be regulated by the Army Corps of Engineers.

SELECTED COMMENTS:

<u>CCRHC Intervenor Consultant Nancy O'Toole</u>

'Rare Species Assessment protocol suggested that while conducting the vernal pool assessment observers should scan land adjacent to the pool (out to 25 feet) for rare species. It was noted on the assessment sheet that all vernal pools were not fully assessed for Fairy Shrimp or rare species. The applicant states a second field visit one to two weeks after the first visit was to naturally occurring vernal pools only. Let it be noted that the first visits were too early in the season, and subsequent ones did not include man made potential vernal pools, covered by Army Corps of Engineers guidelines.'

BSE Pre-filed Rebuttal by Dale Knapp of Stantec regarding O'Toole's Vernal Pool testimony

In addition to being surveyed at the right time, the vernal pools in the Project area were completely surveyed, contrary to Ms. O'Toole's contention that vernal pools were not fully assessed for Fairy Shrimp or rare species. The field biologists responsible for vernal pool surveys examined the pool habitat for egg masses, Fairy Shrimp or other rare species that may be in the pool itself. In addition, the biologists examined the upland area adjacent to the pool for rare species indicators. Second visits were done at natural pools, the only vernal pools that are regulated by the state of Maine. This was the process followed to assess vernal pools within the Project area. Inquiries to IFW prior to vernal pool surveys indicated that there are no documented rare vernal pool indicator species recorded in the Project area. The box checked on the form denotes that while rare species observations occurred during the pool survey, it was not an isolated "targeted" effort to locate a specific species (i.e., turtle trapping).

BSE Post-hearing Brief by Verrill Dana Attorney Kelly Boden:

'Similarly, in her pre-filed testimony Nancy O'Toole suggested that, given the timing, the vernal pool testing was "incomplete and therefore suspect." During the hearing, however, and after listening to testimony from Dale Knapp explaining the timing of vernal pool testing, Ms. O'Toole testified that she "understood" why testing took place when it did and that she was "comfortable" with the timing of the surveys. Ms. O'Toole also raised some concerns about the sufficiency of the wetland surveys, suggesting that Blue Sky had underestimated the extent of wetlands in the Project area with the intention of "claiming no impacts," identifying wetlands later, then "mitigating" instead of avoiding them. As with Mr. Good, Ms. O'Toole offered no facts to support these allegations and agreed during cross-examination that Blue Sky understood regulatory approval would be required for any wetland impacts.'

E. BIRDS AND BATS

SUMMARY STATEMENT:

LURC Staff Summary of Pre-construction Study: (based on application & exhibits)

A pre-construction study and inventory for avian and bat species was conducted for two seasons prior to the submittal of the project development application in order to assess the potential for impacts due to operation of the Bull Hill Wind Project. Studies completed in 2009 and 2010 included avian and bat studies, nocturnal radar surveys, raptor migration surveys, aerial bald eagle nest surveys, and bat acoustic surveys. The applicant states in the application narrative that *"The results of these other radar studies suggest that the vast majority of nocturnal migrants fly at altitudes well above the rotor swept zone of the proposed turbines."*

A comparison in the narrative to five other Maine wind project avian and bat pre-application studies concludes *"In general, nightly and seasonal passage rates, average flight heights, average seasonal flight directions, and percentage targets observed below turbine height have nearly all been within general ranges of other ongoing seasonal migration studies. Together, these studies help demonstrate a relatively high elevation flight pattern over the project area landscape, and support the finding that added pre-construction studies at this time would provide little additional new information and data."*

IF&W Application Review Comments Provided to LURC 4-13-11:
Initially, IF&W commented that they recommend turbine curtailment as a mitigation measure to reduce the potential for bat mortality. The application review comments provided by IF&W biologist Richard Bard to LURC staff (4/13/11) are excerpted below:

2. MDIFW Comment (Richard Bard): The bat radar studies in Exhibit 13C of the application acknowledge that bat activity peaks when wind speeds are below 5.0 meters per second. Recent studies (Arnett et al. 2009 & 2010, Baerwald et al. 2008) at operating wind facilities have indicated that increasing the cut-in speed (the wind speed at wind the turbine is allowed to begin rotating) for operating turbines to 5.0 meters per second has significantly decreased turbine-caused fatalities for bats. Therefore, in order to minimize risk of mortality to bats MDIFW recommends that operational control measures be established for the Blue Sky East project. These measures should be employed from April 20th through October 15th, such that the applicant set the turbine cut-in speed to 5.0 m/s starting at one-half hour before sunset to one-half hour after sunrise. During this time frame when the wind speed is less than the 5.0 m/s threshold, turbine blades are not allowed to rotate thus reducing risk of fatality for bats. If at any point during this time period the wind speed increases to > 5.0 m/s the turbine blades are free to rotate. I have included full citations for the above references:

LURC Staff Summary of Post-Construction Monitoring & Curtailment:
(Summarized from BSE and IF&W post-hearing correspondence and submittals)

Resulting from agency review of the application, IF&W and the applicant have agreed to conduct post-construction monitoring involving bird and bat fatality searches during the first two years of operation during spring to fall. These searches will be conducted as part of a study designed according to methods developed in consultation with IF&W and Bat Conservation International (BCI). The applicant and IF&W propose that the study, coupled with any operational changes that are needed based on the ongoing results of the study, will be protective of bat and bird populations. If the Commission approves this project, the applicant will submit the design of the study to the Commission for review and approval.

The Project study will be conducted such that 50% of the turbines will have an operational curtailment of a cut-in speed at 5 meters per second (m/s). Published studies, as cited in the March 10, 2011 submission by IF&W, show that operational curtailment of turbines at low wind speed reduces bat mortality as a result of either collision with a turbine blade or resulting from barotrauma, which is trauma caused to a bat when it experiences extreme pressure changes near a blade. Curtailment is not designed specifically to avoid or minimize bird mortality as there is not any available data that shows that it will have that effect. However, IF&W theorizes it is reasonable to expect mortality of nighttime migrant species to be lower on nights when the turbines are curtailed.

Mortality studies will be focused on bats, but also account for bird mortality. The curtailment of turbine operations experimentally and as needed to respond to mortality patterns detected in the surveys are designed to protect birds and bats. The initial study design prior to commencing turbine operation and

subsequent reports of the results over the first two years will be reported to LURC and study partners for review. LURC review of the study data along with input from IF&W, USFWS, and BSE may result in LURC requiring operational mitigation, such as curtailment or other management options.

Post-Construction Monitoring & Curtailment Plan Participants Comments:

The following are excerpts from portions of correspondence confirming participation by IF&W, Bat Conservation International and the applicant in the monitoring plan regarding curtailment of turbine operation:

- A portion of an e-mail on 6/1/11 from Ed Arnett of Bat Conservation International in Austin Texas to the applicant and IF&W confirming their willingness to participate in the bat monitoring study set up for the Bull Hill Wind Project as follows:

Thanks for contacting me and inquiring about a potential curtailment project for reducing bat fatalities at your proposed Bull Hill Wind Project in Maine. Per our discussion, we (BCI) understand that the work would not likely begin until the spring of 2013, the beginning of the first full bat-activity year after project construction. BCI is very interested in working with you on this project and including this site in our research portfolio for the region. We are happy to advise on development of survey protocol and study design, and would be interested in leading project efforts. Our design for a similar study at the Sheffield project seems appropriate for this proposed project, but we are happy to entertain alternatives as well.

- A portion of an e-mail on 6/2/11 from Geoff West of Blue Sky East, LLC to Richard Bard of IF&W and cc'd to LURC confirming their willingness to participate in a bat monitoring study set up for the Bull Hill Wind Project as follows:

Blue Sky East, LLC ("Blue Sky East") has submitted an application to LURC to construct a wind-energy facility in Hancock County, Maine known as the Bull Hill Wind Farm. Construction is anticipated to begin in the first quarter of 2012 and the facility is expected to become fully operational by the end of 2012. Prior to becoming fully operational, Blue Sky East has agreed to develop a robust study plan in consultation with IFW that closely follows the Sheffield protocol, with specific details to be decided by the principal investigator with the goal of ensuring that the results are statistically valid and defensible.

First Wind and IFW agreed that a detailed study design for the first two years of operation will be developed in consultation with IFW, the Bat and Wind Energy Cooperative, Bat Conservation International ("BCI"), and potentially the University of Maine. Attached please find an email confirmation from BCI expressing their commitment to the study. The results of this study will help Blue Sky East develop a curtailment plan that is both economically and operationally feasible while reducing impacts to bats at the Bull Hill Wind Farm.

- The following is a portion of the letter on June 15, 2011 from IF&W to LURC regarding the Procedural Order #6 request for information confirming their acceptance of the applicant's proposal for a bat monitoring study and turbine curtailment plan set up for the project:

'As described in First Wind's letter of June 2, 2011, IF&W and the applicant have agreed to pursue a rigorous study of operational curtailment at the Bull Hill facility to determine the dates and conditions in which the practice is likely to substantially and effectively reduce bat mortality. This study is expected to

closely follow the methods and pursue the same objectives as the study at the Sheffield wind facility, currently under construction in Vermont. Additional studies at comparable projects at other locations may be coordinated and pooled to improve analysis of statistical significance of study results'. … As stated above, IF&W and the applicant are in agreement that the particular study protocols should be developed by the Principal Investigator in consultation with IF&W and the applicant'.

LURC Staff Summary of Post-Construction Monitoring Study & Curtailment Plan (cont.):
(BSE Application Exhibit 19 - Post Construction Monitoring, IF&W comments & correspondence).

Curtailment Plan of Turbine Operation:
The applicant proposes to implement operational control measures at the project during the first two years of its operation. This will include:

- Curtailment of half of the turbines at a cut-in speed of 5 meters per second (m/s).
- The remaining turbines will be allowed to operate at normal cut-in speeds at approximately 3 m/s so that a control can be established to determine the effectiveness of these minimization measures.
- Operational control measures will occur only during night hours (roughly ½ hour after sunset until sunrise) when bats are active and when wind speeds are less than 5 m/s and the temperature is above 50 degrees Fahrenheit.
- Operational control measures will be implemented from early May through late September to coincide with the period when the majority of bat mortality has occurred at other wind projects.

Post-Construction Monitoring:
The need for, scope, focus, and timing of consecutive years of post-construction monitoring, including radar studies and mortality searches, will depend on the results of the initial monitoring. This monitoring plan also includes adaptive management in the event that unusually high bird or bat fatality rates occur at the project area as a whole, or in isolated areas; or if there are impacts to species of conservation concern. The study methods for this two-year plan will be developed in consultation with IF&W and Bat Conservation International (BCI), as agreed to by the applicant. It is intended that the University of Maine wildlife students will also be involved. The study's design and results will be reported to LURC for review and approval. The applicant, in consultation with IF&W, USFWS, and Bat Conservation International, will make operational recommendations based upon the study results for LURC staff to analyze and bring to the Commission for review and approval.

Objectives of post-construction monitoring:

- To document the species and number of individuals of bird and bat fatalities during the spring migration, summer breeding, late-summer, and fall migration of the first two years of operation of the wind farm;
- To estimate the level of mortality of birds and bats during the study period based on the results of standardized searches, searcher efficiency trials, scavenger carcass removal trials, and if necessary, a search area correction factor;
- To determine if any mortality events are uniform across the project area;
- If mortality rates are unusually high, to determine the factors influencing mortality;
- In the event of unusually high mortality, to determine the need for and appropriateness of adaptive management action(s) (described below); and
- If possible, attempt to relate the two consecutive years of radar data to mortality data at specific turbine locations.

Adaptive Management Plan:

An Adaptive Management Plan (AMP) will be developed in consultation with IF&W and includes:

- An assessment of the level of impact of observed mortality rates,
- If mortality rates are unusually high, further study to determine the biological or behavioral factors, project design features, and/or environmental conditions (*i.e.,* weather) that may influence mortality,
- Implementation of appropriate management action(s), including as necessary further curtailment, to reduce mortality in the event that it is determined to be an unreasonable adverse impact.

Management Plan Actions:

Possible management actions that would depend upon the bird or bat species group impacted, the factors contributing to mortality, monitoring of results of adaptations, and specific circumstances resulting in increased collision risk may include, but is not necessarily limited to, such measures as:

- Lighting schemes on project turbines and permanent met towers may be changed, as permissible by the FAA;
- Project structures, such as stairways leading up to tower doors, may be modified if being used for perching or nesting by birds;
- Nests may be relocated and/or nesting birds may be deterred from an area if the locations of nests are resulting in increased collision mortality;
- The formation of seasonal water sources may be prevented in the direct vicinity of turbines if resulting in increased collision mortality of birds or bats;
- Pending cooperation of landowners, on-site land uses or habitats surrounding turbines may be altered to reduce attraction of birds or bats; or
- Operational curtailment may be implemented during increased collision risk periods for birds or bats.

Summary of Pre-application Study of Bat Activity at Bull Hill

The following table from the BSE application narrative summarizes the Applicant's study of bat activity at the Bull Hill project site and how that compares to other First Wind Maine project sites. Marine radar surveillance was used in the Spring of 2009 and Fall of 2010 to characterize nocturnal migration activity in the project area.

Table 2. Comparison of bat detection rates at three Maine operational facilities

Project	Year	Season	Survey Dates	# of Met Detectors	Met Detection Rate (call seq/detector night)	Reference
Mars Hill	2005	Fall	late Aug - mid Sept	2	0.8*	Woodlot Alternatives, Inc. 2006
Stetson	2006	Summer/Fall	late Jun - mid Oct	4	2.6	Woodlot Alternatives, Inc. 2007a
Stetson	2007	Spring	late Apr - mid Jun	3	2.0	Woodlot Alternatives, Inc. 2007b
Bull Hill	2009	Summer/Fall	mid Jul - early Nov	2	0.2	Stantec Consulting 2010b
Bull Hill	2010	Spring	mid Apr - mid Jul	2	0.4	Stantec Consulting 2010c
*detection rate calculated based on 25 total calls recorded during 30 detector nights of sampling						

The overall detection rates of the acoustic detectors at Bull Hill were lower than those documented at Stetson and Mars Hill. Despite surveys occurring on different years and with varying levels of survey effort, the similarly low detection rates among these sites suggests that anticipated bat mortality rates will also be similar among the sites, at the low end of the documented range compared to other operational wind projects in the Northeast. For example, post-construction acoustic bat surveys were conducted at the Stetson Wind Project in 2009, concurrent with weekly mortality surveys. The results of the surveys showed similar trends as pre-construction surveys at other projects in Maine and in New England with an overall detection rate of 0.3 call sequences per detector night at detectors deployed on the wind turbine nacelles and 28.5 call sequences per detector night at detectors deployed in trees at or below tree canopy height. When comparing detectors above tree canopy height only (i.e. nacelle detectors and met towers), bat activity was similar to other pre-construction surveys and mortality rates were low.

SELECTED COMMENTS:

CCRHC Consultant Michael Good's Pre-filed Testimony:

"… Also, Maine clearly has many migratory birds passing through the State verified by regional records and years of records from birding events like 'Acadia Birding Festival and other birding events located in Deer Isle and Washington County". This is especially true along coastal Maine where little data exists about the relative number of birds. My personal empirical data from years of research and exploration along coastal Maine suggests HIGH NUMBERS OF NEOTROPICAL AND RAPTORIAL MIGRANTS arrive along the coast line of Maine in the spring, passing through the state on their way to northern Maine, Canada, and beyond. These data plus the radar data of the Bull Hill Wind Project application indicate that extreme caution be used when sighting the wind turbines around the Bull Hill site."

Maine IF&W response to Sixth Procedural Order: (citations)

"… Since the Public Hearing on May 16 and 17, 2011, Maine has confirmed the presence of White Nose Syndrome in bat hibernacula inside the state for the first time. Any additive risk factors, including wind turbine mortality, may place these populations in jeopardy. … Any final study design should include a "short-circuit" provision in case of specific high-mortality events or higher than expected bat mortality rates at non-curtailed control turbines. Under these conditions, the study would be suspended, and all turbines would be curtailed at wind speeds less than 5.0 mps pending consultation with IF&W and/or US Fish and Wildlife Service"

"Adequate population data are not available to determine mortality thresholds at which impacts to a bat species become significant on a population level. We do know that populations of many bat species are in steep decline for a number of reasons, including White Nose Syndrome, therefore any avoidable mortality is cause for concern. Rather than identifying a specific threshold, IF&W has recommended that all possible means to avoid bat mortality be implemented from the beginning of the project, including curtailment, and avoiding nighttime lighting of the facility.

At present, operational curtailment of all turbines during periods of bat activity as recommended, or as to be determined by the curtailment study described in Question 1, is the best method we have of avoiding and minimizing bat mortality.

Regarding birds, IF&W has not requested studies beyond the initial post-construction monitoring that has become standard on wind power facilities in Maine. However, any discovery of state or federally listed species should be reported to the appropriate agency and mitigation measures, if any, should be decided at that point. Similarly, any unusual mortality event at a specific turbine or across the facility in a short period of time should be reported and mitigation measures considered."

F. WILDLIFE HABITAT RARE, THREATENED, OR ENDANGERED (RT&E)

SUMMARY STATEMENT:
There are no mapped rare, threatened, or endangered wildlife (RT&E) noted by the review agencies in the project area or discovered by field determination of the applicant's wildlife consultant Stantec. See *Selected Comments* below for agency and intervenor comments.

SUPPORTING NOTES:

- Maine Natural Areas Program (MNAP). Don Cameron, Ecologist with MNAP submitted review comments on February 9, 2011, stating that their records show 'no mapped rare or unique botanical features in the vicinity of the proposed site'.
- Maine Department of Inland Fisheries and Wildlife (MDIFW). MDIFW submitted review comments and supporting information on March 4 to 12, 2011, and on May 12, 2011. MDIF&W concurs that there are no existing mapped areas of wildlife protection; i.e. raptor nesting; migratory bird corridors; threatened & endangered species habitats; inland wading birds & waterfowl significant wetlands; Deer Wintering areas; or other.
- Dept of Marine Resources' Norm Dube, Fisheries Scientist with Bureau of Sea Run Fisheries and Habitat responded to the application on March 1, 2011 stating, 'After review of Blue Sky East's Bull Hill Wind Project in T16MD, DMR has determined that the project will have no impact on Atlantic salmon populations or habitat. We appreciate the opportunity to comment on the project'.
- Applicant's Exhibit 13A Wildlife Habitat Report states, *"The construction and operation of wind turbines at Bull Hill will result in some direct and indirect impacts to local wildlife communities and their habitats. In general, the impacts could include habitat loss or conversion, disturbance effects that could result in animals avoiding the project area, habitat fragmentation, and collision-related fatalities. Impacts to wildlife communities due to loss of habitat on Bull Hill, Heifer Hill and Beech Knoll are not expected to be adverse to those populations, particularly in light of the fact that the local wildlife populations already adapt to the occasional rapid changes in the distribution of habitats along the ridge from harvesting activities."*
- There are two types of significant or sensitive habitat and/or wildlife communities that occur in the project area: significant vernal pools and *Wetlands of Special Significance. See the discussion of those resources elsewhere in this section.*

SELECTED COMMENTS:

<u>BSE Application Exhibit 13A Wildlife Habitat Report:</u>
Reference cited on Salmon Habitat in Narraguagus River

'The Narraguagus River (West Branch 2.5 miles) and the Union River (East Branch of the Union River runs into Spectacle Pond approximately 2 miles) are the closest designated Essential Fish Habitat (EFH) to the project area. Their tributaries, to the extent they are currently or were historically accessible for salmon migration, are also EFH, and there are many tributary including the Bog River and its tributaries which flow in between Unit 2 and 3 close to the project area. The Narraguagus River is also included as a Habitat Area of Particular Concern, which is a discrete subset of an EFH that provides extremely important ecological functions or are especially vulnerable to degradation. Neither of these rivers nor the EFH associated with them is impacted by the project as designed.'

CCRHC Intervenor Consultant Nancy O'Toole:
Summarized from pre-filed testimony related to salmon habitat

- This proposed project is part of the watershed that includes critical habitat for Atlantic salmon
- Narraguagus Lake is only two miles from Beech Knoll, the proposed location of towers one through four.
- It has been recommended by the Department of Inland Fisheries and Wildlife that Narraguagus Lake be closed for ice fishing due to the fragile status of this fishery.
- In the Maine Wildlands Lake Assessment of 1987 Narraguagus Lake is described as having a "Significant" rating under the categories Scenic, Fish (Native), Shore Character and Cultural Resources.
- The Narraguagus River, the lake's outlet, also collects its waters from several tributaries that rise on the flanks of Heifer Hill, proposed location of turbines number 5 through 7, and Bull Hill, the proposed home of turbines 10 through 19.
- The Narraguagus River is one of eight Maine rivers within the Gulf of Maine Distinct Population Segment (GOM DPS) hosting endangered Atlantic salmon (Salmo salar).
- In the Endangered Species Act, Section 7, (2) under Interagency Cooperation we are informed that any action authorized or permitted must not jeopardize the continued existence of any endangered or threatened species or result in the destruction of or adverse modification of habitat of such species which is determined to be critical.
- Streams or tributaries that drain from the project area and could potentially be impacted by sediment run-off are Mud, Smith, Mahanon, Clark Meadow Brook and Colson Branch.
- All feed into the West Branch of the Narraguagus River. In addition, Narraguagus Lake receives run-off from unnamed tributaries below Beech Knoll's proposed turbines.

BSE Pre-filed Rebuttal by Dale Knapp of Stantec regarding O'Toole's testimony on salmon habitat

Ms. O'Toole also raises several speculative concerns about the Project's potential impact on water quality, and the resultant impact on fisheries. In particular, she notes the proximity of Narraguagas Lake and its feeder streams to the Project. However, as discussed in the Sewall rebuttal testimony, the only portion of the Project in the Narraguagus Lake watershed is approximately 250 feet of 12 foot road leading to a permanent meteorological tower, so the risk to water quality In Narraguagus Lake is virtually nonexistent.

With regard to Ms. O'Toole's concerns with Atlantic Salmon, we are aware of the fact that the West Branch of the Narraguagus River watershed is designated as critical habitat for salmon, and the river itself is designated as salmon habitat. These designations were carefully considered during Project design. The result is a design that has no stream impacts---and therefore no critical habitat impacts---associated with the Project. As a result, and given this design and the erosion and sedimentation control plan that is part of the Project, the Department of Marine Resources concluded that "*After review of Blue Sky East's Bull Hill Wind Project in T16MD, DMR has determined that the project will have no impact on Atlantic salmon populations or habitat.*" (March 1, 2011 email form Norm Dube, DMR to Don Murphy, LURC).

G. RAPTORS

SUMMARY STATEMENT:
IF&W and USFWS biologists that reviewed the BSE raptor study of the area stated that there was no concern for impacts on raptors from this project. There are no active or mapped eagles nesting in the vicinity of the project area.

Raptor review including Migratory monitoring:

- A total of 12 species of raptor were documented in the vicinity of the project area in 2009 and 2010.
- During fall 2009 raptor migration surveys, one state-listed endangered species, peregrine falcon (*Falco peregrinus*), was observed in the project area flying over tree canopy,
- Two state species of special concern were observed during the fall surveys—bald eagle and northern harrier (*Circus cyaneus*).
- Two state species of special concern were observed in winter and spring 2010: six bald eagle observations were recorded and one eagle was seen as the observer was leaving the Project after a survey. All bald eagle observations were outside the project area.
- Five northern harrier observations were made during the spring surveys. One observation of northern harrier occurred within the project area.

Summary Table of Applicant Pre-application Raptor Survey from Application Exhibit 13A

Table 4-1. A summary of the Spring 2010 survey effort and results for the Bull Hill Wind Project in Washington County, Maine			
Range of survey dates		3/19/2010 to 5/23/2010	
No. survey days		15 days	
Total survey hours		104.25	
Total raptor species observed		9	
Raptor species observed		State Listing	In Project area? (Y/N)
(Common Name)	(Scientific Name)		
American kestrel	*Falco sparverius*		Y
bald eagle	*Haliaeetus leucocephalus*	Special Concern	N
broad-winged hawk	*Buteo platypterus*		Y
merlin	*Falco columbarius*		Y
northern harrier	*Circus cyaneus*	Special Concern	Y
osprey	*Pandion haliaetus*		N
red-tailed hawk	*Buteo jamaicensis*		N
sharp-shinned hawk	*Accipiter striatus*		Y
turkey vulture	*Cathartes aura*		Y
Total no. observations of raptors in study area		55	
Seasonal passage rate (raptor observation/hour)		0.53	
Total no. observations of raptors within Project area (percent of total observations in study area)		15 (27%)	
Total no. observations of raptors seen in turbine areas below max turbine height (145 m) (percent of total observations in Project area only)		15 (100%)	

SELECTED REVIEW COMMENTS:

CCRHC Consultant Michael Good's Pre-filed Testimony:

"All along the Maine Coast the Avian community utilizes Rivers Streams and Wetland communities as Stopover Habitats and migratory trails that are vital for breeding success. These Stopover habitats are essential to successful bird migrations. … birds require food and energy to make the migration possible. Many Avian species are insectivores which have genetic memory about pathways that were laid down since the Wisconsian Glacier. Any high ground in the region will have birds passing over it at the same heights as the wind turbines. It is my strong belief that Raptors are at great risk and the locations of the turbines should hinge on Pre-construction Monitoring Plan. A non-biased qualified avian scientist should monitor the site from April through June."

BSE Pre-filed Rebuttal by Adam Gravel of Stantec regarding Michael Good's testimony: (cited)

Mr. Good also suggested that the raptors will utilize the habitat in the Project area, including the many ponds, streams and wetlands that surround the Bull Hill site, and that potential adverse cumulative impacts are likely. Although Mr. Good is correct that areas adjacent to the Project may be utilized by raptors, the surveys and passage rates show that the collision risk is small.

In his testimony, Mr. Good also recommends additional nocturnal radar surveys in 2011 with a focus on understanding the movement of birds through the Project area. We agree with Mr. Good's recommendation, and 2011 surveys are underway. The nocturnal radar surveys conducted in 2009 and 2010 were designed to characterize the movement of birds through the Project area including their passage rate, flight direction, and flight height. Additionally, spring 2011 nocturnal radar surveys are currently ongoing with a fall 2011 survey planned to occur starting in mid-August. The 2011 surveys will follow the same methods as the 2009 and 2010 surveys. It is important to note, however, that while ongoing surveying is important to confirm predictions and improve our understanding of Project impacts, based on the data collected in the 2009 and 2010 surveys we have concluded that the Project will not have an undue adverse effect on bird species.

Finally, Mr. Good recommends that Blue Sky East conduct post construction avian studies. We agree, and post construction studies are a standard part of wildlife evaluations for wind projects, and will be conducted for this Project. The specifics of those studies are being constantly improved as more studies are done and best practices developed. The Application includes a draft Post Construction Monitoring (PCM) Protocol. Because it is often years between permit application and the beginning of operations, this protocol will change to incorporate information from operating projects and continued consultation with the biologists at IFW and USFWS in order to implement a PCM based on the most current best practices.

H. SELECTED COMMENTS – GENERAL

Overall Comments by Intervenor CCRHC, Attorney Lynne Williams from Final Brief;

'CCRHC continues to have concerns that the "compromise" position between MDIFW and BSE is insufficient to protect the population of non-migratory, cave-dwelling bats in Maine, particularly now that they are threatened by White Nose disease. It is incumbent on this Commission to take into account the repeated recommendations of the biologists in our own wildlife agency, and demand that BSE follow the strong recommendations made by the Department, whether or not that comes at a financial loss. If BSE refuses to do so, this Commission should deny the application based on BSE's refusal to avoid undue adverse impact on wildlife that the Department considers to be a threatened population.'

'However, to be truly protective of the above-named species of concern and endangered species in this area, such piecemeal mitigation and minimization measures are neither consistent with the CLUP standard of "no adverse impact," nor with the Site Location of Development Law of "no adverse environmental impact." It should be very clear to the Commission that the collective wildlife concerns presented in both written and oral testimony demonstrate that the project location is not an appropriate location for an intensive industrial wind facility such as that proposed by BSE, and thus the application for the Bull Hill Wind Project should be rejected on these grounds.'

Overall Comments by Applicant BSE from Post-hearing Brief:

In summary, CCRHC's concerns about the sufficiency of Blue Sky's survey work are without merit. Blue Sky retained Stantec to conduct all the resource surveys in the Project area. This firm has conducted over 180 distinct seasons of pre-construction avian surveys in twelve states, including full scale resource studies for fifteen utility-scale projects in Maine.[24] The surveys conducted to identify rare, threatened or endangered species, or their habitats, were based on proven protocols and techniques and consultation with state and federal natural resource agencies, including MDIFW and USFWS.[25] Blue Sky's survey techniques are appropriate and time/agency/project tested and reliable.

I. ANALYSIS

- Wetland impacts: The project design, which includes installation of a pre-constructed bridge to span the only wetland area road crossing that could not be avoided, has resulted in no wetland impacts.

- Bats: There is substantial evidence in the record that the project will not have an undue adverse effect on bats due in part to the low bat activity documented in the project area. The potential impact of the project, however, in conjunction with other stressors on bats, namely White Nose Syndrome, requires that certain conditions be put in place. A 50/50 operational curtailment program in conjunction with an initial two-year bat and bird mortality study should be required. During the two-year study period, staff recommends that the applicant be required to provide, in consultation with IF&W and/or USFWS, semiannual reports detailing the current results of the study for Commission review. The applicant

must demonstrate to the Commission, based upon the semiannual reports, that the project is not causing an undue adverse effect on bats. If upon review the Commission determines there is an unacceptable mortality rate at the un-curtailed turbines such that continued un-curtailed operation would cause an undue adverse effect, the study would be suspended, and all turbines would be curtailed at wind speeds less than 5.0 mps pending further review and approval by the Commission of an adaptive management program to require operational changes as necessary to avoid any undue adverse impact on bats. Otherwise, at the end of the two-year study, the applicant must demonstrate to the Commission that the project is not causing an undue adverse effect on bats, or propose an adaptive management program to require operational changes as necessary to avoid any undue adverse impact on bats. Permit conditions would authorize the Commission to adjust operational requirements at this project based on the study results, regardless of whether the operational changes would reduce the power output of the project.

- Migratory birds: IF&W appears satisfied that based on the pre-application surveys, the studies being done for bats will also suffice to assess any unanticipated problems with bird mortality and the adaptive management plan will allow for appropriate operational changes to avoid undue adverse impacts to migratory birds.

- Vernal Pools: Vernal pools and significant vernal pools have been identified on site by Stantec and documentation forward to IF&W's registration data bank. BSE claims that no significant vernal pools (SVP) have been impacted by the project. IF&W accepted that the exceeded impact on one SVP was to be the responsibility of the Bangor Hydro as an owner of the Right-of-Way for the transmission line.

- Raptors: The stronger evidence in the record, see the applicant's findings, and IF&W and USFWS reviews, shows that there are no active eagle nests in the area and that raptor usage of the area is migratory and secondary to their habitat, thereby creating no undue adverse impact on raptors and their habitat.

- Atlantic salmon watershed: The Intervenor CCRHC raises the issue of project impacts to the watershed of the Narraguagus River that is protected for salmon fisheries. The USFWS and the Maine Dept of Marine Resources have reviewed this issue and do not feel that there will be an undue adverse impact.

- State or federally listed species: MNAP, IF&W, and USFWS report no rare, threatened or endangered (RTE) species field sightings or mapped habitat locations (based primarily on land cover and remote sensing analysis) in the project area. The applicant's field biologist conducted the customary additional field verification, and those studies indicated that there were no state or federally listed species present in the project area. While the Intervenor CCRHC contends that the findings by the applicant and agency reviewers are not credible because, based on their expert witness's experience elsewhere in Maine, the project area can be assumed to contain more species of wildlife than the applicant found, the stronger evidence in the record indicates this project will not have an undue adverse impact on RTE species.

J. QUESTIONS

1. Does the project layout avoid and minimize wetland impacts?

2. Will the proposed study regarding turbine curtailment and bird bat mortality, the adaptive management plan, and ongoing monitoring as may be recommended at the conclusion of the study, lead to sufficient protection of bat populations such that it satisfies the no undue adverse impact criterion?
3. Has the applicant minimized impacts to vernal pools as the vernal pool impact is attributable to the existing utility?
4. Has the applicant demonstrated there will be no undue adverse impact to the Atlantic salmon and its habitat?
5. Has the applicant met its burden of proof to document species and plant communities at the site, including adequate surveys and assessment, and demonstrated that the project as proposed is not likely to cause an undue adverse impact?