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Via Electronic Mail

Mr. Adam Renfandt
Analyst, Public Utility Division
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
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In re: Tatanka Wind Power, LLC
Decommissioning
Case No. PU-10-073
Our File No. 010268-000001

Dear Mr. Renfandt:

I am writing on behalf of Tatanka Wind Power, LLC (“Tatanka”), a subsidiary of Acciona Wind Energy USA LLC, in regard to Tatanka’s April 2021 Updated Decommissioning Plan and Cost Estimate filed as Docket No. 13 in Case No. PU-10-073 (hereinafter the “April 2021 Plan”). On May 18, 2021, the Commission held an informal hearing to discuss the April 2021 Plan in more detail. On July 1, 2021, the Commission held a work session to further evaluate and discuss the April 2021 Plan with Commission Staff. At the July work session, the Commission expressed interest in receiving additional information regarding potential impacts resulting from the proposed felling methodology outlined in the April 2021 Plan. The below information, and Westwood’s enclosed September 2021 Addendum (the “Addendum”), are provided in response.

As previously explained, consultant Westwood was engaged to evaluate estimated decommissioning costs utilizing the felling (or pulling) methodology to dismantle wind turbines. Jay Wetmore, April 2021 Plan author, appeared on behalf of Westwood at the May 2021 informal hearing and provided additional details regarding the felling methodology. Subsequently, during the July work session, the Commission expressed interest in whether other regulatory bodies or entities overseeing decommissioning had evaluated impacts from felling, and more specifically, the potential for fiberglass fragmentation from blade shattering. Decommissioning methods and technology continue to rapidly evolve, and many facilities have yet to undergo decommissioning. It is not apparent that substantial literature or studies related to potential impacts from onshore wind turbine felling are readily available. Although specific studies were not identified, Westwood

has authored wind decommissioning plans for various facilities across the country proposing the felling methodology, which have subsequently been approved by reviewing authorities.¹

As referenced in the Addendum, the strength needed for blade durability also means blades are physically difficult to break generally. As a result, specialized equipment is needed to break down and process blades. For these reasons, fiberglass fragmentation from felling is not anticipated. Although the likelihood of fragmentation is low, if fiberglass fragmentation remains a concern, an alternative approach for blade removal is available. The attached Addendum explains the combined methodology of utilizing both felling and a truck mounted crane for facility decommissioning. Under the combined approach, a mobile truck-mounted crane would be utilized to remove turbine blades and the hub, and the remaining turbine tower would be felled. A benefit of this approach is that it continues to eliminate the need for large crawler cranes. The Addendum contains additional discussion regarding the combined methodology. Costs associated with utilizing a truck-mounted crane for blade and hub removal are set forth in the Addendum, and are estimated to total approximately \$183,600.00.

Tatanka's April 2021 Plan includes a cost estimate that both accounts for and excludes salvage value. *See* N.D. Admin Code § 69-09-09-06(3)(b) (permitting a cost estimate to include salvage value in addition to excluding salvage value). Tatanka proposes to place a financial assurance in accordance with the *gross* decommissioning cost estimate of \$8,878,377.00, which excludes salvage value. As discussed at the informal hearing, the gross estimate is conservative in that it accounts for potential variances by incorporating a ten percent (10%) contingency adding \$807,012.00 to the estimate for additional potential costs. The estimate also accounts for impacts to county roads from decommissioning activities and includes anticipated repair costs, which are estimated to total \$899,550.00. Tatanka's decommissioning cost estimate voluntarily includes the contingency and anticipated costs for public roadway repairs, neither of which is required to be included under N.D. Admin. Code Chapter 69-09-09. *See* April 2021 Plan, Docket No. 13, pg. 13.

Pursuant to the Commission's rules governing facilities constructed prior to 2017, the April 2021 Plan references and incorporates the requirement for Tatanka to remove facility foundations, buildings and ancillary equipment to a depth of three feet. *See* N.D. Admin Code § 69-09-09-05(1)(c)(1). This requirement increases to four feet for facilities constructed on or after July 1,

¹ For example, on July 21, 2021, the Wyoming Industrial Siting Council approved permit issuance for the Rail Tie Wind Project located in Albany County, Wyoming. The project's application included a decommissioning plan proposing felling of 120, 4.2 MW turbines with 105 hub heights. *See* Westwood, 2021 Rail Tie Wind Project Decommissioning Plan, accessible at http://deq.wyoming.gov/media/attachments/Industrial%20Siting/Application%20and%20Permits/Rail%20Tie%20Wind%20Project/App_D_Decommissioning%20Plan.pdf. A copy of the state approval can be provided upon request.

As another example, on July 15, 2021, the Department of Building & Zoning for McLean County, Illinois approved a special use application for the Sapphire Sky Wind Project. Sapphire Sky's special use application included a decommissioning plan that proposed felling the 64-turbine project consisting of 3.6 MW and 4.2 MW turbines with 105 foot hub heights. *See* Westwood, 2021 Sapphire Sky Wind Project Decommissioning Plan, accessible at <https://www.mcleancountyil.gov/DocumentCenter/View/20847/SU-21-03-Sapphire-Sky-Wind-Energy-LLC--Special-Use-Application-?bidId=> (starting at pdf pg. 816 of 829). A copy of the county approval can be provided upon request.

2017. N.D. Admin Code § 69-09-09-05(1)(c)(2). At the May informal hearing, the Commission inquired if Tatanka would voluntarily agree to increase depth of removal to four feet. Tatanka subsequently committed to increase foundation removal from three to four feet upon approval of the April 2021 Plan. The Addendum includes additional information regarding estimated costs associated with increasing foundation depth removal. The estimate provides the Commission with additional details and a more specific breakdown of costs associated with this action. Increased foundation removal is estimated to total approximately \$359,700.00 in additional costs.

Costs for utilizing a truck mounted crane (\$183,600.00) and increasing depth of foundation removal (\$359,700.00) collectively total \$543,300.00. These additional costs are adequately covered by the April 2021 Plan's gross decommissioning estimate of \$8,878,377.00, under the contingency that was voluntarily built-in to the estimate. *See* April 2021 Plan, Docket No. 13, pg. 13. For the above reasons, Tatanka respectfully requests the Commission approve the April 2021 Updated Decommissioning Plan and Cost Estimate, as supplemented.

Please feel free to contact me with any questions. Thank you.

Sincerely,



Casey A. Furey

Encl.

Addendum I – Tatanka Decommissioning Plan (10762379.1)

The addendum includes additional information on two components of the Tatanka Wind Project Decommissioning Plan:

- i) Methodology and costs involved in truck-mounted crane removal of turbine blades and hub assemblies.
- ii) Break down of costs for increasing foundation depth removal from three feet to four feet.

Wind turbine decommissioning methodology is an emerging and rapidly developing area. Given the relatively recent use of felling, Westwood is not aware of any apparent publications specific to the felling methodology for onshore turbines. However, it should be noted that blades are designed not to shatter. The strength needed for blade durability also means blades are physically difficult to break generally. Fiberglass Blades are built to last the entire life of a turbine. They are typically made of electrical grade fiber reinforced epoxy composites and can withstand storms and extreme winds. Although it is possible to process the highly durable wind turbine blades, it would require diamond wire saws or something similar. Therefore, fiberglass fragmentation from felling is extremely unlikely and not anticipated.

An alternative option is to utilize a mobile truck-mounted crane in combination with felling. Although additional information is provided below on the combined approach its use appears unnecessary given the little risk for fragmentation. The first part of the addendum describes the methodology and costs involved in using mobile truck-mounted cranes for removing turbine blades and hub assemblies, prior to felling the towers for 61 turbines for the Tatanka Wind Decommissioning Project in Dickey County, North Dakota. The removed components would then be disassembled and processed for recycling, in the same manner, they would be for other decommissioning methods.

The truck-mounted crane (mobile crane) assumed for removal of turbine blades and hub assembly is a 6 to 8 axle vehicle with a lift capacity of up to 100 tons and a maximum boom height reach of 89 meters. The mobile crane can utilize existing access roads and turbine pads to remove turbine components such as blades (approx. 7 tons each) and hub assembly (approx. 38 tons). The removal of blades and hub assembly at each location would be carried out by a crew of 5 workers including a foreman and a crane operator. Since the blades and hub would be brought down by a crane, no fiberglass shards/pieces would be scattered on the ground or in the soil. After the blades and hub are removed, the turbine tower components would be felled. The anticipated time to bring down turbine blades and hub assembly by a truck-mounted crane is approximately 35 days for all 61 turbines or about one-half day for each turbine.

This method has several advantages over disassembly using large crawler cranes. In addition to the costs associated with preparing crane paths and pads, this method will also reduce the total disturbed area, including wetlands, that need to be reclaimed and restored during the decommissioning process, as well as reduces the amount of crop loss. The elimination of the use of large cranes also reduces the number of trucks delivering and removing equipment over public roads and reduces the time required for decommissioning. It eliminates the need for crane crossings of public roads and the associated temporary road closures and potential for damage to the public roads from the crossings. This method is also potentially safer as fewer iron workers are exposed to the dangers of assembling and breaking down the large cranes, and the exposure to tower pieces and nacelles as they are hoisted from their assembled positions and lowered to the ground. Dismantling turbines typically require a minimum of five picks, with each pick requiring a team of iron workers working on and around the turbine to remove bolts and cut pieces free so they

can be removed.

In contrast to the safety risks of disassembling using large crawler cranes, fewer workers are directly exposed under the felling method. Only two iron workers are in the immediate vicinity of the turbine during the brief time they are actively cutting the base of the turbine. The entire area has to be evacuated and controlled for only a brief time during the actual felling

Truck Mounted Crane Removal of Turbine Blades and Hub Assembly				
Decommissioning Item	Quantity	Unit	Unit Cost	Total Cost
Rent crane truck mounted (100 ton)	35	Days	\$1,527.75	\$53,471
Dismantle Hub and Blades (using truck mounted crane)	35	Days	\$3,466.40	\$121,324
Mobilization	1	Lumpsum	\$8,739.76	\$8,740
Subtotal				\$183,600

The table above shows the cost breakdown for a truck-mounted crane removal of turbine blades and hub assembly only. The total cost including equipment rental, labor, and mobilization is \$183,600. The second part of the addendum includes additional information regarding the specific breakdown of costs associated with increasing foundation depth removal from three feet to four feet. Tatanka Wind Power, LLC recognizes the Commission's interest and preference to increase the Project's foundation depth removal requirement to four feet. A more specific estimate relating to this action is included below to provide the Commission with specific costs associated with this action:

Foundation Removal Cost Breakdown (up to 3 feet)				
Excavate Around Turbine Foundation	61	Each	\$267.00	\$16,287
Remove Turbine Foundation to a Depth of 3 feet and Load	1,922	Cubic Yards	\$176.47	\$339,117
Backfill Excavation Area from Turbine Foundation Removal	61	Each	\$228.16	\$13,918
Haul Concrete (Turbine Foundation)	3,891	Tons	\$18.44	\$71,758
Disposal of Concrete from Turbine Foundation	3,901	Tons	\$74.00	\$288,677
Subtotal				\$729,800

Foundation Removal Cost Breakdown (up to 4 feet)				
Excavate Around Turbine Foundation	61	Each	\$356.00	\$21,716
Remove Turbine Foundation to a Depth of 4 feet and Load	2,883	Cubic Yards	\$176.47	\$508,675
Backfill Excavation Area from Turbine Foundation Removal	61	Each	\$301.76	\$18,407
Haul Concrete (Turbine Foundation)	5,837	Tons	\$18.44	\$107,637
Disposal of Concrete from Turbine Foundation	5,852	Tons	\$74.00	\$433,015
Subtotal				\$1,089,500

The cost for foundation removal to a depth of 3 feet is \$729,800 and to a depth of 4 feet is \$1,089,500. The increase in cost for removing foundations from 3 feet to 4 feet is \$359,700. Tatanka Wind Farm's April 2021 Decommissioning Plan (Docket No. 13) includes a total gross decommissioning cost estimate, excluding salvage value, of \$8,878,377.00. A voluntary 10% contingency (\$807,012.00) was built into this estimate to account for potential variances. Additional estimated costs associated with the use of a mobile crane (\$183,600.00) and increasing the depth of foundation removal (\$359,700.00) collectively totals \$543,300.00. These costs are adequately covered by the cost estimate's built in voluntary contingency.