South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's First Data Request

Date: March 8, 2019

Data Request:

1-1) Provide copies of all data requests submitted by other parties to Applicant in this proceeding and copies of all responses provided to those data requests. Provide this information to date and on an ongoing basis.

Responses:

The only data requests or inquiries that have been submitted have come from PUC staff. That would include general comments/questions that were posted to the docket and data request 1 from staff. Should any direct comments or questions be submitted directly to Triple H Wind Project, LLC, we will provide copies of the question/request and response to the PUC as requested in this data request.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's First Data Request

Date: March 8, 2019

Data Request:

1-2) Has Applicant identified which turbines are alternate sites? If no, when does Applicant expect to make this determination?

Responses:

Not at this time. The final decision on the turbine locations to use will be dependent on forthcoming final engineering, title curative and other construction feasibility evaluations that still need to be completed. We anticipate that we will finalize the array for construction in the summer of 2019.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
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Date: March 8, 2019

Data Request:

1-3) Please confirm that Applicant accounted for setbacks from section line roads when selecting the project layout.

Responses:

The Hyde County Zoning Ordinance requires a 750-foot setback from all County gravel roads, section line roads, etc. To be conservative, Triple H Wind Project, LLC assumed a 100-foot total right of way for all County roads (50 feet from the centerline) and then added a 750-foot minimum setback from the edge of the assumed ROW width. To state this another way, a minimum 800-foot setback was accounted for on all section line roads and County roads.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-4) Which, if any towers, are within the Class E air space shown on the FAA's sectional maps for the airport registered at Highmore, SD?

a) Has Applicant had any communications with personnel at this airport? If so, please describe.

Responses:

The FAA defines class E airspace as follows. As the proposed wind turbine height locations are below 700 feet, there would be no conflict with the Class E airspace associated with the airport in Highmore. In addition, determinations of no hazard (DONH) were previously issued by the FAA for a preliminary array associated with turbine heights greater than what is currently proposed. 7460 filings were submitted to the FAA associated with the array that was filed with the PUC and are under review. Triple H Wind Project, LLC anticipates that DONHs will be issued for the current layout.

Class E	Generally, if the airspace is not Class A, B, C, or D, and is controlled airspace, then it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are federal airways, airspace beginning at either 700 or 1,200 feet above ground level (AGL) used to transition to and from the terminal or en route environment, and en route domestic and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 NM of the coast of the 48 contiguous states and Alaska, up to but not including 18,000 feet MSL, and the airspace above FL 600.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-5) Provide a copy of the contract/land use agreement signed by landowners, as well as any contracts that differ from the standard contract.

Responses:

The land easements that have been signed with the landowners are proprietary.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-6) Does the Applicant offer a "good neighbor" contract? If so, provide a sample.

Responses:

The standard easements for wind energy development (EWED) that Triple H Wind Project, LLC utilizes includes an alternative payment over the life of the project in the event that the landowner that signs up with the project but does not end up having a wind turbine constructed on their property. Occasionally, we sign good neighbor agreements that address a variety of authorizations requested from landowners. These sometimes cover the construction of a transmission line, corner crossing for underground collection lines, etc. However, at this time we do not have independent contracts that are separate from our standard EWEDs signed.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-7) Provide a copy of the PPAs referenced on page 2-1 of the Application.

Responses:

The PPAs that have been signed for the project are proprietary.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's First Data Request

Date: March 8, 2019

Data Request:

1-8) What capacity factor is assumed when calculating the projected tax revenue.

Responses:

Capacity factors are determined based on collecting onsite wind speed data over a long-term period and based on the power curve from the turbine model that is selected. It is considered proprietary and generally is not shared publicly. That said, the wind speeds found in the Triple H Wind Project are generally in the range of between 46-49% NCF for the Project. The project tax revenue estimates were prepared based on the capacity factor for the Project that is within this range.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-9) Will the South Dakota Office of School and Public Lands parcels within the project area be adversely affected by the project?

Responses:

No. The South Dakota Office of School and Public Lands would actually benefit from the Project. Triple H Wind Project, LLC has entered into easements with South Dakota Office of School and Public Lands. Three wind turbines are proposed on State Lands owned properties that have executed easements.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
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Date: March 8, 2019

Data Request:

1-10) Per ARSD 20:10:22:15(1), provide a map showing surface water drainage pattern before and after construction of the facility. Use arrows to indicate the directed on any water flows.

Responses:

Please see the attached map that shows the surface water drainage patterns for the Project.

Response Prepared by:

Leslie Knapp, Tetra Tech

ENGIE

Triple H Wind Project

Surface Water Flow

Hyde County, South Dakota

- Project Area
- Proposed Turbine
- Potential Permanent MET Tower Location
- Proposed Access Road
- Proposed Collector Line
- Potential Collection Substation Location
- Potential Interconnection Switching Station Location
- Potential Laydown Area Location
- Municipal Boundary
- County Boundary
- State Highway
- Local Road
- NHD Intermittent Stream with Flow Direction
- NHD Waterbody
- HUC8 Subbasin Boundary

N

0 0.5 1 2

Miles

Construction of the Project will result in new impervious surfaces (turbine foundations, long-term operational access roads, interconnection substation, interconnection switching station, O&M facility) in areas of higher elevation. The dispersed nature of the Project facilities will not provide enough of a concentration of increased impervious surfaces in any specific location to change drainage patterns. Installation of underground utilities is expected to avoid impacts by boring under water features as necessary or collocating with other impacts where possible. Access road crossings will not block stream or drainage features and will be appropriately designed (i.e., culverts, low-water crossings) to maintain existing drainage.
The Project is not anticipated to cause significant changes in drainage and runoff patterns or volume.

TETRA TECH

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South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's First Data Request

Date: March 8, 2019

Data Request:
1-11) Provide GIS shape files for the project and project facilities.

Responses:
Shapefiles are submitted with this response.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's First Data Request

Date: March 8, 2019

Data Request:
1-13) Referring to section 20.2 of the Application, please define "severe icing conditions."

Responses:
"Severe icing conditions" are generally described in the PUC application, but there are defined conditions that would be adhered to during operation. Engie operates a number of wind projects in Canada where icing conditions are fairly common. Operations staff monitors the power curve associated with the turbines during forecasted icing event to identify if there are deviations from normal operations. If turbines fall approximately 10% below what is expected from the power curve, the turbines are shutdown.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-1) Refer to the direct testimony of Casey Willis, lines 182 – 183. Mr. Willis states "there are 12 non-participating homes that located between ½ mile and 4,000 feet from the closest turbine." For each non-participating home that is located between ½ mile and 1 mile from the closest turbine, please provide the following information:

(a) Name of property owner
(b) Address
(c) Distance from closest turbine
(d) NSR ID
(e) Predicted Expected Shadow Flicker (Hours per Year)
(f) Anomalous Meteorological Sound Level

Responses:

My prior statement was incorrect. I stated that there were 12 non-participating homes that are within ½ mile and 4,000 feet from the closest turbine. That statement should have been that there are a total of 12 homes that are within ½ mile and 4,000 feet from the closest turbine. Of the 12, some of those homes are owned by participants in the project. There are 5 homes that are non-participants that are located between ½ mile to 4,000 feet from the closet turbine. Predicted noise levels and shadow flicker exposure duration are shown in the table below along with their corresponding mailing addresses.

Parcel Name	Nearest Turbine	Distance to Turbine (ft)	NSR ID	Predicted Expected Shadow Flicker (Hours per Year)	Anomalous Meteorological Sound Level (dBA)
Sharon Smith Trust	58	2,688	76	7:39:00	43
Jay Dalton etux	101	2,706	22	0:00:00	42
Travis Ping etux	101	3,351	24	0:00:00	41
Joan Taylor Trust	11	3,611	2	4:12:00	42
HeckenLaible, Ronald	83	3,783	10	0:00:00	40

Parcel Name	Primary Contact	Address	City	State	Zip
Hamlin & Lyons	Donald Hamlin Jr	314 1/2 8TH Ave SE	Aberdeen	SD	57401
HeckenLaible, Ronald	Ronald Heckenlaible	20121 SD Highway 47	Highmore	SD	57345
Joan Taylor Trust	Joan Taylor	137 Thomas Court	Central Point	OR	97502
Sharon Smith Trust	Sharon Smith	19651 319TH Ave	Harrold	SD	57536

Travis Ping etux	Travis Ping	33579 204th St.	Highmore	SD	57345
Jay Dalton etux	Jay Dalton	P.O. Box 361	Highmore	SD	57345

The staff request question was for all non-participating properties between ½ mile and 1 mile from the closest turbine. The responses above were related to locations between ½ mile and 4,000 feet. There are 2 additional homes that are located between 4,000 feet to 1 mile of the closest turbine. Both of these homes are owned by participants.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-2) Refer to the direct testimony of Casey Willis, lines 163 – 186. Will the Applicant agree to the same condition to install Aircraft Detection Lighting System (ADLS) technology as a subsidiary of Engie Group proposed in Docket EL18-046 for Dakota Range III? If no, please explain the differences between the two wind energy facilities that would justify different lighting systems.

Responses:

Upon further discussion, Triple H Wind Project, LLC can agree to the same ADLS condition that was agreed to on the Dakota Range III Project. The Project will utilize an ADLS system if approved by the Federal Aviation Administration as conditioned on Dakota Range III.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-3) Refer to the direct testimony of Casey Willis, lines 82 – 109, Application Section 4.12.11, and Appendix L to the Application.

a) Per Appendix L to the Application, the estimated cost of decommissioning per turbine in current dollars is $71,790, assuming salvage and no resale.

i) Please provide the estimated cost of decommissioning per turbine in current dollars, assuming *no salvage* and no resale.

ii) Please provide the estimated cost of decommissioning per turbine in 2045 dollars, assuming salvage and no resale. Please provide and explain the assumptions and calculations to determine the 2045 estimate.

iii) Please provide the estimated cost of decommissioning per turbine in 2045 dollars, assuming *no salvage* and no resale. Please provide and explain the assumptions and calculations to determine the 2045 estimate.

Responses:

i. The estimated cost of decommissioning per turbine in current dollars, assuming no salvage and no resale is $146,440.

ii. The estimated cost of decommissioning per turbine in 2045 dollars, assuming salvage and no resale is $148,430. The 2045 estimate was calculated by using an annual inflation rate of 2.64% added to the current year (2019) estimate for every year up to 2045 (see attached spreadsheet). The 2.64% was derived from analysis of inflation rates from 1985 through 2018 and averaging them (see attached spreadsheet).

iii. The estimated cost of decommissioning per turbine in 2045 dollars, assuming no salvage and no resale is $288,332. (See explanation for item ii. above).

b) Please explain why a salvage credit should be included in the decommissioning estimate when determining an appropriate amount to establish a financial assurance.

Responses:

It is industry practice to include salvage value or recycle value for steel and wind tower components in decommissioning plans and reclamation cost estimates, and is likely to be pursued by the owner to decrease reclamation costs.

c) In Application Section 4.12.11, the Applicant states "at the end of commercial operation, Triple H will be responsible for removing wind facilities and the turbine foundations to a depth of four feet below grade." In Appendix L to the Application, the Applicant states that "included in the estimate are the costs to decommission the power generating equipment associated with the Project, as well as the costs to retire the Project facilities, with all equipment and structures removed to a depth of 3 feet below grade." Is the Applicant removing all equipment and structures to a depth of 3 or 4 feet? Please clarify. If the Applicant chooses 3 ft., please provide support for that depth as a reasonable standard for decommissioning. If the Applicant chooses 4 ft., please explain if the decommission cost estimate provided in Appendix L is accurate since the estimate was developed assuming 3 ft.

Responses:
All equipment, structures, and cabling will be removed to a depth of 4 feet. Underground electrical distribution cabling will be buried at depths greater than 4 feet. As such, underground cable will be abandoned in place, with only the stubs to grade being removed. The Decommissioning Plan has been revised to state the removal depth for equipment, structures, and cabling to a depth of 4 feet.

d) Refer to the direct testimony of Casey Willis, lines 82 through 109. Please explain why a letter of credit is a superior financial assurance option for participating landowners compared to the escrow agreement ordered by the Commission in Dockets EL17-055, EL18-003, EL18-026, and EL18-046.

Responses:
In general, we are concerned the escrow account method of financial assurance results in confusion, will be problematic to maintain and disburse, attractive to creditors and litigants, and is an inefficient use of capital. We think a letter of credit accomplishes the same objective, that being to guarantee the availability of funds for decommissioning with similar protections/guarantees to the South Dakota PUC.

We note that Dakota Range III (EL 18-046) is a project that is owned by the same parent company as Triple H Wind Project, LLC. While the escrow account was required for EL 18-046, Triple H Wind Project, LLC would prefer to use a letter of credit in lieu of posting cash in an escrow account.

The letter of credit basically works as a revolving line of credit that the PUC can rely upon and withdraw funds in any amount up to the stated value of the contract. Instructions for and limitations on the withdrawal of funds are stated in the terms of the letter of credit concerning how draws are made, where funds are to be deposited, and the timeliness of the deposit when requested from the financial institution.

For example, Triple H Wind Project, LLC instructs the applicable financial institution to issue a $1,000,000.00 letter of credit to the South Dakota PUC. The financial institution issues a hard paper copy of a letter of credit that is delivered to the South Dakota PUC. When South Dakota PUC receives the official document of the letter of credit, the PUC may request a cash deposit to their account of any amount totaling up to $1,000,000.00 from the issuing financial institution.

The letter of credit does not add any financial or transactional risk to the project compared to using an escrow account for several reasons:

1. The letter of credit is posted from ENGIE Holdings Inc., the parent company of Triple H Wind Project, LLC that currently has $900M USD of capacity and is actively seeking to expand its portfolio, with currently has $5 billion of assets on its balance sheet to support this aggregate facility.
2. Any draws that would be presented under this issued letter of credit would be immediately have funds available from the financial institution where the letter of credit was issued from.
3. The actual language of the letter of credit detailing the terms and conditions would be negotiated and agreed upon by the South Dakota PUC, Triple H Wind Project, LLC, and the issuing financial institution prior to issuance.
4. The terms of the letter of credit can be amended as is required by collateral requirements of the underlying financial transaction. For example, if the face value of the letter of credit needed to be increased from $1,000,000.00 to $2,000,000.00, Triple H Wind Project, LLC would instruct the issuing financial institution to increase the stated value and the PUC would receive an official document in confirmation
5. Letters of credit traditionally are issued from very creditworthy financial institutions that are rated with a minimum credit rating of A3 assigned by Moody's or A assigned by Standard & Poors'.

Triple H Wind Project, LLC would provide a letter of credit to the South Dakota PUC for an appropriate face value of from one of the following institutions:

a. BNP Paribas
b. Canadian Imperial Bank of Commerce
c. HSBC Bank
d. Natixis, New York Branch
e. Societe Generale, New York Branch
f. Wells Fargo Bank, N.A.

Similarly a bond is a facility with which the Commission is familiar. It has a cost, and guarantees the availability of funds for the specified purpose. It limits the use of funds to that which is in the bond language and limits the availability to entities listed in the bond, thereby avoiding its use for unintended purposes. There is no cash deposit so neither creditors or the Legislature is interested in the funds, nor is there a tax event on an annual basis. There's no question as to the guarantee behind the funds and no FDIC limits on the bond either.

e) Please provide a list of all State commissions that have accepted a letter of credit from the Applicant as a financial assurance for wind facility decommissioning costs. Please provide examples of the letter of credits accepted.

Engie currently has limited operational wind assets in the United States. The locations where projects have been constructed do not require decommissioning plans beyond what is built into the guarantees in our easements. Engie however has had operating gas plants in the past where decommissioning costs were covered by the assurances from letters of credit. This is not uncommon in the energy industry.

We are aware of the fact that letters of credit have been used to guarantee decommissioning plans for wind projects in the following States at a minimum through either a State permit process or as required through County Zoning Standards.

- Maine
- Minnesota
- Montana
- Michigan
- New York
- Indiana
- Illinois
- Iowa
- New Hampshire
- Oregon
- Vermont

Response Prepared by:
Casey Willis

DECOMMISSIONING PLAN AND RECLAMATION COST ESTIMATE

TRIPLE H WIND PROJECT, LLC

HYDE COUNTY, SOUTH DAKOTA

Prepared for:

Triple H Wind Project, LLC

Prepared by:
Tetra Tech, Inc.
350 Indiana St., Suite 500
Golden, CO 80401

April 2019

Triple H Wind Project
Decommissioning Plan

Table of Contents

1.0 Introduction

Tetra Tech was retained by Triple H Wind Project, LLC to prepare a decommissioning plan and cost analysis (Study) as part of an application for Energy Facility Permits from the South Dakota Public Utilities Commission (SDPUC) for the proposed Triple H Wind Project, LLC (Project). The scope of this Study is to review the Project details and develop a decommissioning plan and associated cost estimate for retiring the Project facilities at the end of its useful life.

2.0 Project Description

The Project will be approximately 250 MW and will be located in Hyde County, South Dakota. The Project will utilize GE 2.72-MW wind turbine generators (WTGs). The current plan is to erect up to 92 WTGs at the site. Other major components for this Project include a Project substation, an interconnection switchyard, an approximately 500-foot long 345-kilovolt (kV) interconnection transmission line, three (3) permanent meteorological towers, an operations and maintenance (O&M) building, 36.6 miles of gravel access roads, and pad-mounted transformers at each WTG. These Project facilities are described in more detail below.

2.1 Wind Turbine Generators

The Project will consist of up to 92 wind turbine generators (GE 2.72-116). The 2.72-MW turbines include 89-meter (292 feet), conical, tubular, steel towers. The rotor diameter is 116.5 meters (382.2 feet). All turbine components will be fully removed as part of decommissioning.

2.2 Wind Turbine Foundations

Each WTG will be supported by a cylindrical concrete pedestal on top of a sloped, octagonal concrete spread footing, as is commonly used throughout the wind industry. The cylindrical concrete pedestal is proposed to be approximately 13 feet in diameter and three (3) feet tall. Less than one (1) foot of the pedestal will extend above-grade. The sloped, octagonal concrete base beneath the pedestal will extend downward an additional five (5) feet. The base of the foundation is expected to have a bottom diameter of approximately 55 feet. The total foundation depth should be approximately eight (8) feet below grade.

2.3 Access Roads

Each wind turbine will have an access road to allow for vehicle access to facilitate inspections and maintenance of the turbines and associated equipment during operation. The access roads will be 16 feet wide and will consist of crushed gravel overlying compacted subgrade. The Study accounts for removal of approximately 36.6 miles of access roads. All public and county roads are assumed to remain in place after decommissioning.

2.4 Collection System

Each wind turbine generates three-phase electrical power that is transformed to 34.5-kV with an oil-filled, medium-voltage, pad-mounted transformer located adjacent to the base of the turbine. All such transformers will be removed as part of decommissioning.

The Project will include an underground 34.5-kV electrical power collection system that will collect the electrical power from the wind turbines and route it to the Substation. A total of 57.6 miles of underground cable lines will be buried to a below-grade depth greater than 48 inches. Any cables (including both power and communication cabling) buried at a below-grade depth of four (4) feet or less will be removed when the Project is decommissioned. All cables buried deeper than four (4) feet below grade will be left in place when the Project is decommissioned.

2.5 Project Substation

Power from each wind turbine will be delivered via underground power collection cabling to an on-site Project substation, where it will be stepped up from 34.5-kV to 345-kV via two (2) main power transformers. The plans also include two (2) high-voltage circuit breakers, one (1) dead-end structure, substation steel structures, medium-voltage circuit breakers, switching devices, perimeter fencing, auxiliary equipment, and a control enclosure. All above-grade equipment within the perimeter fence of the substation, equipment foundations to a below-grade depth of four (4) feet, as well as underground cables to a depth of four (4) feet will be removed as part of decommissioning.

The interconnection switchyard will contain equipment to enable electrical interconnection between the Project and the regional transmission system (Leland Olds to Fort Thompson 345-kV line). This switchyard is expected to include up to three (3) 345-kV circuit breakers, three (3) dead-end structures, substation steel structures, disconnect breakers, disconnect switches, bus conductors, auxiliary equipment, perimeter fencing, and a control enclosure.

2.6 Interconnection Transmission Line

Output from the Project will be delivered to the existing transmission system via a 345-kV interconnection transmission line that will span approximately 500 feet. All above-grade equipment for the interconnection transmission line, including structures and cabling, and all below-grade equipment to a depth of four (4)feet will be removed as part of decommissioning.

2.7 O&M Building

The Project includes an on-site O&M building consisting of spare parts storage and an area for minor maintenance. This building will be a pre-fabricated metal building with a reinforced concrete foundation. The proposed 8,000 square-foot building, as well as the surrounding gravel and perimeter fencing, is assumed to be decommissioned and removed as part of decommissioning.

2.8 Meteorological Towers

One (1) permanent meteorological towers will be installed as part of this Project. The towers will be lattice-type towers that typically range in height from 80 to 90 meters and are supported by guy wires. The towers will be fully removed as part of decommissioning, including their supporting foundations down to four (4) feet below grade.

3.0 Anticipated Life of Triple H Wind Project

Megawatt-scale wind turbine generators available on the market today have a life expectancy of more than 20 years. The tubular steel towers supporting the generators are robust and with basic routine maintenance will serve many years beyond the life expectancy of the generators.

As the wind turbine generators to be installed for the Project approach the end of their expected life, technological advances should make available more efficient and cost-effective generators that will economically drive the replacement of the existing generators and thus prolong the economic life of the Project to an expected 30 years. Once the Project has met its design life it will need to be decommissioned. The following sections provide a description of the decommissioning work and the estimated costs associated with that work.

4.0 Decommissioning Process Description

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and will be in accordance with all applicable federal, state, and local permits.

The decommissioning and restoration process comprises removal of all above ground structures; removal of below ground structures to a depth of four (4) feet; restoration of topsoil, revegetation and seeding; and a two-year monitoring and remediation period.

Above ground structures include the WTGs, step-up (pad-mounted) transformers, O&M building, meteorological towers, overhead electrical transmission lines, interconnection switchyard equipment and the substation. Below ground structures include WTG foundations, collection system conduits/cable, foundations for meteorological towers, foundation for the O&M building, substation or switchyard equipment foundations and drainage structures. The existing high-voltage transmission line (Leland Olds to Fort Thompson 345-kV line) crossing the site will remain in place after decommissioning, but all interconnection facilities interior to the Project will be removed.

It is assumed that the Project will incur costs for removal and disposal of the wind turbines, wind turbine foundations, and other Project facilities, as well as costs for the restoration of the Project Site. Above-grade steel, aluminum, and copper equipment, however, is expected to have significant scrap value to a salvage contractor. All recyclable materials will be recycled to the extent possible, while all other non-recyclable waste materials will be disposed of in accordance with state and federal law.

The process of removing structures involves evaluating and categorizing all components and materials into categories of recondition and reuse, salvage, recycling, and disposal. In the interest of increased efficiency and minimal transportation impacts, components and material may be stored on-site in a pre-approved location until the bulk of similar components or materials are ready for transport. The components and material will be transported to the appropriate facilities for reconditioning, salvage, recycling, or disposal.

4.1 WTG Removals

During the decommissioning process access roads to turbines may be widened temporarily to sufficient width to accommodate movement of appropriately sized cranes or other machinery required for the disassembly and removal of the turbines. High value components will be stripped. The remaining material will be reduced to shippable dimension and transported off site for proper disposal. Control cabinets, electronic components, and internal cables will be removed. The blades, hub and nacelle will be lowered to the ground for disassembly. The tower sections will also be lowered to the ground where they will be further disassembled into transportable sections. The blades, hub, nacelle, and tower sections will either be transported whole for reconditioning and reuse or disassembled into salvageable, recyclable, or disposable components. Each WTG area will be thoroughly cleaned and all debris removed.

Once removed, the wind turbine blades will be cut into manageably- sized sections, loaded onto a trailer, and hauled to a local landfill for disposal; the wind turbine blades are primarily constructed from a composite material that is assumed to have no salvage value at the time of decommissioning.

4.2 Turbine Access Roads

All crushed rock surfacing will be removed from the Project's access roads. The removed crushed rock will be loaded into dump trucks and hauled offsite for disposal. Following the removal of crushed rock surfacing, the compacted subgrade will be de-compacted and a layer of topsoil will be added to replace the removed rock. The areas where crushed rock has been removed will be fine graded to provide suitable drainage. In right-of-way and non-agricultural areas, the ground will be seeded to prevent erosion.

4.3 WTG Foundation Removal

Topsoil will be removed from an area surrounding the foundation and stored for later replacement. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete to a depth of 48 inches below grade. After removal of all noted foundation materials, the hole will be filled with clean subgrade material of quality comparable to the immediate surrounding area. The subgrade material will be compacted to a density similar to surrounding subgrade material. All unexcavated

areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and subgrade material to the proper density consistent and compatible with the surrounding area. These areas will be thoroughly cleaned and all debris removed.

4.4 O&M Building

The 8,000 square-foot O&M building, as well as the surrounding gravel and perimeter fencing will be demolished/removed and disposed off-site. Any building foundations will be removed to a depth of four (4) feet below ground surface (bgs), and similarly disposed off-site. The area will be thoroughly cleaned and all debris removed.

4.5 Underground Electrical Collection System

The cables and conduits will be removed to a depth of at least four(4) feet bgs. All cable and conduit buried greater than four (4) feet bgs will be left in place and abandoned. They contain no materials known to be harmful to the environment and will not interfere with future agricultural related use of the area.

4.6 Overhead Transmission Line

The conductors will be removed and stored in a pre-approved location. Switches and other hardware will be removed and delivered to a processing company for recycling. The supporting transmission line structures will be removed and the concrete foundations removed to a depth of four (4) feet bgs. The steel transmission structure components will be stored in a pre-approved location. Stored conductors and other components will be later removed and transported to appropriate facilities for salvage or disposal. The area will be thoroughly cleaned and all debris removed.

4.7 Substation

Disassembly of the substation and associated switchyard will be completed and all material/equipment removed from the site. Steel, conductors, switches, transformers, etc. will be reconditioned and reused, sold as scrap, recycled, or disposed of appropriately depending upon market value. Foundations and underground components will be removed to a depth of four (4) feet and the excavation filled, contoured, and revegetated. All unexcavated areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and subgrade material to the proper density consistent and compatible with the surrounding area. The area will be thoroughly cleaned and all debris removed.

4.8 Meteorological Towers

One permanent meteorological towers will be disassembled at an appropriate time during the decommissioning activities so as not to interfere with the other ongoing work. This typically involves the use of a base crane to dismantle the masts, section by section, down to the foundation surface. The instrumentation and booms would be either removed before the sections are laid down, or removed from the sections once on the ground.

The disassembly works includes the cost of labor, machinery and tools to perform the dismantling tasks, including foundation removal to four (4) feet below grade, and the loading of the dismantled material onto transport vehicles for removal from the site to an appropriate disposal, salvage or rework facility.

5.0 Site Restoration Process Description

To the extent possible, topsoil will be removed prior to removal of structures from all work areas and stockpiled, clearly designated, and separated from other excavated material. Prior to topsoil replacement, all rocks four (4) inches or greater will be removed from the surface of the subsoil. The topsoil will be de-compacted to match the density and consistency of the immediate surrounding area. The topsoil will be replaced to original depth, and original surface contours reestablished where possible. All rocks four (4) inches or larger will be removed from the surface of the topsoil. Any topsoil deficiency and trench settling will be mitigated with imported topsoil consistent with the quality of the affected site.

All disturbed soil surfaces will be seeded with a seed mix agreed upon with the landowner(s) and/or applicable local, state or federal agencies such as the U.S. Department of Agriculture. These areas will be restored to a condition and forage density similar to the original condition. In all areas restoration will include, as reasonably required, leveling, terracing, mulching, and other necessary steps to prevent soil erosion, to ensure establishment of suitable grasses and forbs, and to control noxious weeds. Areas restored in agricultural fields will only be reseeded at request of the landowner. It is assumed that 50 percent of the access roads will be in agricultural areas.

6.0 Estimated Cost of Decommissioning

At the time of retirement, the above-grade steel structures and turbine nacelles are assumed to have significant scrap value which will offset a portion of the cost to remove these items. However, the Project will also incur costs for removal and disposal of the wind turbine generator blades, foundations, and other Project facilities, along with the costs for the restoration of the site following the removal of salvageable equipment and disposal of other items.

The decommissioning cost estimate provided herein includes the costs to return the site to a condition compatible with the surrounding land and similar to the conditions that existed before development of the Project. Included in the estimate are the costs to decommission the power generating equipment associated with the Project, as well as the costs to retire the Project facilities, with all equipment and structures removed to a depth of four (4) feet below grade. These costs are offset by the estimated revenue that will be received for scrap value of steel, aluminum, and copper equipment; no resale of the Project facilities for reuse is considered. Accordingly, it is a "no resale" estimate.

The estimated decommissioning costs for the Project were prepared using available information from a variety of credible industry sources. As summarized in Appendix A, the current cost of decommissioning Project is estimated to be approximately $75,386 per turbine or $27,742 per MW (based on 2.72 MW turbines) in 2018 dollars. This cost includes a partial offset from the salvage value of the towers, turbine components, and electrical equipment. The detailed reclamation cost estimate is provided in Appendix B.

APPENDIX A

SUMMARY OF ESTIMATED COST OF DECOMMISSIONING PER TURBINE

Decommissioning cost per MW (in current dollars)	Quantity	Unit	Unit Price	Total
Mob/Demob				
Equipment, facilities & personnel	1	lump sum	$ 900,299	
Site Facilities - rental	1	lump sum	$ 15,085	
				$ 915,384
Field Management				
$18,282.31/week	30	week	$ 548,469	$ 548,469
Substation & Switchyard Removal				
	1	lump sum	$ 187,915	$ 187,915
Removal of a Tower and Nacelle Units				
Construct/remove temporary crane pads ($7,514/WTG)	92	each	$ 691,263	
WTG Removal ($30,000/WTG)	92	each	$ 2,760,000	
WTG foundation removal	92	each	$ 854,844	
WTG Sizing & Loadout (net salvage value of $16,940.86/WTG)	92	each	$ 1,762,204	*salvage value*
				$ 2,543,903
Pad mounted transformer removal				
$1,905 (per turbine)	92	each	$ 334,247	
				$ 334,247
Site Restoration, Seeding and Re-vegetation				
(≈18.3 miles of access roadway, 1 acre O&M site, 8 acre substation & switchyard, and .5 acres/turbine site)	1	lump sum	$ 725,821	$ 725,821
Removal of Transmission Line				
(≈500 feet)	1	lump sum	$ 49,954	
				$ 49,954
O&M Building Removal				
Building demo, foundation removal & off-site disposal	1	lump sum	$ 24,881	
				$ 24,881
Access Road Removal				
(≈36.6 miles of gravel road)	47,720	CY	$ 514,780	
				$ 514,780
Administrative & Project Management Tasks				
Home office, Project Management	1	lump sum	$ 292,268	
Contractor OH & fee (13%)	1	lump sum	$ 797,891	$ 1,090,159
Total Removal Cost for 92 Turbines (250 MW)	**1**	**lump sum**		**$ 6,935,514**
Removal Cost/WTG	**92**	**each**	*$ 75,386*	
Removal Cost/MW	250	each	*$ 27,742*	

Assumptions:

The scope of work and individual tasks were established using professional experience, in collaboration with Tetra Tech's engineering staff. The Project was broken into individual tasks that were each estimated separately to include labor requirements, equipment needs, and duration. Production rates were established using professional experience and published standards that include RS Means (www.rsmeans.com). Labor rates prevalent to the geographic area of the Project were obtained by referencing US Department of Labor wage determinations. After the estimate was completed, typical average markups that are industry standard were applied for contingency, overhead, and fee. Estimating methods and assumptions specific to this estimate are as follows:

- Labor cost were developed by reviewing U.S. Department of Labor wage determinations and rates published by RS Means. An average rate was developed that includes base wage, fringe, and payroll tax liability. The final rate used in the estimate is an average of 40 hours standard (ST), and 10 hours overtime (OT) per week, assuming a 50-hour work week during decommissioning activities.
- Equipment (commonly referred to as yellow iron) rates used in the estimate are developed by reviewing rates published by RS Means, and historical vendor quotes. Rates include fuel, maintenance and wear & tear of ground engaging components. Rates utilized assume the use of rental equipment, not owned.
- Mobilization and demobilization costs are estimated to be approximately 15 percent of the overall contractor's costs. This reflects the actual cost to mobilize equipment, facilities and crew to the project site. A substantial portion of this cost is for the crane & crew required for WTG removal. This amount does not include the front loading of cost from other tasks.
- Work was estimated on a unit cost basis, priced by task that follows the progression of work from start to finish. Unit costs are developed by including the labor, equipment and production rate required for each individual task. RS Means and estimator's experience are utilized to establish the crew, equipment and production for each individual task.
- Roads would be restored so that they become a part of the natural surroundings and are no longer recognizable to the greatest extent possible. Road gravel would be used to backfill foundation locations to within 6 inches of final grade. It is expected that the remaining road gravel will be accepted by local receivers with no additional disposal cost. Acccess roads located on agricultural land, assumed to be 50 percent of roads, will not be reseeded. On private lands, prior existing roads would be restored at the request of the current landowner.
- All concrete foundations will be removed to a depth of four (4) feet bgs. Gravel from road removal will be utilized to backfill to within 6 inches of final grade, and then completed with an additional 6 inches of topsoil. Concrete foundation removal will be accomplished with the use of excavators with concrete breakers. Processed concrete will be transported offsite under the same assumptions as road gravel.
- Underground electrical distribution cabling is assumed to be aluminum, greater than 48 inches deep, and of low salvage value. As such, underground cable will be abandoned in place, with only the stubs to grade being removed down to 4 feet bgs.
- Oil from transformers and nacelles will be drained prior to removal, and the oil disposed of following state and federal regulations. Oil disposal cost is assumed to be $4 per gallon.

- To reduce the cost of loading and transport, WTG components, substation transformers and equipment will be sized onsite utilizing shears and torch crews. Blades are assumed to have no scrap value, and will incur an estimated cost of $95 per ton for trucking and landfill fee's. Remaining material is assumed to have a scrap value, with a cost of $65 per ton for trucking, and a credit of $216 per ton for scrap.
- WTG removal will require the construction and subsequent removal of temporary crane pads. Estimated cost of crane pads are based on an engineered design from a similar project.
- Transmission line is assumed to include 2 towers and cable. Towers are assumed to be steel, and will be processed onsite and shipped as scrap.
- O&M building is assumed to have no scrap value, and will be used to top loads of other waste. An allowance for 40 tons of demolition is included for this building.
- Final restoration will include the placement of 6 inchs of topsoil on all disturbed areas, with a final seeding utilizing a mix of native grasses. It is assumed that 50 percent of the topsoil required for restoration is available onsite as a result of the original installation.
- The costs for temporary facilities have been included in the restoration cost. These include (1) office trailer, (2) Conex storage units, portolets, first aid supplies and utilities.
- Field management during construction activities has been added to the estimate. These costs include (1) Superintendent, (1) Health & Safety Rep and (2) Field Engineers. These positions are critical to the safe and successful execution of work.
- A contractors Home Office, Project Management, Over Head and Fee can vary widely by contractor. As such, averages were developed for the estimate and added as a percentage of total cost. These include 5 percent for Home Office & Project Management, and 13 percent for Overhead & Fee. Note that Contractor contingency costs are not included. Several other miscellaneous costs have been approximated, including permits, engineering, signage, fencing, traffic control, utility disconnects, etc. In the context of the overall estimate, these are incidental costs that are covered in the estimate markups.

APPENDIX B

Detailed Reclamation Cost Estimate

CBS Outline Report
TETRA TECH EC, INC.
Job Code: Triple H Wind
Description: Decommissioning Estimate

From Cost Item: . **To Cost Item: .**

Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	User Defined 1
1	TRIPLE H WIND RETIREMENT - WITH SCRAP CREDIT					
1.1	Mob / Demob	1.00	Lump Sum	900,299.26	900,299.26	
1.1.1	Equipment Mob	1.00	Lump Sum	101,500.00	101,500.00	
1.1.2	Site Facilities	1.00	Lump Sum	2,200.00	2,200.00	
1.1.3	Crew Mob & Site Setup	3.00	Day	14,319.85	42,959.56	
1.1.4	Crew Demob & Site Cleanup	2.00	Day	14,319.85	28,639.70	
1.1.5	Mob-Erection Sub	1.00	Lump Sum	725,000.00	725,000.00	
1.2	Site Facilities	7.00	Month	2,155.00	15,085.00	
1.3	Field Management	30.00	Week	18,282.31	548,469.40	
1.4	Substation & Switchyard Removal	1.00	Lump Sum	187,915.00	187,915.00	
1.4.1	Fence Removal	1.00	Day	1,202.19	1,202.19	
1.4.2	Transformer & Switchyard Equip Removal	1.00	Each	129,209.96	129,209.96	
1.4.2.1	Oil Removal & Disposal	1.00	Each	104,492.79	104,492.79	
1.4.2.1.1	Oil Removal	1.00	Each	1,742.79	1,742.79	
1.4.2.1.2	Oil Disposal	25,000.00	Gallon	4.00	100,000.00	
1.4.2.1.3	Trucking - Per Load	2.00	Each	1,375.00	2,750.00	
1.4.2.2	Demo & Prepare For Shipment Offsite	150.00	Ton	99.78	14,967.17	
1.4.2.3	Salvage & Recovery	150.00	Ton	65.00	9,750.00	
1.4.2.3.1	Scrap Trucking Cost	150.00	Ton	65.00	9,750.00	
1.4.3	Remove Control Building	1.00	Each	2,546.81	2,546.81	
1.4.3.1	Demo & Prepare For Shipment Offsite	10.00	Ton	189.68	1,896.81	
1.4.3.2	Salvage & Recovery	10.00	Ton	65.00	650.00	
1.4.3.2.1	Scrap Trucking Cost	10.00	Ton	65.00	650.00	
1.4.4	UG Utility & Ground Removal	2.00	Day	1,202.19	2,404.37	
1.4.5	Remove Foundations To Subgrade	500.00	Cubic Yard	34.43	17,213.22	
1.4.5.1	Excavate / Remove Foundation - Various Depth	500.00	Cubic Yard	16.86	8,428.60	
1.4.5.2	Concrete Transport Offsite	500.00	Cubic Yard	17.57	8,784.62	
1.4.6	Misc. Material Disposal	1.00	Lump Sum	1,675.00	1,675.00	
1.4.6.1	Trucking - Per Load	1.00	Each	1,375.00	1,375.00	
1.4.6.2	Disposal Cost	10.00	Ton	30.00	300.00	
1.4.7	Restore Yard	1.00	Lump Sum	33,663.46	33,663.46	
1.4.7.1	Backfill / Regrade	4.00	Acre	1,540.15	6,160.62	
1.4.7.2	Vegetative Cover	2,000.00	Cubic Yard	12.22	24,442.84	
1.4.7.2.1	Topsoil, Delivered	1,000.00	Cubic Yard	10.00	10,000.00	
1.4.7.2.2	Placement	2,000.00	Cubic Yard	7.22	14,442.84	
1.4.7.3	Re-Seed With Native Vegetation	4.00	Acre	765.00	3,060.00	
1.5	Construct & Remove Temporary Crane Pads	92.00	Each	7,513.73	691,263.45	
1.5.1	Crane Pad 4" Stone 8" depth	9,200.00	Ton	34.66	318,846.06	
1.5.2	Crane Pad 2" Stone 6" depth	6,900.00	Ton	37.88	261,346.06	
1.5.3	Remove stone after erection	92.00	Each	1,207.30	111,071.34	
1.6	WTG Removal	92.00	Each	30,000.00	2,760,000.00	
1.6.1	Remove Top,Nacell, Rotor	92.00	Each	20,000.00	1,840,000.00	
1.6.2	Remove Base & MId	92.00	Each	10,000.00	920,000.00	
1.7	WTG Sizing & Loadout	92.00	Each	40,731.14	3,747,264.88	
1.7.1	Oil Removal & Disposal	92.00	Each	349.22	32,128.67	

Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	User Defined 1
1.7.1.1	Oil Removal	92.00	Each	174.28	16,033.67	
1.7.1.2	Oil Disposal	3,680.00	Gallon	4.00	14,720.00	
1.7.1.3	Trucking - Per Load	1.00	Each	1,375.00	1,375.00	
1.7.2	Demo & Prepare For Shipment Offsite	28,060.00	Ton	63.66	1,786,356.21	
1.7.3	Salvage & Recovery	92.00	Each	17,355.00	1,596,660.00	
1.7.3.1	Scrap Trucking Cost	24,564.00	Ton	65.00	1,596,660.00	
1.7.4	Blade T&D	3,496.00	Ton	95.00	332,120.00	
1.8	WTG Foundation Removal	92.00	Each	9,291.79	854,844.34	
1.8.1	Remove 13' x 3' Cylindrical Pedestal	1,380.00	Cubic Yard	44.63	61,582.81	
1.8.2	Remove Top 2' Of Octagonal Base	13,432.00	Cubic Yard	45.85	615,828.13	
1.8.3	Concrete Transport Offsite	14,812.00	Cubic Yard	11.98	177,433.40	
1.9	Pad Mount Transformer Removal	92.00	Each	3,633.12	334,246.90	
1.9.1	Oil Removal & Disposal	92.00	Each	2,972.93	273,509.81	
1.9.1.1	Oil Removal	92.00	Each	98.20	9,034.81	
1.9.1.2	Oil Disposal	64,400.00	Gallon	4.00	257,600.00	
1.9.1.3	Trucking - Per Load	5.00	Each	1,375.00	6,875.00	
1.9.2	Remove & Loadout Transformer	92.00	Each	105.76	9,729.85	
1.9.3	Salvage & Recovery	92.00	Each	520.00	47,840.00	
1.9.3.1	Scrap Trucking Cost	736.00	Ton	65.00	47,840.00	
1.9.4	Remove Foundations To Subgrade	92.00	Each	34.43	3,167.23	
1.9.4.1	Excavate / Remove Foundation - Various Depth	92.00	Cubic Yard	16.86	1,550.86	
1.9.4.2	Concrete Transport Offsite	92.00	Cubic Yard	17.57	1,616.37	
1.10	Transmission Line Removal	1.00	Lump Sum	49,954.05	49,954.05	
1.10.1	Conductor Removal	0.17	Mile	32,605.77	5,542.98	
1.10.1.1	Cut / Lower Cable, Size & Loadout	0.17	Mile	30,005.77	5,100.98	
1.10.1.2	Salvage & Recovery	6.80	Ton	65.00	442.00	
1.10.1.2.1	Scrap Trucking Cost	6.80	Ton	65.00	442.00	
1.10.2	Remove Structure	4.00	Each	2,470.73	9,882.93	
1.10.2.1	Demo & Prepare For Shipment Offsite	40.00	Ton	182.07	7,282.93	
1.10.2.2	Salvage & Recovery	40.00	Ton	65.00	2,600.00	
1.10.2.2.1	Scrap Trucking Cost	40.00	Ton	65.00	2,600.00	
1.10.3	Remove Foundations To Subgrade	4.00	Each	4,620.42	18,481.68	
1.10.3.1	Excavate / Remove Foundation - Various Depth	4.00	Each	4,594.67	18,378.68	
1.10.3.2	Concrete Transport Offsite	6.45	Cubic Yard	15.96	103.00	
1.10.4	Restore Structure Location Work Areas & Roads	4.00	Each	4,011.61	16,046.46	
1.10.4.1	Backfill / Regrade	2.40	Acre	1,384.12	3,321.89	
1.10.4.2	Vegetative Cover	400.00	Cubic Yard	27.22	10,888.57	
1.10.4.2.1	Topsoil, Delivered	400.00	Cubic Yard	20.00	8,000.00	
1.10.4.2.2	Placement	400.00	Cubic Yard	7.22	2,888.57	
1.10.4.3	Re-Seed With Native Vegetation	2.40	Acre	765.00	1,836.00	
1.11	O&M Building Removal	1.00	Lump Sum	24,881.21	24,881.21	
1.11.1	Structure Demo	40.00	Ton	484.00	19,359.88	
1.11.2	Remove Foundations To Subgrade	50.00	Cubic Yard	34.43	1,721.32	
1.11.2.1	Excavate / Remove Foundation - Various Depth	50.00	Cubic Yard	16.86	842.86	
1.11.2.2	Concrete Transport Offsite	50.00	Cubic Yard	17.57	878.46	
1.11.3	Blade T&D	40.00	Ton	95.00	3,800.00	
1.12	Access Road Removal	47,720.00	Cubic Yard	10.79	514,780.17	
1.13	Site Restoration	1.00	Lump Sum	725,821.00	725,821.00	
1.13.1	Vegetative Cover	50,000.00	Cubic Yard	12.22	611,071.00	
1.13.1.1	Topsoil, Delivered	25,000.00	Cubic Yard	10.00	250,000.00	
1.13.1.2	Placement	50,000.00	Cubic Yard	7.22	361,071.00	

Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	User Defined 1
1.13.2	Re-Seed With Native Vegetation - Roads & Areas Disturbed By Construction	150.00	Acre	765.00	114,750.00	
1.14	Scrap Metals Credit	1.00	Lump Sum	(5,509,468.80)	(5,509,468.80)	
1.14.1	Scrap Metals Credit - Transformer & Switchyard	150.00	Ton	(216.00)	(32,400.00)	
1.14.2	Scrap Metals Credit - Control Building	10.00	Ton	(216.00)	(2,160.00)	
1.14.3	Scrap Metals Credit - WTG	24,564.00	Ton	(216.00)	(5,305,824.00)	
1.14.4	Scrap Metals Credit - Pad Mount Transformer	736.00	Ton	(216.00)	(158,976.00)	
1.14.5	Scrap Metals Credit - T Line	6.80	Ton	(216.00)	(1,468.80)	
1.14.6	Scrap Metals Credit - T Line Structure	40.00	Ton	(216.00)	(8,640.00)	
1.15	Home Office, Project Management (5% Of Cost)	1.00	Lump Sum	292,267.80	292,267.80	
1.16	Contractor OH & Fee (13% Of Cost)	1.00	Lump Sum	797,891.12	797,891.12	
Total:	**TRIPLE H WIND RETIREMENT - WITH SCRAP CREDIT**				**6,935,514.78**	
Grand Total:					**6,935,514.78**	

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-4) Please provide the avoidance, minimization, and mitigation measures the Applicant will implement for whooping cranes.

Responses:

Engie is planning to implement a shutdown plan for whooping cranes in conjunction with the Bird and Bat Conservation Strategy (BBCS) that will be developed and implemented for the Project. Project operational staff will be trained to identify potential wildlife conflicts and the proper response. One component will be training onsite personnel for the key identification features of whooping cranes and procedures to be followed if a whooping crane is observed in the project area during the spring and fall migratory periods. If whooping cranes are observed onsite, any turbine within one (1) mile of the confirmed whooping crane observation will be shut down until the time that the observed crane(s) leave the area. Upon confirmation that the whooping crane(s) has left the area, operations will return to normal.

This minimization measure is not unique for the Triple H Wind Project. Engie personnel implement this provision along with most operators that have projects within the whooping crane migratory corridor.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-5) Refer to Section 2.0 of the Application. The Applicant states that 52 MW of the project will be sold on a merchant basis. Will the Applicant obtain financial hedges or other financial instruments to protect against market price volatility for the 52 MW of electricity? Please explain the Applicant's merchant strategy.

Responses:

The operating plan at this point is for the merchant component of the offtake for the project to be sold on a merchant basis on the open market in SPP with no financial hedges or other instruments. However, Engie's asset management team will continually look for hedges and other instruments that may optimize the project output. It is possible that some or all of the currently uncontracted component will be contracted in the future.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-6) Refer to the comment of Nick Nemec submitted at the public input hearing. Please explain how the Applicant will coordinate with Mr. Nemec on locating access roads on his property. Specifically, has the Applicant modified the access road location as requested by Mr. Nemec?

Responses:

We will coordinate with Mr. Nemec on the requested road locations as we will with all participants in the Triple H Wind Project when engineering of the layout has advanced further. Per the terms of all of the easements, Triple H Wind Project is obligated to consult with the landowner(s) on the improvements proposed on their property. Where there are modifications requested by the landowner, we evaluate and implement requested modifications, where feasible.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-7) In Section 2.0 of the Application, the Applicant states during operation, the Project will employ approximately 15 to 20 full-time personnel. Please explain why a subsidiary of Engie Group forecasted 10 full-time employees for the 150 MW Dakota Range III project in Docket EL18-046, and is forecasting 15 to 20 full-time employees for this 250 MW project? Please explain the differences between the projects that drive the need for more full-time personnel.

Responses:

Dakota Range III is a smaller project at 150 MW. Thus, it was estimated that 10 employees would support the Project. Triple H is a larger project at 250 MW, thus warranting additional operational employees.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Second Data Request

Date: April 10, 2019

Data Request:

2-8) Refer to Triple H's response to Commission Staff data request 1-2. Will the Applicant be able to identify the primary and alternate turbine locations prior to a Commission decision in this docket? Please explain.

Responses:

No, for the same reasons noted in response 1-2, we still need to complete final engineering, title curative and other construction feasibility evaluations. In particular, we are just starting the ALTA survey for the Project. The field efforts associated with this task have been delayed due to the significant winter storms that have impacted the majority of the state this winter and spring.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-1) Refer to the Page 5-3 of the Application. Please explain the basis for 750 ft. in the following Hyde County setback: "The setback from any county gravel roads, section line roads, highways and minimum maintenance roads shall be not less than 750 feet or 1.4 times the tower height, whichever is greater."

Responses:

This is simply the setback that Hyde County adopted in their update to their zoning ordinance. The layout of the Project is compatible with the County's requirement.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-2) Refer to Appendix H. Please confirm there are only two non-participating residences predicted to experience any shadow flicker. If no, please identify the number of non-participating residences predicted to experience any shadow flicker.

Responses:

That is correct. There are two non-participating residences that are predicted to have a minimal level of shadow flicker exposure. Expected shadow flicker at these receptors is predicted to be 7.7 and 4.2 hours per year, which is well below the widely used industry standard of 30 hour per year.

Response Prepared by:

Ted Guertin, Tetra Tech

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-3) Refer to Appendix G. Please confirm there are only five non-participating residences predicted to experience sound levels between 40 dBA and 45 dBA. If no, please identify the number of non-participating residences predicted to experience sound levels between 40 dBA and 45 dBA.

Responses:

That is correct. There are five non-participating residences that are predicted to have sound levels between 40 to 45 dBA. The five non-participating residences that are predicted to have sound levels between 40 to 45 dBA correspond to NSR IDs 2, 10, 22, 24, and 76.

Response Prepared by:

Tricia Pellerin, Tetra Tech

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-4) Pursuant to 20:10:22:11, please provide maps showing places of historical significance, transportation facilities, or other public facilities adjacent to or abutting the proposed wind energy facility. If there are none in or near the Project area, please indicate as such.

Responses:

Please see the enclosed map which identified all placed of historical significance, transportation facilities and other public facilities in proximity to the Triple H Wind Project.

Response Prepared by:

Leslie Knapp, Tetra Tech

ENGIE

Triple H Wind Project

Figure 9
Public Lands and Recreation

Hyde County, South Dakota

- Project Area
- Proposed Turbine
- Potential Permanent MET Tower Location
- Proposed Access Road
- Proposed Collector Line
- Potential Collection Substation Location
- Potential Interconnection Switching Station Location
- Potential Laydown Area Location
- State Highway
- Local Road
- County Boundary

State Lands

- Game Production Area
- School and Public Lands
- Hunting Walk in Area (WIA)
- Managed Fish Area

Federal Lands

- USFWS Waterfowl Production Area

USFWS Conservation Easement

- Grassland
- Grassland (Top)
- Wetland

N

0 0.5 1 2
Miles

TETRA TECH

R:\PROJECTS\TRIPLE_H_6595\PUC\MAP-SIT\H Figure 9 Public Lands and Rec.mxd

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-5) Pursuant to 20:10:22:13, please identify any irreversible changes which are anticipated to remain beyond the operating lifetime of the facility.

Responses:

Table 6-1 from the project application presents both the temporary construction impacts and long-term operational impacts by Project component and is limited to the final Project layout not including alternative collection substation, interconnection switching station, and laydown area locations.

Table 6-1. Summary of Triple H Ground Disturbance Impacts

	Construction Impacts (Temporary)		Operational Impacts (Long-Term)	
Project Component	***Dimensions***	***Total Acreage***	***Dimensions***	***Total Acreage***
Turbine Foundations (includes crane pad area adjacent to turbine foundation)	150-foot radius x 92 turbines	149	35-foot radius x 92 turbines	8.1
Access Roads[1,2]	40-foot wide x 36.6 miles	178	16-foot wide x 36.6 miles	71
Electrical Collector and Communication Systems	40-foot wide x 57.7 miles	268	N/A	0
Temporary Laydown/Staging Area and Batch Plant, if Required	10 acres	10	N/A	0
O&M Facility	5 acres	5	5 acres	5
Project Collection Substation[3]	5 acres	5	2.5 acres	2.5
Interconnection Switching Station[3]	5 acres	5	2.5 acres	2.5
One Permanent MET Tower	100-foot by 100-foot	0.2	40-foot by 40- foot	0.04
	TOTAL	**620.20**	**TOTAL**	**89.14**

1 Separate crane paths up to 40 feet wide may be required. Following completion of construction, any temporary crane paths will be removed, and the area restored pursuant to the contractual easement obligations.

2 Access road calculations are based on routes to 92 turbines and do not include access roads to alternate turbines.

3 Total impact may be overestimated due to overlap of components.

As discussed in Sections 7.0 through 16.0 of the Application, impacts to the physical environment, hydrologic resources, terrestrial and aquatic ecosystems and socioeconomic and community resources have been avoided or minimized during the siting and design of the Project. Furthermore, implementation of the mitigation measures identified in the Application will minimize potential impacts of the Project on all resources. Because of the measures that Triple H will implement to minimize the potential impacts of the Project on all resources, the construction and operation of the Project will not cause any irreversible change that would exist beyond the operating lifetime of the facility.

Response Prepared by:
Leslie Knapp, Tetra Tech

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Third Data Request

Date: April 10, 2019

Data Request:

3-6) Pursuant to 20:10:22:18(2), please identify the number of persons and homes which will be displaced by the location of the proposed facility.

Responses:

There are 13 occupied dwellings within the Project Area. As designed, the Project layout of turbines, access roads, collector lines and associated facilities will not cause displacement of residences or businesses due to construction or operation of the Project. As currently designed, the closest participating residence to a turbine is approximately 1,500 feet; the closest non-participating residence to a turbine is approximately 3,000 feet.

Response Prepared by:

Leslie Knapp, Tetra Tech

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-1) Refer to the Pages 5-3 and 11-10 of the Application. On Page 5-3 of the Application, the Hyde County Noise Requirement is provided:

> "Noise level produced by the LWES shall not exceed 45 decibels of sound at the perimeter of occupied residences existing at the time the permit application is filed, *unless a signed waiver or easement is obtained from the owner of the residence.* The level, however may be exceeded during short-term events such as utility outages or wind storms." *(emphasis added)*

On Page 11-10, the Applicant made the following statement:

> "The maximum calculated noise level, based on assumptions incorporated into the CadnaA model and the turbine layout, results in a 49 dBA LEQ at one NSR and under anomalous meteorological conditions, three NSRs have the potential to breach the 45 dBA noise limit threshold as mandated under the Hyde County Zoning Ordinance (Table 5 in Appendix G). *As all three NSRs involve landowners participating in the project, no written waiver is required." (emphasis added)*

Responses:

The exact language from the Hyde County Zoning Ordinance is as follows.

Section 9-104. A. 18. Noise. Noise level produced by the LWES shall not exceed forty-five (45) decibels of sound at the perimeter of the occupied residences existing at the time the permit application is filed, unless a signed waiver or easement is obtained from the owner of the residence. The level, however may be exceeded during short-term events such as utility outages or wind storms.

As noted in the application, three NSRs have the potential to exceed the 45-decibel threshold. However, all three of these locations are participating landowners that have easements signed to participate in the project. An easement is one mechanism that the County allows in order to exceed the 45-decibel threshold.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-2) Refer to the Page 11-11 of the Application. The Applicant states, "Even then, those landowners are Project participants and have agreed to these terms after having the circumstances explained to them." Please provide any documentation that shows that the landowners have "agreed to these terms."

Responses:

This statement noted above was done in error in the application and over states what is typically done with discussing noise concerns with landowners. The easements do not require that we seek concurrence with the noise analysis for a particular project. The easements that are offered guarantee a minimum setback of 1,400 feet from occupied homes, in part to minimize noise and shadow flicker concerns. We have found that this distance sufficiently minimizes impacts in multiple States where we have built projects. If there are further questions about noise generated by wind turbines, these questions generally arise prior to signing the easement. Land agents provide additional resources about wind and sound issues to demonstrate that the setback distance is sufficient to mitigate the impacts.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-3) Refer to the Page 11-14 of the Application. The Applicant states, "Flicker mitigation will be addressed as situations arise wherein a residence is experiencing inordinately more flicker than anticipated in the modeling, although it is highly unlikely more flicker than modeled will occur." Under what situations has a residence experienced inordinately more flicker than anticipated in the modeling? Please explain.

Responses:

WindPro expected shadow flicker impact predictions account for meteorological conditions based on historical measured data including wind speed, wind direction, and sunshine probability. Wind speed and wind direction were measured on the project site, and sunshine probability was measured at nearby Huron, SD and is based on an average of 18 years of measurement data. While this data is clearly representative of the conditions at the project site area, it is possible that conditions for a given year in the future will differ from the historical average data and result in conditions that could cause a modest increase in shadow flicker over what was predicted. It should be noted, however, that the analysis has other built in conservatisms that make it unlikely that higher shadow flicker impacts over what has been predicted are experienced at the residential receptors. These conservatisms include the assumption that the receptors all have a direct in-line view of the incoming shadow flicker sunlight and does not account for trees or other obstructions which may block sunlight. In reality, the windows of many houses will not face the sun directly for the key shadow flicker impact times and will often have intervening obstacles (such as trees) that will mitigate shadow flicker impact.

Response Prepared by:
Ted Guertin, Tetra Tech

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-4) Refer to Page 16-6 of the Application. The Applicant states that the existing community facilities and services should be adequate to support the workforce during construction. Please explain where housing will likely be obtained for the workforce during construction.

Responses:

The housing will likely be obtained from the following locations:

a. Local RV Parks will be utilized by workers who bring their campers from job to job.
b. Any local apartment building openings will be utilized where applicable.
c. Hotels/Motels will be utilized initially until the above can be secured for traveling workers. The Hotels/Motels will also be utilized for workers & mgmt. who come to site temporarily.
d. Private listings of housing for rent will also be investigated prior to mobilization by Contractor and those lists will be provided to the traveling workforce.

Response Prepared by:

Jason Hellerud, Wanzek

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-5) Refer to Page 17-1 of the Application and ARSD 20:10:22:24. Please provide:

a) A plan for utilizing and training the available labor force in South Dakota by categories of special skills required.
b) An assessment of the adequacy of local workforce to meet permanent labor requirement during the operation of the proposed facility.
c) Provide an estimated percentage of permanent workforce that will remain within the county and township(s) during operation.

Responses:

a) The Project is expected to employ approximately 200 temporary construction workers during the construction period to support Project construction. It is likely that general skilled labor is available in the surrounding counties or the state to serve the basic infrastructure and site development needs of the Project. Specialized labor will be required for certain components of Project construction. It is likely that this labor will be imported from other areas of the state or from other states, as the relatively short duration of construction makes special training of local or regional labor impracticable. Balancing the use of local contractors and imported specialized contractors will likely alleviate any labor relations issues.

b) After construction of the Project is completed, approximately 15 to 19 locally based employees will be hired for full-time positions on the Project's operation and maintenance team. With all wind projects, there is an attempt to advertise and offer positions with qualified local individuals. That would likely be done locally for the Triple H Wind Project. The ability to hire locally will be dependent on if there are individuals that have the necessary background and skill set to work in an operational position.

c) After construction is complete, approximately 15 to 19 permanent staff will hired to operate the windfarm and substation for the life of the Project. The team will have personnel on-call 24 hours per day, 7 days per week to address issues arising outside of normal business hours. There is no way to assess a percentage of the permanent workforce that will remain in the area. Individuals that are hired may choose to live locally or may drive in to work from outside the County.

Response Prepared by:
Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fourth Data Request

Date: April 15, 2019

Data Request:

4-6) Refer to the direct testimony of Casey Willis, lines 82 through 114, regarding decommissioning. Is the Applicant recommending the Commission utilize a parent guarantee or letter of credit to guarantee decommissioning costs, or is the Applicant recommending the Commission not require security for decommissioning and rely on the Restoration Fund created through landowner easements to cover decommissioning costs? Please explain.

Responses:

Triple H Wind Project, LLC is proposing to utilize a letter of credit to guarantee decommissioning costs. For further information on this, please see response to data request number 3-2.

Response Prepared by:

Casey Willis

South Dakota Public Utilities Commission
Triple H Wind Project, LLC
Docket EL 19-007
Response to Staff's Fifth Data Request

Date: May 7, 2019

Data Request:

5-1) Refer to the Applicant's response to Staff Data Request 2-4 regarding whooping crane mitigation.

a) The Applicant states, "This minimization measure is not unique for the Triple H Wind Project. Engie personnel implement this provision along with most operators that have projects within the whooping crane migratory corridor." Please provide documentation of the minimization measure(s) that Engie employs for projects within the whooping crane migratory corridor.

Responses:

Minimization measures to avoid impacts to wind projects are commonly used for wind projects located within the whooping crane migratory corridor. There are ample examples in the docket records for projects in North Dakota that have been permitted through the Public Services Commission. Page 53 from the docket shown below is an example from the Sunflower Wind Project. I was directly involved with developing this mitigation measure, through a prior company that developed this project.

https://psc.nd.gov/database/documents/14-0105/003-010.pdf

Western Area Power Administration's Upper Great Plains Wind Energy Programmatic Environmental Impact Statement also addresses minimization measures tied to operations to minimize impacts to Whooping Cranes.

https://www.wapa.gov/regions/UGP/Environment/Documents/Whooping%20crane.pdf

b) The Applicant states, "Project operational staff will be trained to identify potential wildlife conflicts and the proper response."

i) Does the Applicant agree to annual training of project operational staff on the identification, biology, and migration timing of whooping cranes? If no, please explain.

Responses:

Yes.

ii) Does the Applicant agree to train project operational staff on the standard operating procedure if a whooping crane is sighted near the facility? Explain.

Responses:
Yes, we will work with our consultant to develop a standardized response training in the event that a whooping crane(s) is identified in close proximity to the wind turbines. This will be included in the Bird and Bat Conservation Strategy (BBCS) that will be implemented at the Project.

iii) Please provide a detailed lesson plan for the training of operational staff.

Responses:
This has not been developed yet, but will be included in the BBCS developed for the Project.

c) The Applicant states, "One component will be training onsite personnel for the key identification features of whooping cranes and procedures to be followed if a whooping crane is observed in the project area during the spring and fall migratory periods."
   i) Please provide the procedures to be followed if a whooping crane is observed in the project area during the spring and fall migratory periods.

Generally speaking, if a whooping crane is identified by onsite personnel, following standard procedures that will be developed and implemented as a part of the BBCS, all operating wind turbines will be shutdown within one (1) mile of the observed stopover. After it is confirmed that the whooping crane(s) have left the area, turbine operations will resume.

ii) Is there a policy to be followed if a whooping crane is observed *near* the project area, rather than *in* the project area? Please explain. Please define what the Applicant would consider near.

Responses:
If a whooping crane(s) is observed near the project area, all turbines within one (1) mile will be shutdown during the brief period that the birds are present as noted above. As noted in the question below, Engie staff can notify SDGFP if there are incidental observations of Whooping Cranes observed in general.

d) If a whooping crane is sighted within 2 miles of the facility, does the Applicant agree to contact the South Dakota Game Fish & Parks within 24 hours, or the next business day, as appropriate? If no, please explain.

Responses:
Yes.

e) Which representative of the Applicant should the South Dakota Game Fish & Parks contact if the agency receives reports of whooping crane sightings?

Responses:
Contact information for the site manager will be provided to SDGFP.

f) Does the Applicant agree to allow the South Dakota Game Fish & Parks to review the turbine shutdown plan before implementation? If no, please explain.

Responses:
SDGFP will be consulted with on the BBCS, which will include shutdown procedures to minimize impacts to whooping cranes as noted in this response.

Response Prepared by:
Casey Willis