

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

**PETITION NO. 983 - BNE Energy Inc. Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of a 4.8 MW Wind Renewable Generating facility located on Flagg Hill Road, Colebrook Connecticut.**

**BNE ENERGY INC.'S DEVELOPMENT AND  
MANAGEMENT (D&M) PLAN MODIFICATION  
JANUARY 9, 2020**

BNE Energy Inc. ("BNE") hereby respectfully requests approval of a Development and Management (D&M) Plan modification for the construction, operation and maintenance of the third wind turbine, an Enercon 4.23-megawatt ("MW") wind turbine with a 128 meter hub height and 138 meter diameter blade to be located at 29 Flagg Hill Road and 17 Flagg Hill Road in Colebrook, Connecticut. A copy of the Enercon wind turbine brochure is attached hereto as Exhibit A.

The third turbine is in addition to the two GE 2.85 MW wind turbines with 98.3 meter hub heights and 103 meter diameter blades currently in operations at the project site. BNE is requesting that the Enercon 4.2-138 be approved as it will produce significantly more renewable energy than the 2.85-103 wind turbine. BNE is also requesting a modification to the location of the third turbine, which will minimize wetland and environmental impacts. The improved location is made possible due to the planned acquisition of two parcels adjacent to 29 Flagg Hill Road that will add 37.2 acres to the project site. BNE has an option to purchase 27.21 acres located at 53 Flagg Hill Road, Colebrook, CT 06029. A redacted copy of the Option to Purchase 53 Flagg Hill Road is attached hereto as Exhibit B. BNE also has an option to purchase approximately 9.95 acres located at 45 Flagg Hill Road in Colebrook, CT 06029. A redacted copy of the Option to Purchase a portion of the property located at 45 Flagg Hill Road is attached hereto as Exhibit C. If this D&M plan modification is approved, both parcels will be purchased prior to construction and will be merged into 29 Flagg Hill Road, Colebrook, CT 06029. The requested modification would not constitute a significant change or alteration in the general physical characteristics of the facility, will result in significantly more renewable energy production, and will reduce wetland and environmental impacts.

In its Petition dated December 6, 2010, BNE proposed utilizing three 1.6 MW wind turbines with 82.5 m diameter blades and 100 m hub heights. On December 12, 2013, the Siting Council considered and approved the D&M plan modification dated November 5, 2013 approving the construction, operation and maintenance of three GE 2.85-103 turbines at 98.3 meter hub heights. Two of the wind turbines were constructed and began commercial operations on November 4, 2015. It has been approximately six years since the Siting Council approved the D&M plan modification, and the GE 2.85-103 wind turbines at 98.3 meter hub heights are no longer available due to changes in GE's product line. GE has introduced a 5 MW wind turbine, but that turbine is not suitable for the site.

As a result, BNE is seeking approval of the newly available Enercon 4.2-138 MW wind turbine. The 4.2 wind turbine is designed for high performance, reliability and availability. Enercon's 4.2-138 wind turbine provides increased nameplate rating and significantly more annual electricity production than the GE 2.85-103. The turbine is also designed to meet or exceed the high availability and reliability of the GE wind turbine models.

The Enercon 4.2 wind turbine offers significant benefits as compared to the 2.85 wind turbine in terms of renewable electricity production and its revised location will result in lower environmental impacts as follows:

- 110% increase in renewable electricity production resulting in more renewable energy produced by the third turbine than is produced by the two existing 2.85 MW turbines combined;
- 47% increase in nameplate capacity from 2.85 MW to 4.2 MW and increased blade lengths resulting in a substantial increase in renewable electricity production;
- Substantial increase to the amount of Class I renewable energy credits produced by the project which will further help the State meet its RPS requirements;
- 24% reduction in wetland activity from 4,250 square feet down to 3,260 square feet;
- Significant reduction to vernal pool impacts; and
- No other adverse material effects.

To access the previously-approved location for the third turbine, there was approximately 4,250 square feet of activity within the wetland boundary which was previously approved by the Council. With the additional property acquired to the south, the access drive to the third turbine will be relocated to an area requiring only approximately 2,320 square feet of activity within the wetland boundary resulting in a reduction of 45% to the wetland activity. This is a significant reduction in the footprint of the disturbance within the wetlands from the previously-approved location. The access road has been designed in accordance with the same concepts and recommendations as the previously-approved layout.

Additionally, the previously-approved crossing location was approximately 500' from the closest vernal pool on the site and within the 750' protective envelope suggested for vernal pools. The new location is approximately 930' away (430' further) from the on-site vernal pools and entirely outside of the 750' protective boundary. As a result, the revised location for the third turbine minimizes wetland and environmental impacts and provides a more suitable location for the placement of the turbine as it relates to efficiency and renewable energy production. A copy of the updated civil plans for the location of the third turbine is attached hereto as Exhibit D and a copy of the updated Stormwater Management Plan is attached hereto as Exhibit E.

The State of Connecticut recognized the benefits of local renewable energy development and implemented renewable portfolio standards ("RPS") to encourage the development of renewable energy resources not only to lessen the country's dependence on foreign oil but also to reduce the environmental impacts associated with fossil fuel sources. The RPS require that 27.5 percent of electric generation in the State be produced via renewable sources for 2019 with 19.5 percent being produced by Class I renewable sources which includes wind energy. By 2020, the State RPS requirements will increase to 29 percent, with a minimum of 21 percent of which must

derive from Class I renewable energy sources. The RPS requirements increase to 48% by 2030 with a minimum of 40% being derived from Class I renewable energy, which includes wind.

Further, many of the State's cities and towns have pledged to obtain 20 percent of their electricity from renewable sources by 2020. Colebrook South will play an important role in meeting the State's renewable energy goals, and the new wind turbine will substantially increase the production of Class I renewable energy credits produced by the project which will further contribute to the overall RPS standards set by the State of Connecticut.

The rotor blades of the 1.6-82.5 wind turbines were 40.3 meters in length, but in its Petition for Wind Colebrook South, BNE requested approval for blade lengths of up to 50 meters to account for potential technological upgrades.

"While BNE is committed to using GE turbines, BNE has not signed a contract to purchase these specific turbines. GE has approved the proposed Project layout and has been kept apprised of the regulatory approval process of Wind Colebrook South. Due to ever-evolving technological advances, a longer blade length of up to 50 meters may be employed. Therefore, the visual resources evaluation utilizes a 50 meter blade length to account for potential technological upgrades." Petition at 8.

BNE also requested approval for 100 meter hub heights resulting in a maximum tip height of 492 feet which represents the total height of the tower plus the blade in its highest vertical position. The GE 2.85 wind turbines subsequently approved by the Siting Council have a rotor blade length of 50.2 meters and a hub height of 98.3 meters resulting in a maximum tip height of 491.34 feet, slightly lower than the maximum tip height that BNE requested approval for in its Petition. However, improvements to wind turbine technology continue to occur and the size of the wind turbines continues to increase. As noted above, GE currently manufactures a 5 MW onshore wind turbine. This turbine, for which BNE is not seeking approval, has 158 meter diameter blades and up to a 161 meter hub height. By comparison, the Enercon 4.2 MW wind turbine has 138 meter diameter blades and a 128 meter hub height. The addition of the Enercon 4.2-103 MW wind turbine will significantly increase the amount of renewable energy that is produced by Project, and will be less visible than the corresponding GE turbine. See Exhibit A.

On June 2, 2011, the Siting Council issued its Opinion, Decision and Order approving Wind Colebrook South. In the Opinion, the Siting Council found that "the visibility of the proposed turbines does not have a substantial adverse effect." Opinion, p. 5. The Siting Council also stated that, "Having looked at evidence regarding both the 82.5m and 100m rotor diameters proposed by BNE for this site, the Council is of the opinion that the visual impact is not significantly different." Id at 6. In the more than four years of operations since November 2015, the Project has not received any complaints regarding visual impacts, shadow flicker or ice drop. In fact, the overwhelming response from the public to the wind turbines has been extremely positive. BNE has given numerous tours of the wind project upon request from various schools, universities, environmental groups and other members of the public.

Although the Enercon 4.2 with 138 meter rotor diameters will be taller than the 2.85 MW turbines, the third turbine will be more than 1,000 feet from the existing turbines and will be further away in the woods. The proposed location of turbine three will also be approximately

1,950 feet further away from the closest point to Route 44, the main thoroughway in the area, and more than 1,300 feet further away from the closest point to Flagg Hill Road than the existing turbines. The location of the third turbine further in the woods from the homes located on Flagg Hill Road and Route 44 will mitigate any potential visual impact due to the taller size of turbine three as compared to the 2.85-103. Therefore, the visibility of the proposed 4.2 wind turbine does not have a substantial adverse effect. Similarly, any potential impact from shadow flicker due to the taller turbine will be mitigated by the location of the third turbine deeper in the woods and further away from Route 44 and Flagg Hill Road.

Ice studies were also calculated using 100 meter hub heights and 100 meter diameter blades during the Siting Council process, resulting in a minimum setback of 676 feet from the nearest residence. In addition, GE's ice setback requirements increased the minimum setback to 990 feet for the 2.85s without imposing additional ice safety measures. However, in 2017 GE revised its ice setback requirements consistent with industry standards and reduced the setback for the 2.85s from 990 feet down to 558 feet. A copy of the GE ice setbacks and the GE letter to WCS reducing the ice setback for the 2.85 MW turbines is attached as Exhibit F.

GE's ice setbacks which are among the strictest in the industry and would result in a setback of 711 feet from the nearest residence to turbine three. The nearest residence to turbine three is located on Beckley Road and is 1,027 feet away from the third turbine considerably further than GE's ice setback requirements. The next closest residence to the third turbine is also located on Beckley Road and is over 1,600 feet from the third turbine and all other residences in the vicinity are more than 2,000 feet from the third turbine.

Although the planned setbacks on their own are sufficient to address ice drop safely, the Enercon 4.2 MW turbine has an additional safety feature. Specifically, the Enercon 4.2 MW turbine has an option for a blade heating system which will be utilized for the third turbine to warm up the blade surface and melt ice which may form on the blades. This further mitigates any risk of ice on the blades. A copy of the Enercon heated blade option is attached as Exhibit G.

In addition, the Ice Safety Management Plan approved by the Siting Council will continue to be in effect and will not change as a result of utilizing the Enercon 4.2 MW turbine. These measures will fully address any concerns for ice from the third turbine.

The Enercon 4.2 MW turbine is comparable in sound to the GE 1.6 turbines that were previously approved by the Siting Council. Enercon utilizes Trailing Edge Serrations on the 4.2 turbine as an acoustic enhancement that enables improved turbine acoustics and ultra-quiet power production. In its Opinion, the Council found that the project would meet Connecticut allowable limits:

“On balance, the Council is satisfied that noise emitted by the project would meet Connecticut DEP allowable limits at the nearest residential receptors, and that the DEP regulations are protective of the public health.” Opinion at 5.

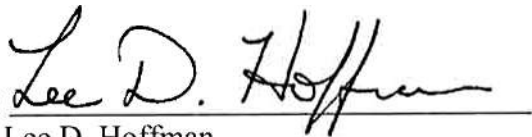
The maximum daytime and nighttime sound levels of the 1.6 MW wind turbines of 106 dBA were used in the Noise Evaluation report to conduct the worst-case noise impact for the project. The maximum daytime and nighttime sound level of the 4.2 MW wind turbines is also 106 dBA,

and would therefore also meet Connecticut DEEP allowable limits for noise. See Exhibit A. Additionally, the Enercon 4.2 has the capability of operating at reduced sound outputs, if needed, to meet the maximum noise requirements of 51 dBA at the nearest residential receptors.

In Conclusion, GE's 2.85-103 wind turbine at a 98.3 meter hub height is no longer available given the evolution of its wind turbine product line. As a result, BNE is requesting that the Enercon 4.2-138 be approved as it will produce significantly more renewable energy, and minimize environmental impacts. BNE is also requesting a modification to the location of the third turbine, which will optimize renewable energy production and minimize wetland and environmental impacts. The requested modification would not constitute a significant change or alteration in the general physical characteristics of the facility, will result in significantly more renewable energy production and will reduce wetland and environmental impacts.

Accordingly, BNE Energy respectfully requests that the Siting Council approve the D&M Plan modification for the construction, operation and maintenance of the third turbine, the Enercon 4.2 MW wind turbine with 138 meter diameter blades and a 128 meter hub height at the proposed location as provided for herein which will maximize renewable energy production and minimize wetland and environmental impacts.

Respectfully submitted,  
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