



## DRAFT STAFF ANALYSIS

of applications for

SITE LOCATION OF DEVELOPMENT ACT and  
NATURAL RESOURCES PROTECTION ACT PERMITS  
for  
THE WEAVER WIND PROJECT  
by  
WEAVER WIND, LLC

L-26464-TH-K-N/L-26464-24-L-N/L-26464-2F-M-N/L-26464-IW-N-N

APRIL 11, 2019

### 1. PROJECT DESCRIPTION:

A. Summary. The applicant is seeking a permit under the Site Location of Development Act (Site Law) and the Natural Resources Protection Act (NRPA) to construct a 22-turbine, 72.6 megawatt (MW), wind energy development which is an “expedited wind energy development” as defined in the Maine Wind Energy Act (WEA), 35-A M.R.S. § 3451(4). In addition to the generating facilities, the project would include new roads, upgrades to existing roads, and the construction of a new substation. The project would also include an operations and maintenance (O&M) building located in the Town of Aurora, an organized town. The overall proposed project will include 40.5 acres of new impervious and developed area.

1. Turbines. The applicant proposes to construct 22 wind turbines, Vestas V126-3.45 MW, derated to 3.3 MW, with Serrated Trailing Edge (STE) turbine blades. The turbines would have a maximum height of 591 feet. Eight turbines would be located in the Town of Eastbrook, with 14 others located in Osborn. The turbines would be placed on Hardwood Hill, Birch Hill, Een Ridge, Little Bull Hill, and additional unnamed hills.
2. Turbine Pads. Each turbine pad would be approximately 13,170 square feet in size.
3. Access Roads and Crane Paths. The applicant proposes to upgrade four miles of existing gravel logging roads to access the turbine locations. The applicant also proposes to construct approximately six miles of new roads, with an average width of 24 feet. All crane paths would be approximately 39.5 feet wide.
4. Electrical Transmission Lines. The applicant proposes approximately 24.5 miles of underground and aboveground 34.5 kilovolt (kV) collector line. The

proposed project would include the construction of a new substation adjacent to the Bull Hill Wind substation, with a 120,000-square foot fenced footprint.

5. O&M Building. The applicant proposes to construct an O&M building in Aurora. The development of the O&M building would result in approximately 0.6 acre of impervious area.
6. Meteorological Towers. The applicant proposes to construct up to eight temporary meteorological (met) towers and up to five permanent met towers throughout the project site. Each met tower would have a maximum height of 400 feet.

The applicant is also requesting approval under the NRPA to clear approximately 110,041 square feet of wetlands for the construction of overhead lines, and for turbine transport. Additionally, the applicant is proposing activities adjacent to streams and wetlands of special significance, and soil disturbance within an Inland Waterfowl and Wading Bird Habitat (IWWH), a Significant Wildlife Habitat.

The details of the turbines, access roads, and associated facilities are provided on the set of plans entitled “Weaver Wind Project” prepared by James W. Sewall Company and dated October 2018.

B. Current Use of Site. The area surrounding the proposed project is currently managed for commercial timber. The area contains numerous logging roads, some of which would be upgraded as part of this project.

C. Public Interest. The Department held its first public meeting in Aurora, on January 16, 2019, to solicit comments from the public concerning the project. A second public meeting will be held on April 18, 2019. During the processing of the application, the Department has received comments both in support of and against the project, as well as questions from the public. The Department considers all public comments received on the proposed project.

## 2. TITLE, RIGHT OR INTEREST:

Pursuant to Chapter 2 §11(D) and the Department’s Policies and Procedures under the Site Law, Chapter 372 §9, an applicant must demonstrate to the Department’s satisfaction sufficient title, right, or interest in all of the property that is proposed for development or use. Weaver Wind, LLC would own the turbines, collector line, met towers, substation, O&M building, and their associated infrastructure.

To demonstrate title, right or interest for the proposed development, the applicant submitted signed copies of leases and easements for the properties on which the proposed project would be located.

3. FINANCIAL CAPACITY:

Pursuant to the Financial Capacity Standard of the Site Law, Chapter 373 §1, applications for approval of proposed developments must include evidence that affirmatively demonstrates that the developer would have the financial capacity to construct, operate, and maintain all aspects of the development.

The applicant estimates the total cost of the project to be \$145 million. Weaver Wind, LLC is a legal entity authorized to do business in the State of Maine and is wholly owned by Longroad Development Holdings, LLC, which is a wholly owned subsidiary of Longroad Energy Partners, LLC. The applicant submitted a plan detailing financing for the project. The financing proposed would include a combination of construction debt, tax equity, and long-term debt commitments. The applicant also submitted a letter from KeyBank, dated August 29, 2018 stating that Longroad Energy Partners, LLC would likely be able to obtain financing for the project.

4. TECHNICAL ABILITY:

Pursuant to Chapter 373 §2, applications for approval of proposed developments must include evidence that affirmatively demonstrates that the applicant would have the technical ability to undertake the proposed development and to meet state air and water pollution control standards.

The applicant provided resume information for key persons involved with the project and a list of projects successfully constructed by the applicant. The applicant retained the services of the following companies to prepare the application:

- Stantec Consulting – permitting, soils, natural resource assessment
- Reed and Reed, Inc., and James W. Sewall Company – civil engineering and stormwater analysis
- CHA, Inc. – electrical engineering
- Plisga & Day – land surveys
- Aerial Survey and Photo, Inc. – aerial photography interpretation
- Epsilon Associates, Inc. – shadow flicker assessment
- Terrence J. DeWan & Associates – visual impact analysis
- Market Decisions, LLC – user surveys
- Bodwell EnviroAcoustics, LLC – sound assessment
- TRC Solutions – prehistoric archaeological resources
- Independent Archaeological Consulting, LLC – historic archaeological resources
- Kleinfelder – historical architectural resources
- Verrill Dana – legal counsel
- Normandeau Associates, Inc. - soil surveys
- Western Ecosystems - biology

5. NOISE:

To address the standards pertaining for the control of noise in the Site Law, 38 M.R.S. § 484(3), and the Department's pertinent rule, in Chapter 375 §10, the applicant submitted a sound level assessment entitled "Sound Level Assessment, Weaver Wind Project," completed by Bodwell EnviroAcoustics, LLC, dated October 2018. The sound level assessment was conducted to predict expected sound levels from the proposed project, and to compare the model results to the applicable requirements of Chapter 375 §10.

The Weaver Wind project is required to comply with Department regulations applicable to sound levels from construction activities, routine operation and routine maintenance. Chapter 375 §10 applies sound level limits ( $L_{eqA-Hr}$ ) at facility property boundaries and at "protected locations." Chapter 375 §10(G)(16) defines a protected location as "[a]ny location accessible by foot, on a parcel of land containing a residence or planned residence or approved subdivision near the development site at the time a Site Location of Development application is submitted..." In addition to residential parcels, protected locations include, but are not limited to, schools, state parks, and designated wilderness areas. For the proposed project, the nearest protected location would be 4,590 feet from the closest turbine.

As outlined in Chapter 375 §10(I)(2), the sound level resulting from routine operation of a wind energy development is limited to 75 decibels (dBA) at any time of day at any development property boundary. At any protected location, the limit is 55 dBA between 7:00 a.m. and 7:00 p.m., and 42 dBA between 7:00 p.m. and 7:00 a.m.

Additionally, turbines located within the Town of Eastbrook would be subject to the Eastbrook Wind Energy Facility Ordinance. To comply, within 660 feet of any protected location, the sound level may not exceed 40 dBA between 6:00 p.m. and 7:00 a.m. The sounds level at any location within two miles of a turbine may not exceed 35 dBA.

To assist with the review of the application, the Department retained an independent noise consultant, Tech Environmental, Inc., to review the applicant's prediction model and associated data as well as other evidence received on the issue of noise.

- A. Sound Level Modeling. The applicant's noise consultant, Bodwell EnviroAcoustics LLC, developed a sound level prediction model to estimate sound levels from the operation of the proposed project. The sound model for the project was created using Cadna/A software developed by DataKustik of Germany. Cadna/A allows the consultant to construct topographic surface models of area terrain for calculating sound attenuation from multiple sound sources such as wind turbines. The locations of the proposed turbines, roads, parcels, land uses and waterbodies were entered into Cadna/A in order to calculate sound levels at various points within the proposed project area. Sound level predictions were calculated in accordance with ISO 9613-2, which is an international standard for calculating outdoor sound propagation.

This computerized model can predict sound levels at specific receiver positions originating from a variety of sound sources. Applicable national or international standards can also be included in the analysis as described above. Cadna/A accounts for such factors as:

- Distance attenuation;
- Geometrical characteristics of sources and receivers;
- Atmospheric attenuation (i.e. the rate of sound absorption by atmospheric gases in the air between sound sources and receptors);
- Ground attenuation (effect of sound absorption by the ground as sound passes over various terrain and vegetation types between source and receptor);
- Screening effects of surrounding terrain; and
- Meteorological conditions and effects.

Sound associated with the operational phase of the project was modeled excluding other existing sound sources. Modeling the sound generated from the operation of the 22 turbines was conducted using the manufacturer's full rated sound level output. Vestas V126 turbines with STE blades have a full rated sound level output of 104.3 dBA with a manufacturer uncertainty value of 2.0 dBA. In addition, the applicant added 1 dBA to the turbine sound power output to compensate for any uncertainty in the model. The model was run with all 22 turbines operating at full sound power output. The highest predicted sound level for a turbine subject to the Department's 42 dBA standard is 37.0 dBA at Receptor W1. At Receptor W3A, which would be subject to Eastbrook's 40 dBA limit, the predicted sound level would be less than 35.0 dBA. At Receptor W4, which would be subject to Eastbrook's 35 dBA limit, the predicted sound level would be 30.5 dBA. Finally, at Receptor H1, representing private dwellings on the southeast shore of Spectacle Pond that would be subject to sound from both Weaver and the Hancock Wind project, the predicted sound level would be 38.2 dBA.

The applicant concluded that the proposed project would result in sound levels below the required daytime sound level limit of 55 dBA and the nighttime (7:00 p.m. to 7:00 a.m.) sound level limit of 42 dBA at all protected locations. The applicant also concluded the proposed project would result in sound levels below the Town of Eastbrook's Ordinance levels of 40 dBA within 660 feet of a protected location, and 35 dBA at any location greater than two miles from a turbine.

B. Tonal Sound. As defined in Chapter 375§ 10(I)(3), a tonal sound exists if:

“...at a protected location, the 10-minute equivalent average one-third octave band sound pressure level in the band containing the tonal sound exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by 5 dB for center frequencies at or between 500 Hz and 10,000 Hz, by 8 dB for center frequencies at or between 160 and 400 Hz, and by 15 dB for center frequencies at or between 25 Hz and 125 Hz. 5 dBA shall be added to any average

10-minute sound level ( $Leq_{A 10\text{-min}}$ ) for which a tonal sound occurs that results from routine operation of the wind energy development.”

The applicant’s October 2018 sound level assessment states that the Vestas turbines carry Sound Level Performance Standard warranties certifying that they would not produce a tonal sound as it is defined by the Department’s Noise Regulations. In its review of the applicant’s sound level assessment on behalf of the Department, Tech Environmental, Inc. confirmed that an analysis of the sound power level spectrum for the turbines revealed that they have no potential for creating a tonal sound as defined in the Department’s Noise Regulations.

C. Short Duration Repetitive Sound. Chapter 375 §10(I)(4) defines short duration repetitive sound (SDRS) as:

“...a sequence of repetitive sounds that occur within a 10-minute measurement interval, each clearly discernible as an event resulting from the development and causing an increase in the sound level of 5 dBA or greater on the fast meter response above the sound level observed immediately before and after the event, each typically  $\pm 1$  second in duration, and which are inherent to the process or operation of the development.” Chapter 375 §10(I)(4) requires that if any defined SDRS results from routine operation of a development, 5 dBA must be added to the average 10-minute sound level ( $Leq_{A 10\text{ min}}$ ) measurement interval in which greater than 5 SDRS events are present.

The October 2018 sound level assessment submitted by the applicant summarized measurements of operating wind turbines in Maine and data from published literature that indicates that sound level fluctuations during the blade passage of wind turbines typically range from 2 to 5 dBA, with an occasional event reaching 6 dBA or more. Based on the applicant’s sound level assessment and the assessment by the Department’s noise consultant, it appears that the proposed project would be unlikely to generate SDRS that would result in sound levels above the applicable limits. Compliance testing for SDRS would be incorporated into the post-construction noise monitoring program (discussed in Section 5.G. below) after project completion to provide assurance that SDRS is not occurring at a rate that would result in sound levels above the applicable limits.

D. Peer Review and Analysis. Tech Environmental, Inc. reviewed Section 1, Project Description, as well as Section 5, Noise, of the project application. Section 5 contains the report by Bodwell EnviroAcoustics, LLC, which is entitled “Sound Level Assessment Weaver Wind Project.” Tech Environmental, Inc. concluded that the Vestas V126 turbine maximum sound power levels with conservative uncertainty factors were used in the analysis; the acoustic models and their assumptions are appropriate; the sound receiver locations are appropriate; the decibel contour maps adequately cover the potential impact area; and Chapter 375 §10 and Town of Eastbrook’s Wind Energy Facility requirements have been properly interpreted and applied by the applicant. Additionally, Tech

Environmental, Inc. states the applicant submitted a cumulative impact analysis of Weaver Wind, Hancock Wind, and Bull Hill Wind projects, demonstrating compliance with both Department and Eastbrook noise regulations.

- E. Winter Operating Protocol. Turbine blade icing can increase sound levels. Previous analyses have shown Turbine Power Degradation (TPD) is an effective indicator of increased sound output. The applicant proposes to monitor nine turbines (turbines #3-11) for TPD. If TPD reaches 25% on one or more turbines, turbine pausing and/or noise-reduced operation (NRO) would be activated for all nine of these turbines. A Winter Operating Protocol would be developed and submitted to the Department prior to start of commercial operation of the development.
- F. Post-construction Monitoring Program. In its review, Tech Environmental, Inc. stated that to ensure that the sound level predictions submitted by the applicant are accurate, and to ensure compliance with the Department's and the Town of Eastbrook's Noise Regulations, including the provisions regarding SDRS and tonal sound, it recommended that the Department require post-construction sound monitoring for the project at Receptor W1 and Receptor H1 if the project is approved. Tech Environmental, Inc. also recommended that at least six of the twelve test periods to be used in the compliance test report represent nighttime (7:00 p.m. to 7:00 a.m.) conditions during which the sound level limit is 42 dBA. In addition, the compliance test report would include a complete presentation of the data and calculations for the SDRS analysis.
- G. Sound Complaint Response and Resolution Protocol. The applicant proposes to implement a formal protocol for responding to sound complaints. The protocol would be required to meet all applicable standards of Chapter 375 §10(I)(7)(j).

6. SCENIC CHARACTER:

The Site Law, 38 M.R.S. § 484(3), and the NRPA, 38 M.R.S. § 480-D, both have standards pertaining to scenic impacts that must be satisfied in order to obtain a permit for a wind energy development. The Site Law generally requires an applicant to demonstrate that the applicant has made adequate provision for fitting the development harmoniously into the existing natural environment and that the proposed project would not adversely affect existing uses or scenic character. Pursuant to the NRPA, an applicant must demonstrate that a proposed project would not unreasonably interfere with existing scenic, aesthetic or recreational uses of a protected natural resource. The WEA modifies and further specifies those standards and states that when expedited wind energy developments are being evaluated:

[T]he [Department] shall determine, in the manner provided in subsection 3, whether the development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character... Except as otherwise

provided in subsection 2, determination that a wind energy development fits harmoniously into the existing natural environment in terms of potential effects on scenic character and existing uses related to scenic character is not required for approval under... Title 38, section 484, subsection 3. 35-A M.R.S. § 3452(1).

The proposed project contains “generating facilities” including wind turbines as defined by 35-A M.R.S. § 3451(5) and “associated facilities” such as buildings, access roads, and collection lines, as defined by 35-A M.R.S. § 3451 (1). With regard to the associated facilities, the WEA, 35-A M.R.S. § 3452(2), provides in pertinent part that:

The [Department] shall evaluate the effect of associated facilities of a wind energy development in terms of potential effects on scenic character and existing uses related to scenic character in accordance with... Title 38, section 484, subsection 3, in the manner provided for development other than wind energy development if the [Department] determines that application of the standard in subsection 1 to the development may result in unreasonable adverse effects due to the scope, scale, location or other characteristics of the associated facilities. An interested party may submit information regarding this determination to the [Department] for its consideration. The [Department] shall make a determination pursuant to this subsection within 30 days of its acceptance of the application as complete for processing.

The WEA, 35-A M.R.S. § 3452(3), further provides that:

A finding by the [Department] that the development’s generating facilities are a highly visible feature in the landscape is not solely sufficient basis for determination that an expedited wind energy project has an unreasonable adverse effect on the scenic character and existing uses related to scenic character of a scenic resource of state or national significance. In making its determination under subsection 1, the [Department] shall consider insignificant the effects of portions of the development’s generating facilities located more than 8 miles, measured horizontally, from a scenic resource of state or national significance.

To address the scenic impact criteria, the applicant submitted a Visual Impact Assessment (VIA) prepared by Terrence J. DeWan & Associates. The VIA examined the potential scenic impact of the generating facilities and associated facilities on Scenic Resources of State or National Significance (SRSNS) within eight miles of the proposed project using the evaluation criteria contained in the WEA. The applicant also submitted a user intercept survey authored by Market Decisions. The applicant identified nine SRSNS within eight miles of the proposed generating facilities. The anticipated scenic impacts from the proposed project are discussed below.

The applicant’s VIA for the generating facility and associated facilities addressed the criteria set forth in 35-A M.R.S. § 3452(3):



- (A) The significance of the potentially affected scenic resource of state or national significance;
- (B) The existing character of the surrounding area;
- (C) The expectations of the typical viewer;
- (D) The expedited wind energy development's purpose and the context of the proposed activity;
- (E) The extent, nature, and duration of potentially affected public uses of the scenic resource of state or national significance and the potential effect of the generating facilities' presence on the public's continued use and enjoyment of the scenic resource of state or national significance; and
- (F) The scope and scale of the potential effect of views of the generating facilities on the scenic resource of state or national significance, including but not limited to issues related to the number and extent of turbines visible from the scenic resource of state or national significance, the distance from the scenic resource of state or national significance and the effect of prominent features of the development on the landscape.

A. Scenic Resources of State or National Significance. SRSNS are defined in 35-A M.R.S. § 3451(9). The following is a description of what constitutes each type of SRSNS and the applicant's assessment of potential impacts to each of the SRSNS within eight miles of the proposed generating facilities:

- 1) National Natural Landmarks. A federally designated wilderness area or other comparable outstanding natural and cultural features, such as the Orono Bog or Meddybemps Heath.

The applicant did not identify any national natural landmarks within eight miles of the project.

- 2) Historic Places. Properties listed on the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966, as amended.

The applicant identified three places listed on the National Register of Historic Places located within eight miles of the project. The three sites, the Eastbrook Baptist Church, the Town House in Eastbrook, and the Brick School House in Aurora, would not have any views of the project. The applicant concluded that the proposed project would not have an unreasonable adverse effect on the scenic character or existing uses related to the scenic character of these historic places.

- 3) National or state parks.

The applicant did not identify national or state parks within eight miles of the project.

- 4) Great ponds. A great pond is a SRSNS if it is:

- a. one of the 66 great ponds located in the State's organized area identified as having outstanding or significant scenic quality in the "Maine's Finest Lakes" study published by the Executive Department, State Planning Office in October 1989; or,
- b. one of the 280 great ponds in the State's unorganized or de-organized areas designated as outstanding or significant from a scenic perspective in the "Maine Wildlands Lakes Assessment" (MWLA) published by the Maine Land Use Regulation Commission in June, 1987.

There are no great ponds within eight miles of the generating facilities listed in the "Maine Finest Lakes" study. The applicant identified six great ponds within eight miles of the project that have been rated outstanding or significant for scenic quality in the MWLA. The applicant identified the six SRSNS as Alligator Lake, Narraguagus Lake, Upper Lead Mountain Pond, Middle Lead Mountain Pond, Lower Lead Mountain Pond, and Myrick Pond. According to the applicant's VIA, the project would be visible from four of the six great ponds within eight miles of the project. The proposed project would not be visible from Alligator Lake or Myrick Pond.

#### *Narraguagus Lake*

Narraguagus Lake is a 426-acre lake located in T16 MD, T10 SD, and T9 SD. The proposed project would be located about 5.1 miles southeast of Narraguagus Lake. The applicant described the shoreline as largely undeveloped, with approximately six camps on the northwest and western shore. The lake does not have a public boat launch. The camps are accessed by a logging road. Narraguagus Lake is rated as 'significant' for scenic quality in the MWLA.

The applicant's VIA states that the closest visible turbine is approximately 6.3 miles away. The viewshed analysis, using a 40-foot tree height, indicated blades from up to five turbines may be visible from the eastern side of the lake. However, a refined 3D modeling lowered the visibility to blades from only one turbine. The turbine blades would be visible from approximately 22% of Narraguagus Lake. The applicant concluded that the proposed project should not have an unreasonable adverse effect on the scenic character or existing uses related to the scenic character of Narraguagus Lake.

#### *Upper Lead Mountain Pond*

Upper Lead Mountain Pond is a 1,021-acre pond located in T28 MD and T22 MD, which is located about 3.7 miles north of the project. There is a gravel surface public boat launch on the southeastern side of the pond and the pond is developed with multiple camps. Upper Lead Mountain Pond is rated as 'significant' for scenic quality in the MWLA. The applicant conducted surveys of people using the pond. According to the survey, 100% of visitors thought the

project would have no effect or a positive effect on their likelihood to visit the pond in the future.

The applicant's VIA indicates that the closest visible turbine is approximately 3.7 miles away. Approximately 26% of Upper Lead Mountain Pond would have views of up to one nacelle and the blades of up to four additional turbines. The applicant's VIA also indicates that several red warning lights would be visible at night from the eastern side of the pond. The applicant concluded that the proposed project should not have an unreasonable adverse effect on the scenic character or existing uses related to the scenic character of Upper Lead Mountain Pond.

#### *Middle and Lower Lead Mountain Ponds*

Middle and Lower Lead Mountain Ponds are a combined pond of 575 acres, located in T28 MD. The pond was rated as 'significant' for scenic quality in the MWLA. The pond has approximately 12 camps and a public gravel boat launch is located at the south end of Lower Lead Mountain Pond.

The applicant's VIA indicates the nearest turbine is 2.0 miles away. Approximately 26% of Middle Lead Mountain Pond and 35% of Lower Lead Mountain Pond would have views of the blades for up to four turbines (Middle) and four nacelles and three blades (Lower). The applicant conducted surveys of people using Lower Lead Mountain Pond. According to the survey, 100% of visitors thought the project would have no effect or a positive effect on their likelihood to visit the pond in the future. The applicant's VIA also indicates that several red warning lights would be visible at night from the northeastern side of the pond. The applicant concluded that the proposed project would have no unreasonable adverse effect on the scenic character or existing uses related to the scenic character of Middle and Lower Lead Mountain Pond.

- 5) Scenic Rivers or Streams. A segment of a scenic river or stream is a SRSNS if it is identified as having unique or outstanding scenic attributes listed in the 1982 "Maine Rivers Study" by the Department of Agriculture, Conservation and Forestry. The applicant identified a 24-mile segment of the West Branch Union River as a SRSNS. While three turbines are located within 8 miles of the River, the applicant stated project visibility would be minimal to none based on intervening vegetation.
- 6) Scenic Viewpoints. A scenic viewpoint is a SRSNS if it is located on state public reserved land or on a trail that is used exclusively for pedestrian use, such as the Appalachian Trail, that the Department of Agriculture, Conservation and Forestry designates by rule adopted in accordance with 35-A M.R.S. § 3457.

There are no qualifying scenic viewpoints from which turbines would be visible for this project.

- 7) Scenic Turnouts. A scenic turnout is a SRSNS if it has been constructed by the Department of Transportation pursuant to 23 M.R.S. § 954 on a public road designated as a scenic highway.

A 4-mile portion of the Blackwoods Scenic Byway is located within 8 miles of the proposed project. However, no scenic turnouts are located along that portion of the Byway.

- 8) Coastal Scenic Viewpoints. To qualify as a SRSNS, a scenic viewpoint located in the coastal area, as defined by 38 M.R.S. § 1802((1)), must be ranked as having state or national significance in terms of scenic quality in:

(a) one of the scenic inventories prepared for and published by the Executive Department, State Planning Office: “Method for Coastal Scenic Landscape Assessment with Field Results for Kittery to Scarborough and Cape Elizabeth to South Thomaston,” Dominie, et al., October 1987; “Scenic Inventory Mainland Sites of Penobscot Bay,” Dewan and Associates, et al., August 1990; or “Scenic Inventory: Islesboro, Vinalhaven, North Haven and Associated Offshore Islands,” Dewan and Associates, June 1992; or

(b) a scenic inventory developed by or prepared for the Executive Department, State Planning Office in accordance with 38 M.R.S. § 3457.

The applicant did not identify any coastal scenic viewpoints within eight miles of the turbines.

- B. Peer Review of the Visual Impact Assessment. The Department hired Scenic Quality Consultants, an independent scenic consultant, to assist in its review of the evidence submitted on scenic character. Scenic Quality Consultants visited the project on November 7, 2018. Scenic Quality Consultants reviewed the VIA for adequacy and provided the Department with comments dated December 24, 2018. In its comments, Scenic Quality Consultants stated the VIA meets or exceeds the professional standards for conducting and reporting a wind energy project VIA.

- C. Cumulative Impact. The proximity of the Bull Hill and Hancock Wind projects to the proposed project necessitates an analysis of the potential for cumulative impacts to some of the SRSNS.

- 1) Narraguagus Lake. One blade from the proposed project, 6 turbines from the Hancock project, and up to 19 turbines from Bull Hill would be visible from the Lake.
- 2) Upper Lead Mountain Pond. No turbines from the Bull Hill project are visible. Four turbines from the Hancock project and 5 turbines from the Weaver project would be visible from the Pond.

- 3) Middle and Lower Lead Mountain Ponds. No turbines from the Bull Hill project are visible. Blades from up to nine Hancock turbines, and seven Weaver turbines would be visible.

D. Night Lighting. The applicant proposes to install a radar-assisted lighting (RAL) system upon receiving Federal Aviation Administration approval. With RAL, safety lights remain off until they are activated by aircraft operating in the vicinity of the turbines.

7. WILDLIFE AND FISHERIES:

Applicants for Site Law or NRPA permits are required to demonstrate that the proposed project would adequately provide for the protection of wildlife and fisheries and would not cause unreasonable harm to any significant wildlife habitat; freshwater plant habitat; threatened or endangered plant habitat; aquatic or adjacent upland habitat; travel corridor; freshwater, estuarine or marine fisheries; or other aquatic life. The applicant retained Stantec Consulting to conduct wildlife surveys; wetland delineations; rare, threatened and endangered plant and animal surveys; and vernal pool surveys. The applicant consulted with the Department and other federal and state natural resource agencies during the preparation of the applications.

The Maine Department of Inland Fisheries and Wildlife provided review comments on the proposed project to the Department on April 10, 2019.

8. HISTORIC SITES AND UNUSUAL NATURAL AREAS:

The Maine Historic Preservation Commission reviewed the proposed project and stated that it would have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

The Maine Natural Areas Program database does not contain any records documenting the existence of rare or unique botanical features on the project site.

9. BUFFERS:

The applicant proposes to maintain stormwater management buffers and buffers for natural resource protection. All buffers would be vegetated. The applicant proposes to implement vegetation removal practices during and after project construction in some areas to preserve and maintain buffers. These practices include no cutting or limited and selective clearing. The locations of the proposed buffers are shown on project plans submitted with the application.

A. Stormwater Buffers. The applicant proposes to maintain stormwater buffers along the access road and around the turbine pads. The proposed stormwater and phosphorus treatment measures, including the proposed buffers, are more fully described below in Section 11.

- B. Atlantic Salmon Stream Buffers. There are nine perennial streams located in critical Atlantic salmon habitat watersheds along collector line corridors or adjacent to access roads. The majority of the collector lines would be installed underground, with no impacts to the streams. The crossing of the East Branch of the Union River would require vegetation clearing during project construction. Any areas requiring vegetation maintenance would have a 100-foot wide vegetated buffer and only plants that are capable of growing within 15 feet of the conductor within the next three to four years would be removed. The applicant proposes to place permanent structures a minimum of 60 feet from perennial streams/ivers. Initial clearing and vegetation maintenance would be completed by hand-cutting or by using low-ground-pressure tree harvesting equipment.
- C. Vegetation Management Plan. The applicant submitted a Vegetation Management Plan for the proposed project, prepared by Stantec Consulting Services, Inc., dated August 2018, which describes the plan for routine maintenance activities. The plan summarizes vegetation management methods and procedures that would be utilized by the applicant for overhead collector line corridors.

10. SOILS:

The applicant submitted a Class L soil survey for the turbines, met towers, and access roads, and a Class B soil survey for the O&M building, laydown areas, and substation. A Class D soil survey was completed for the electrical collector line areas. These surveys were prepared by a certified soils scientist and reviewed by staff from the Department's Division of Environmental Assessment.

The applicant proposes to conduct geotechnical investigations of new road segments and/or turbine pads prior to construction.

11. STORMWATER MANAGEMENT:

The proposed project would include approximately 40.5 acres of new impervious and developed area. It would be within the watershed of Spectacle Pond, Graham Lake, and the Union River. The applicant submitted a stormwater management plan based on the Basic, General, Phosphorus, and Flooding Standards contained in Department Rules, Chapter 500. The proposed stormwater management system would consist of 173 buffers, an underdrained soil filter, and a detention pond.

A. Basic Standards:

(1) Erosion and Sedimentation Control: The applicant submitted an Erosion and Sedimentation Control Plan (Section 14 of the application) that is based on the performance standards contained in Appendix A of Chapter 500 and the Best Management Practices outlined in the Maine Erosion and Sediment Control BMPs, which

were developed by the Department. This plan and plan sheets containing erosion control details were reviewed by the Bureau of Land Resources (BLR).

Erosion control details would be included on the final construction plans and the erosion control narrative would be included in the project specifications to be provided to the construction contractor.

(2) Inspection and Maintenance: The applicant submitted a maintenance plan that would address both short and long-term maintenance requirements. The maintenance plan is based on the standards contained in Appendix B of Chapter 500. This plan was reviewed by BLR. The applicant would be responsible for the maintenance of all common facilities including the stormwater management system.

(3) Housekeeping: The applicant submitted a proposed plan to comply with the performance standards outlined in Appendix C of Chapter 500.

#### B. General and Phosphorus Standards:

The applicant's stormwater management plan includes general treatment measures to mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. This mitigation would be achieved by using Best Management Practices (BMPs) that would control runoff from no less than 95% of the impervious area and no less than 80% of the developed area for the O&M building. The parts of the proposed project in the Graham Lake watershed meet the definition of "a linear portion of a project" in Chapter 500 and the applicant is proposing to control runoff volume from no less than 75% of the impervious area and no less than 50% of the developed area.

The stormwater buffers would be protected from alteration through the execution of a deed restriction. The applicant submitted a draft deed restriction.

Since part of the proposed project is located in the watershed of Spectacle Pond, stormwater runoff from the project site would be treated to meet the Phosphorus Standard outlined in Chapter 500 §4(C). The applicant's phosphorus control plan was developed using methodology developed by the Department and outlined in "Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development". For the portion of the project located in Eastbrook, the Permitted Phosphorus Export is 3.4722 pounds of phosphorus per year. The applicant proposes to remove phosphorus from the project's stormwater runoff by utilizing buffers, as shown on the set of plans referenced above in Section 1. The Predicted Phosphorus Export for the Eastbrook portion, based on the applicant's model would be 3.4341 pounds per year. For the portion of the project located in Osborn, the Permitted Phosphorus Export is 14.584 pounds of phosphorus per year. The Predicted Phosphorus Export for the Osborn portion, based on the applicant's model would be 13.9395 pounds per year. For the portion of the project located in T22 MD, the Permitted Phosphorus Export is 0.1261 pounds of phosphorus per year. The

Predicted Phosphorus Export for the T22 MD portion, based on the applicant's model would be 0.1181 pounds per year. The applicant states that the proposed stormwater treatment would be able to reduce the export of phosphorus in the stormwater runoff below the maximum Permitted Phosphorus Export for the site.

The stormwater management system proposed by the applicant was reviewed by, and revised in response to comments from, BLR. After a final review, BLR commented that the proposed stormwater management system would be designed in accordance with the General and Phosphorus Standard contained in Chapter 500 §4(B) and Chapter 500 §4(C).

C. Flooding Standard:

The applicant estimated pre- and post-development stormwater runoff flows by using Hydrocad, a stormwater modeling software that utilizes the methodologies outlined in Technical Releases #55 and #20, U.S.D.A., Soil Conservation Service. The post-development peak flow from the site would not exceed the pre-development peak flow from the site and the peak flow of the receiving waters would not be increased as a result of stormwater runoff from the development site.

12. GROUNDWATER:

There are two significant sand and gravel aquifers located in and around the site of the proposed project. The closest significant sand and gravel aquifer to any turbine would be 1,300 feet away.

The applicant submitted a construction Spill Prevention Control and Countermeasure (SPCC) plan it would intend to use. The SPCC plan includes general operational requirements, storage and handling requirements, and training requirements to prevent spilling of oil, hazardous materials, or waste. The plan also sets out spill reporting and cleanup requirements should such an event occur.

13. WATER SUPPLY:

The proposed project would anticipate using approximately 300 gallons of water per day for the O&M building. The applicant submitted an assessment of groundwater supplies that are available on the project site. This assessment was prepared by a well driller and was reviewed by the DEA.

14. WASTEWATER DISPOSAL:

When completed, the proposed project would be predicted to discharge 300 gallons of wastewater per day from the O&M building. Wastewater would be disposed of by an individual subsurface wastewater disposal system. The applicant submitted an HHE-200 form for the proposed disposal system. This information was reviewed by DEA.



15. SOLID WASTE:

When completed, the proposed project would generate 264 cubic yards of general office solid waste per year for the O&M building. All general solid wastes from the proposed project would be disposed of at Penobscot Energy Recovery Company, which is currently in substantial compliance with the Maine Solid Waste Management Rules.

Approximately 55 large tires would be disposed of at BDS Waste Disposal. BDS is in compliance with Maine Solid Waste Management Rules.

The applicant proposes to sell any marketable timber/pulp from the project site. Stumps may be left in place, used to make erosion control mix, or would be deposited in a stump dump. Any stump dumps would be operated in compliance with Maine Solid Waste Management Rules.

The proposed project would generate approximately 1080 cubic yards of construction debris and demolition debris. All construction and demolition debris generated would be disposed of at Juniper Ridge Landfill, which is currently in substantial compliance with the Maine Solid Waste Management Rules.

16. FLOODING:

The proposed project is not located within the 100-year flood plain of any river or stream.

17. BLASTING:

The applicant anticipates that blasting would be required to facilitate the construction of the access roads, turbine foundations and other portions of the project. DEA reviewed a blasting plan submitted by the applicant outlining the proposed procedures for removing bedrock. The DEA commented that any blasting at the site would be required to comply with all applicable provisions of 38 M.R.S. §490-Z.

18. AIR EMISSIONS:

The applicant states that there would be no sources of emissions associated with the operation of the project that would require an air emission license. The applicant states that it would control dust generated during construction activities with calcium chloride, water or other approved dust control agents on an as needed basis.

19. ODORS:

The applicant states that no odors would be associated with the construction or operation of the facility.

20. WATER VAPOR:

The applicant states that the proposed project would not produce any water vapors as a result of construction or operation activities.

21. SUNLIGHT:

The applicant states that the proposed project would not block access to direct sunlight for any structures using solar energy through active or passive systems.

22. PUBLIC NOTICE:

The applicant held a public information meeting on September 25, 2018 in Eastbrook, Maine. Approximately 32 members of the public attended the meeting. Notices were mailed to project abutters announcing the anticipated submission of the application. A public notice was also placed in the Bangor Daily News on October 26, 2018. The Department placed notices in the Bangor Daily News on December 29, 2018 and January 5, 2019 notifying the public of the Department's public meeting which was held in Aurora on January 16, 2019. Notices were placed in the Ellsworth American on March 28 and April 4 for the Department's planned second public meeting to be held on April 18, 2019.

23. WETLAND IMPACTS:

The applicant proposes to clear 110,041 square feet of forested and scrub shrub wetland for turbine transport, a temporary laydown area, and collector lines. No fill is proposed in the wetlands.

The Wetland Protection Rules interpret and elaborate on NRPA criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. No activity may be permitted if there is a practicable alternative to the project that would be less damaging to the environment. The applicant submitted an alternative analysis for the proposed project completed by Stantec and dated October 2018. The purpose of the proposed wetland alteration would be to provide clearance for turbine transport and collector lines. No fill would be proposed in wetland. The applicant designed the project to utilize existing roads, when possible, to avoid fill in wetlands at the project site. In order to meet the stated project purpose some impacts to freshwater wetlands would be unavoidable.

B. Minimal Alteration. The amount of freshwater wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project.

Wetland impacts would consist of one-time vegetation cutting to a height of one to two feet above ground for transportation or collector line installation. No soil disturbance would be proposed in these areas and no loss of wetland functions and values would be anticipated. The applicant designed the overall project, as well as details such as turbine pad locations, size, and shape, to minimize wetland impacts.

C. Compensation. In accordance with Chapter 310 §5(C)(6)(a), compensation would not be required to achieve the goal of no net loss of wetland functions and values since the project would not result in fill in the resource.

24. SHADOW FLICKER:

In accordance with 38 M.R.S. § 484(10), an applicant must demonstrate that a proposed wind energy development has been designed to avoid unreasonable adverse shadow flicker effects. Shadow flicker means alternating changes in light intensity caused by rotating wind turbine blades casting shadows on the ground or a stationary object. Shadow flicker occurs as the shadows of the blades move past the observation point, when the rotor is directly between the observer and the sun, and the rotor is spinning.

The applicant submitted a shadow flicker analysis with its application. The applicant used WindPRO, a wind modeling software program, to model expected shadow flicker effects on adjacent properties from the 22 proposed turbine locations. The applicant assumed a worst-case scenario, that all receptors have a direct in-line view of the incoming shadow flicker sunlight, and did not take into account any existing vegetative buffers.

The Department generally recommends that applicants conduct a shadow flicker model out to a distance of 1,000 feet or greater from a residential structure, and the applicant's model did so. The applicant modeled 63 receptors. An applicant must demonstrate that the project would not generate more than 30 hours per year of shadow flicker on any occupied building on the property not owned by the applicant, or subject to an easement for shadow flicker. The applicant's WindPRO analysis concludes that no properties subject to this requirement would receive shadow flicker in excess of 30 hours per year.

25. PUBLIC SAFETY:

The applicant proposes to use Vestas V126-3.45 wind turbines. The turbines conformity with International Electrotechnical Commission standards has been certified by Det Norske Veritas. The applicant provided a copy of the certification.

The Department recognizes that locating wind turbines a safe distance away from any occupied structures, public roads, or other public use areas is extremely important. In establishing a recommended safety setback, the Department considers industry standards for wind energy production in climates similar to Maine, as well as the guidelines

recommended by certifying agencies such as Det Norske Veritas. The Department requires that all wind turbines be set back from the property line, occupied structures, or public areas, a minimum of 1.5 times the sum of the hub height plus the rotor diameter or the normal setback requirement for the local zoning classification as dictated by local municipal zoning ordinance or the Land Use Planning Commission, whichever is greater. Based on the Department setback requirements, the minimum setback distance to the nearest property line should be 1,196 feet. A review of the application indicates that all turbines would be set back more than 1,200 feet of the nearest non-participating landowner and approximately 3,225 feet from the nearest private residence.

The turbines would be equipped with smoke detection systems. The turbines would be monitored remotely 24 hours a day, and would be designed to automatically stop in the event of a fire or smoke detection or failure of the detection system. The applicant submitted a Fire Safety Plan that details fire prevention protocol and standard operating procedures for a fire event.

The applicant submitted letters from the Maine Forest Service, the Eastbrook Volunteer Fire Department, and the Osborn Volunteer Fire Department which state that none of the agencies anticipate an adverse impact on fire services from the proposed project. The applicant submitted a draft Emergency Preparedness and Emergency Action Plan. The applicant proposes to submit a final Emergency Preparedness and Emergency Action Plan once developed.

26. DECOMMISSIONING PLAN:

In order to facilitate and ensure appropriate removal of the wind generation equipment when it reaches the end of its useful life, or if required by the Department, the Department requires applicants to demonstrate, in the form of a decommissioning plan, the means by which decommissioning would be accomplished. The applicant submitted a decommissioning plan which includes a description of the trigger for implementing the decommissioning, a description of the work required, an estimate of decommissioning costs, a schedule for contributions to its decommissioning fund, and a demonstration of financial assurance.

- A. Trigger for implementation of decommissioning. The proposed wind turbine generators are designed and certified by independent agencies for a minimum expected operational life of 20 years, however other factors may trigger the requirement for decommissioning before 20 years have passed.

After the commencement of operations, decommissioning of the entire facility would begin if no generation occurs for a period of twelve consecutive months. Decommissioning of one or more individual turbines must begin if 12 consecutive months of no generation occurs at that turbine. The exception is if one or more turbines are rendered inoperable by unanticipated mechanical or structural failures, or by fire, earthquake, flood, tornado, or other natural disaster; or war, civil strife or other similar violence, and if it will take more than twelve months to repair or replace

the inoperable turbine(s). In that instance, the applicant may request an additional twelve months to accomplish the repair or replacement without triggering the decommissioning requirement. The applicant may request an extension within six months of the event which renders the turbine(s) inoperable. If the extension request is denied, the decommissioning of the inoperable turbine(s) would be initiated within 18 months of the event.

- B. Financial Assurance. The applicant estimates that the current cost for decommissioning the project would be \$3,317,700. The applicant proposes financial assurance for the decommissioning costs would be in the form of (i) performance bond, (ii) surety bond, or (iii) irrevocable letter of credit, or other acceptable form of financial assurance for the total cost of decommissioning. The applicant proposes to have the financial assurance mechanism in place prior to construction and to re-evaluate the decommissioning cost and financial assurance every two years after project operations commence.

27. TANGIBLE BENEFITS:

In its application, the applicant described tangible benefits that the project would provide to the State of Maine and to host communities, including economic benefits and environmental benefits.

- A. Job Creation. The applicant states that its proposal would benefit the host communities and surrounding areas through construction-related employment opportunities. The applicant has stated that it would hire local firms and individuals whenever possible for concrete supply, civil and electrical work, and tree-clearing related to the project. Additionally, local businesses such as lodging, restaurants, and fuel supply may receive increased revenue due to the project. The applicant estimates the project would create approximately 135 full-time jobs during project construction/development and four to six permanent jobs for the operation and maintenance of the facility after construction.
- B. Generation of Wind Energy. The applicant estimates that the proposed project would provide an approximate average output of 228,800 megawatt-hours per year.
- C. Property Tax Payments. The applicant estimates that the project would result in estimated annual tax payments to the Town of Osborn (\$82,677), the Town of Eastbrook (\$354,654), and Hancock County Unorganized Territory (\$15,076).
- D. Community Benefits Agreement. The applicant proposes community benefit agreements with the Towns of Osborn (\$55,994/year) and Eastbrook (\$150,004/year). The above payments would be made yearly for 20 years. The communities may use the funds at their discretion for public purposes including lowering tax rates or investment in municipal assets and/or services. Annual payments made to Osborn and Eastbrook as part of the Community Benefits Agreements total \$9,363 per turbine per year for 20 years, which exceeds the \$4,000 per turbine per year for 20

- years required in 35-A M.R.S. § 3454(2). Additionally, the applicant proposes a one-time payment to the Town of Osborn in the amount of \$250,000 to be used for municipal services or infrastructure to advance public safety and a one-time payment in the amount of \$500,000 to the Town of Osborn to establish an energy conservation fund.
- E. Other tangible benefits. The applicant also proposes to make an annual payment to the Airline Riders ATV Club (\$10,000/year for 20 years) and a one-time payment to the Lower Lead Mountain Pond Owners Association (\$230,000) for a dam rehabilitation.
- F. Tangible benefit reporting. The applicant proposes to submit a report to the Department regarding the tangible benefits realized from the project. The applicant proposes that no later than 60 days after the first December 31 following commencement of commercial operation (denoted as Year 1 of operation), the applicant would report on the tangible benefits realized from the construction of the project and provide documentation of the project's community benefits packages and any payments made pursuant to such packages at the time of reporting. Biannually thereafter (i.e., no later than 60 days following December 31 of Years 3, 5, 7, 9, 11, 13, 15, 17 and 19 of operation), the applicant would submit information on the tangible benefits realized from the operation and maintenance of the project including but not limited to reporting on payments made in connection with the community benefits package requirements set forth in 35-A M.R.S. § 3454.
28. MAINE LAND USE PLANNING COMMISSION CERTIFICATION:
- The Land Use Planning Commission (LUPC) issued a determination on November 28, 2018, that the project is an allowed use in the subdistricts affected.
- In Commission Determination #SLC-6A, dated April 4, 2019 and signed by Nicholas D. Livesay, Executive Director, the LUPC certified that the project conforms with the applicable regulatory and statutory requirements, and plans adopted pursuant to 12 M.R.S. Chapter 206-A, and meets the Commission's Land Use Standards applicable to the project that are not considered in the Department's review, subject to conditions of approval.
29. BEST PRACTICAL MITIGATION:
- In P.L. 2013, Chapter 325, the Legislature requires applicants to submit information on best practical mitigation for all aspects of construction and operation of generating facilities.
- The applicant states that it designed the project to avoid any permanent fill in freshwater wetlands and to minimize intrusion into significant wildlife habitats. Buffers are proposed to minimize impacts to streams and wetlands and detailed erosion and sediment

control plans have been proposed to minimize soil erosion in and near resources during and after construction.

The applicant proposes to curtail the project to minimize impacts to bat populations and proposes a mitigation package to off-set impacts to migrating birds.

Radar-assisted lighting is proposed to minimize the visual impacts from the project on nearby scenic resources. The applicant located the proposed turbines to minimize visual impacts to the scenic resources and submitted a detailed analysis of scenic impacts.