CROWLEY | FLECK PLLP
ATTORNEYS

Casey A. Furey
100 West Broadway, Suite 250
P.O. Box 2798
Bismarck, ND 58502-2798
701.223.6585
cfurey@crowleyfleck.com

September 30, 2020

Via Electronic Mail

Mr. Steve Kahl
Executive Director
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480
ndpsc@nd.gov

In re: Tatanka Wind Power LLC
Tatanka Wind Energy Conversion System
Dickey County
Case No. PU-10-073
Our File No. 010268-000001

Dear Mr. Kahl:

Please find enclosed for filing in the above-referenced matter an updated decommissioning plan and associated cost estimate.

Please feel free to contact me with any questions.

Sincerely,

Casey A. Furey

CAF/lh
Enc.

cc: Emilie Beavers (via email)

FEHR GRAHAM
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ACCIONA WIND ENERGY USA LLC

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Tatanka Wind Power LLC — Case No. PU-10-073
Tatanka Wind Energy Conversion System – Dickey County

13 August 2020

DECOMMISSIONING PLAN

Pursuant to N.D. Admin. Code ch 69-09-09, Tatanka Wind Power LLC provides this decommissioning plan for the 180 MW Tatanka Wind Energy Conversion System in Dickey County, North Dakota ("Tatanka WECS").

Tatanka WECS within Dickey County is comprised of 61 AW77 Class IIA 1.5MW Wind Turbines, manufactured by Acciona Windpower which became operational in July 24, 2008. This decommissioning plan is filed pursuant to the Commission's rulemaking in PU-19-291, and is filed to update the existing decommissioning plan in the above-referenced matter. The decommissioning plan is premised on the proper treatment of the asset retirement obligation, pursuant to generally accepted accounting principles or "GAAP", associated with Tatanka WECS.

N.D. Admin. Code § 69-09-09-01(6)(a) – Anticipated Facility Life

Tatanka WECS turbines have previously reported an anticipated useful life of at least twenty-five (25) years. Refined analysis of actual run time relative to predicted run time coupled with a robust preventative maintenance programs after initial commercial operation allows adoption of a 30-year useful life for the Tatanka WECS. Within twelve (12) months after the facility or turbine reaches the end of its useful life, decommissioning shall begin and will be completed within twelve months after commencement of decommissioning, or twenty-four (24) months after the facility or turbine reaches the end of its useful life.

Based on the operational date for the WECS, July 24, 2008, the 30-year analytical end of life is anticipated to occur on July 25, 2038 with decommissioning to begin on or around August 2038 and to end February 2039. The decommissioning period can be deferred to begin in April 2039 and to end November 2039 to better fit the construction season of ND.

N.D. Admin. Code § 69-09-09-01(6)(b) – Decommissioning Cost Estimate

In accordance with GAAP, Tatanka Wind Power LLC will assess, maintain, and recognize its asset retirement obligation, which includes decommissioning and restoration. Initial decommissioning cost estimates of the asset retirement obligation did assume the recoupment of the salvage value associated with Tatanka WECS's components and were net project cost estimates. The 2020 net present worth (NPW) net cost of decommissioning and restoration at the end of the asset's life Per Exhibit A is estimated to be approximately

$9,366,099. The per turbine cost for decommissioning and restoration is approximately $153,542.

Updated decommissioning cost estimates of the asset retirement obligation do not assume the recoupment of the salvage value associated with Tatanka WECS's components and are thus total gross project cost estimates. The 2020 NPW gross cost of decommissioning and restoration at the end of the asset's life per Exhibit B is estimated to be approximately $15,832,099. The gross cost per turbine for decommissioning and restoration is approximately $259,542.

Pursuant to N.D. Admin Code § 69-09-09-06, the decommissioning cost estimate has been prepared by a licensed North Dakota professional engineer. Further details are provided in Exhibits A and B attached hereto and incorporated by reference.

N.D. Admin. Code § 69-09-09-01(6)(c) - Decommissioning Cost Estimate Method

See attached Exhibit A for a listing of individual line items of costs. All costs are presented as net present worth (NPW) in 2020 dollars and in their initial 2018 dollars. A 3.0% annual cost increase has been used to index the 2018 costs to 2020.

The decommissioning process generates waste materials that include ferrous metals (turbine tower and concrete foundation reinforcing steel), non-ferrous electrical conductors and cables, and processed aggregate materials (aggregate road and maintenance pad surfacing materials). These products have direct and indirect economic value.

The decommissioning cost estimates prepared with the initial decommissioning plan submittal implicitly included salvage value, bartered trade-offs between the landowners and the WECS owner, and other income streams that reduce the net decommissioning project costs relative to the competing option of sending these waste streams to a licensed and regulated landfill.

Salvage value of steel is realized by sending recyclable steel materials to local steel scrap vendors, which is a highly distributed industry with 1,337 businesses in the United States listed in NAICS Code 509302000 – Metal Scrap. The distributed nature of the scrap industry affords realistic opportunity for the decommissioning agent to sell the scrap steel for cash value. Selling scrap steel to a scrap vendor provides many benefits that reduce the net decommissioning project cost:

- Direct revenue from the sale of the scrap materials
- Reduced processing costs, as scrap yards accept larger pieces than landfills
- Lower haul and shipping costs, as scrap yards or similar custody transfer locations are generally closer to a WECS than a regulated landfill (the scrap purchaser may actually pick up the scrap at the WECS site)

The value of the scrap would be between $18,000 and $35,000 based on fluctuating market conditions, a median value of $26,000 was used for the scrap material cash value. A total cost value of $106,000 is the determined cost of preparing, loading, hauling, and disposing of scrap steel materials.

The bartered trade-offs generally considered the reality that landowners desire the aggregate road surface and crane pad surface and accept offers to leave the materials on-site, thereby reducing the decommissioning expense of recovering and shipping the materials off site. A total cost value of $4,000 is the determined cost of loading, hauling, and off-site stockpiling of salvaged aggregate materials.

While there are efforts to develop methods to recycle the composite materials used to construct the wind turbine blades, none is yet commercially viable; the wind turbine blades must therefore be sent to a landfill.

N.D. Admin. Code § 69-09-09-01(6)(d) – Decommissioning Activities

Decommissioning of turbines and towers includes dismantling of turbine components and transportation of the dismantled components offsite. The costs and activities for the removal of the tower and wind turbine components, access roadways, meteorological towers and project substation have been evaluated.

Tower and Wind Turbine Components. The turbines are Acciona 1.5 MW (61 turbines) on tubular steel towers. Activities have been estimated for dismantling the turbines, tower sections and wind turbine blades. Removal of the tower wiring and transformer is also included. All components would be removed from the property. Salvage value of the steel components is assumed, and landfill charges are not included in the net cost (Exhibit A) but are included in the gross cost (Exhibit B).

The composite materials used to construct the turbine blades currently have no salvage or recycling value. The root end metal fabrication component has scrap value and will likely be cut loose from the turbine blades prior to disposal. The composite materials of the blades can be disposed as demolition waste and typical municipal waste landfills can accept the material. Therefore, only typical tipping fees are necessary and special hauling costs or tipping fees are not included.

Tower and Transformer Foundations. Tower and transformer foundations, conduits and connections immediately at the tower foundation will be removed to a depth of approximately four (4) feet below existing grade, which is the normal location of the construction cold joint between the central pier and the foundation and is therefore a convenient depth. This depth exceeds the 36” minimum depth per **§** NDCC 69-09-09 (1) (c).

This work will consist of sufficiently excavating around the foundations to provide access to, and a working platform around, the foundation. Each foundation is to be pulverized to the prescribed minimum depth, all exposed reinforcing steel is cut flush to the top surface of the remaining concrete and all demolition debris is properly disposed. All excavation is to then be backfilled full-depth with native soils and graded to match surrounding contours and will be restored to conditions that will support vegetation.

Tower Access Roads. It is feasible that the landowners may elect to leave the access roadways in place in lieu of removal during decommissioning; however, the decommissioning plan and costs assume that access roadways will be completely removed and the site restored to its native predevelopment surface profile condition.

The cost estimates assume that the aggregate surface road material will be stripped, and removed from the site to an appropriate disposal location. In practice, the land owner will request that the aggregate surface material be stockpiled on the site for the land owner's future use. This practice has not been assumed in the cost estimates.

Typical practice to construct the access roads and aggregate surface pads is to fold the existing topsoil to the side and then to blend it into the existing grade. In theory, there is sufficient, recoverable quantities of topsoil on the site to completely restore the roads and foundation pad. However, an allowance for imported topsoil is included in the decommissioning costs.

Typical access roads are constructed with a geotextile fabric placed between the subgrade and the aggregate surface material. The geotextile fabric will also be removed and properly disposed. Remaining subgrade will be worked to provide decompaction and graded to match the existing contours. Roadway areas will be covered with topsoil recovered from the site (or imported, as needed) and seeded to establish temporary vegetative cover.

The aggregate surface working pad around the foundations will be removed prior to excavation, and the surface will be restored in a manner similar to the access roads. The topsoil allowance for each turbine site will cover as-needed costs of imported topsoil.

Collection System and Cables. The cable trenches provide for a minimum cover of 40 inches over the cables, with at least 36 inches of earthen materials and topsoil in all areas other than road crossings. Due to the nature and depth of the cable trenches, the physical removal of the collection cabling is not viewed as a required activity and costs are thus not included in the decommissioning costs of the Tatanka WECS.

Underground collection conduit and cables from within the foundation excavation will be removed and disposed or more likely sold for salvage value. The costs are ancillary to the foundation removal and are included in the foundation removal costs. Scrap value is not explicitly considered.

Project Substation Electrical Components. Substation decommissioning will be performed after disconnection of the transmission line. The main transformer, circuit breakers, and switch gear equipment, and buried wiring less than 24" below grade within the area will be removed. Buried wiring deeper than 24" below grade may be abandoned in place, and the concrete foundations will be removed to a depth of three (3) feet below existing grade.

Meteorological Tower. The towers will be decommissioned by lowering the towers and disconnecting the cables and tower from the foundations. The foundations will then be uncovered and removed from the site to be disposed of at a landfill operation.

N.D. Admin. Code § 69-09-09-01(6)(e) – Effects of Present and Future Natural Resource Development.

Business operations at Tatanka WECS focus on harnessing wind resources during the facilities useful life until that time when the site will be restored in accordance with Commission's

rules through the decommissioning process. Tatanka WECS has been developed to not impact the present or future development of natural resources during operation or decommissioning.

N.D. Admin. Code § 69-09-09-01(6)(f) – Detailed Plan of Financial Assurance

Tatanka Wind Power, LLC will submit corresponding financial assurance in accordance with the provisions of N.D. Admin. Code § 69-09-09-08.

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13 August 2020

North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

Regarding: Decommissioning Estimate – Tatanka Wind Power LLC

North Dakota Public Service Commission,

Per the request of Tatanka Wind Power LLC, the team of Fehr Graham and AE2S is pleased to submit the following Decommissioning Cost Estimate for the existing Tatanka Wind Power Facility located in Dickey County, North Dakota. The estimate is based on information gathered from Fehr Graham's historical data from the past 45 years of experience in the engineering and environmental industry, and AE2S' experience in engineering and environmental services throughout North Dakota over the last 25 years. Our team believes that the estimate is a conservative budgetary cost to complete the work.

Background: Fehr Graham

Fehr Graham is a 45 year old, privately held, engineering and environmental firm for the public and private sectors. With 10 locations located within the Midwest, Fehr Graham has a large pool of resources at the ready.

Background: AE2S

AE2S is an employee-owned engineering firm headquartered in Grand Forks, ND with offices throughout ND, MT, SD, and developing offices in CO, Utah, WI. AE2S provides environmental engineering specializing in water and waste water treatment, distribution, and collection; general civil engineering, with staff with civil engineering and structural engineering experience in the wind energy development sector.

AE2S routinely manages large rural water projects, which is an asset of experience for surface restoration of cultivated fields and other rural land use functions.

The Team:

Fehr Graham and AE2S partnered to help prepare a decommissioning cost estimate for the Tatanka Wind Power LLC facility. Fehr Graham has experience in preparing decommissioning reports for wind and solar power farms across the United States and Canada. AE2S has experience regarding the specific conditions and regulatory requirements regarding facilities within North Dakota. With Fehr Graham's and AE2S' experience, the team is confident that the estimate given are reasonable and comprehensive.

The Process:

Fehr Graham and AE2S worked together to prepare the attached estimate. During the initial phase of the work, personnel from both firms talked, shared notes, and had discussions about past experience and other similar projects. Responsibilities were assigned, and each company worked to obtain the additional data to assist in preparing the final documents. A draft version of the decommissioning report was developed and distributed for all parties to review. The final decommissioning estimate was created after discussion and agreement by all parties.

Methodology:

The estimate of cost was developed on a per turbine basis, which was then pro-rated by the number of turbines within the common development to compute a total cost. Fehr Graham had completed an earlier decommissioning cost estimate for the Tatanka Wind Power Facility and used that historical data for the respective costs for each phase of the wind turbine decommissioning. AE2S provided input on the specifics of performing this work within the state of North Dakota.

Please see the attached Exhibit A providing a detailed cost breakdown of the work required to complete the decommissioning process, including previously implied offsets related to scrap value, bartered trade-offs, and other income streams that offset the decommissioning costs.

Please see the attached Exhibit B providing a detailed cost breakdown of the work required to complete the decommissioning process, exclusive of salvage value and inclusive of additional costs to prepare and ship all waste streams to regulated landfills.

These breakdowns address the cost for each respective phase of the decommissioning process for the wind power facility. The decommissioning cost estimate is reasonable, and it is our conclusion that the costs include the scope of work needed to properly decommission the Tatanka WECS facility.

Sincerely,

Fehr Graham:

Adam G. Holder
Principal

AE2S, Inc.:

JAY R. KLEVEN
REGISTERED
PROFESSIONAL
PE 4685
ENGINEER
NORTH DAKOTA

13 Aug 2021

Jay Kleven, PE (ND PE-4685)

EXHIBIT A – NET COSTS WITH SALVAGE

Tatanka Wind Power LLC
Decommissioning Cost Estimate – Tatanka WECS
Dickey County, ND

Facility Information:

Facility Location	Dickey County, ND
Facility Size	180 MW
Technology	Acciona AW77 (1.5MW)
Number of Turbines	61

WTG Decommissioning Costs – Net Costs with offsets:

Cost Item		2018	2020 (i= 3.0%, n = 3)
1. SWPP/Erosion Control (Each)	$	2,000	$2,185
2. Fluid Removal (each)	$	6,000	$6,556
3. Turbine Hub and Nacelle Removal (each)	$	42,000	$45,895
4. Tower Removal (each)	$	22,000	$24,040
5. Down-tower wiring and equipment (each)	$	6,000	$6,556
6. Turbine Foundation Removal (each)	$	35,000	$38,245
7. Access Roadway Removal (each)	$	9,300	$10,162
8. Earthwork, backfill, seeding (each)	$	14,000	$15,298
9. Topsoil Import (each)	$	$3,000	$3,278
WTG Decommissioning Subtotal (each)	$	$139,300	$152,217
Total WTG Decommissioning Costs	**$**	**8,497,300**	**$9,285,237**

Other Project Decommissioning Costs:

10. Project Substation Removal	$	67,000	$73,213
11. Meteorological Tower Removal	$	7,000	$7,649
Other Decommissioning Subtotal	**$**	**74,000**	**$80,862**
PROJECT NET COSTS	**$**	**8,571,300**	**$9,366,099**
Average Net Cost per WTG	**$**	**140,513**	**$153,542**
Scrap Value per WTG			**$106,000**
Average Total Cost per WTG			**$259,542**

EXHIBIT B – TOTAL COSTS WITH LANDFILL DISPOSAL

Tatanka Wind Power LLC
Decommissioning Cost Estimate – Tatanka WECS
Dickey County, ND

Facility Information:

Facility Location	Dickey County, ND
Facility Size	180 MW
Technology	Acciona AW77 (1.5MW)
Number of Turbines	61

WTG Decommissioning Costs – Total Costs with no offsets:

Cost Item		2020
1. SWPP/Erosion Control (Each)	$	$2,185
2. Fluid Removal (each)	$	$6,556
3. Turbine Hub and Nacelle Removal (each)	$	$45,895
4. Tower Removal (each)	$	$24,040
5. Down-tower wiring and equipment (each)	$	$6,556
6. Turbine Foundation Removal (each)	$	$38,245
7. Access Roadway Removal (each)	$	$10,162
8. Earthwork, backfill, seeding (each)	$	$15,298
9. Topsoil Import (each)	$	$3,278
10. Prepare, load, haul, dispose/landfill of waste	$	102,000
11. Load, haul, stockpile aggregate surface materials	$	$4,000
WTG Decommissioning Subtotal (each)	$	$258,217
Total WTG Decommissioning Costs	**$**	**15,751,237**

Other Project Decommissioning Costs:

10. Project Substation Removal	$	$73,213
11. Meteorological Tower Removal	$	$7,649
Other Decommissioning Subtotal	**$**	$80,862
PROJECT TOTAL COSTS	**$**	**15,832,099**
Average Total Cost per WTG	**$**	**259,542**