BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET EL19-007

IN THE MATTER OF THE APPLICATION OF TRIPLE H WIND PROJECT, LLC FOR A PERMIT OF A WIND ENERGY FACILITY IN HYDE COUNTY, SOUTH DAKOTA

DIRECT TESTIMONY OF JON THURBER
ON BEHALF OF THE COMMISSION STAFF
MAY 29, 2019

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EXHIBITS

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. Jon Thurber, Public Utilities Commission, State Capitol Building, 500 East Capitol Avenue, Pierre, South Dakota, 57501.

Q. By whom are you employed and in what capacity?

A. I am a utility analyst for the South Dakota Public Utilities Commission ("Commission"). I am responsible for analyzing and presenting recommendations on utility dockets filed with the Commission.

Q. Please describe your educational and business background.

A. I graduated summa cum laude from the University of Wisconsin – Stevens Point in December of 2006, with a Bachelors of Science Degree in Managerial Accounting, Computer Information Systems, Business Administration, and Mathematics. My regulated utility work experience began in 2008 as a utility analyst for the Commission. At the Commission, my responsibilities included analyzing and testifying on ratemaking matters arising in rate proceedings involving electric and natural gas utilities. In 2013, I joined Black Hills Corporation as Manager of Rates. During my time at Black Hills Corporation, I held various regulatory management roles and was responsible for the oversight of electric and natural gas filings in Wyoming, Montana, and South Dakota. In July of 2016, I returned to the Commission as a utility analyst. In addition to cost of service dockets, I work on transmission siting, energy conversion facility siting, wind energy facility siting, and Southwest Power Pool transmission cost allocation issues.

In my ten years of regulatory experience, I have either reviewed or prepared over 175 regulatory filings. These filings include six wind energy facility and three transmission facility siting dockets. I have provided written and oral testimony on the following topics: the appropriate test year, rate base, revenues, expenses, taxes, cost allocation, rate design, power cost adjustments, capital investment trackers, PURPA standards, avoided costs, electric generation resource decisions, and wind energy facility siting dockets.

Q. Are you familiar with Triple H Wind Energy LLC's ("Triple H" or "Company" or "Applicant") application for a permit of a wind energy facility, Docket EL19-007?

A. Yes. I have reviewed the Company's prefiled testimony, appendixes, figures, and responses to data requests produced by Triple H as it pertains to the issues that I am addressing.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your direct testimony?

A. Commission Staff and Triple H reached a settlement that resolved all issues except for the funding for the decommissioning of the Project and the risks associated with ice throw. The Settlement Stipulation was considered by the Commission on May 28, 2019, and the Commission approved the Settlement Stipulation, with the exceptions of Condition 35 requiring a public liaison and Condition 38 establishing a procedure to minimize impacts to whooping cranes. Commission Staff will work to make Tom Kirschenmann, Deputy Director of the Wildlife Division and Chief of the Terrestrial Resources Section at the Game, Fish, and Parks, available at the evidentiary hearing to testify on the potential impacts to whooping cranes. Mr. Kirschenmann may file supplemental direct testimony in this proceeding. The purpose of my direct testimony is to provide Commission Staff's recommendation on the funding for the decommissioning of the Project and the appropriate setback to address safety risks associated with ice throw.

III. DECOMMISSIONING

Q. Did the South Dakota legislature request that the Commission consider rules for the decommissioning of a wind energy facility?

A. Yes. SDCL 49-41B-35(3) states that the Commission may adopt rules to "require bonds, guarantees, insurance, or other requirements to provide funding for the decommissioning and removal of a wind energy facility." Under that general authority, the Commission promulgated ARSD 20:10:22:33.01:

> ***Decommissioning of wind energy facilities – Funding for removal of facilities.*** *The applicant shall provide a plan regarding the action to be taken upon the decommissioning and removal of the wind energy facilities. Estimates*

of monetary costs and the site condition after decommissioning shall be included in the plan. The commission may require a bond, guarantee, insurance, or other requirement to provide funding for the decommissioning and removal of a wind energy facility. The commission shall consider the size of the facility, the location of the facility, and the financial condition of the applicant when determining whether to require some type of funding. The same criteria shall used to determine the amount of any required funding.

Q. Did the Applicant provide a decommissioning plan, an estimate of monetary costs, and a description of the site condition after decommissioning as required by ARSD 20:10:22:33:01?

A. Yes. Triple H provided the decommissioning plan in Appendix L of the Application, and the Applicant discusses site condition after decommissioning and the estimate of monetary costs in Sections 5.0 and 6.0, respectively, of the plan.

Q. Did Commission Staff have any concerns regarding the decommissioning plan?

A. There was one discrepancy regarding the removal depth committed to in the Application and the decommissioning plan, but Triple H clarified its commitment through discovery. In Section 4.12.11 of the Application, Triple H committed to removing wind facilities and turbine foundations to a depth of ***four*** feet below grade. In Section 4.0 of the decommissioning plan, the Applicant states that the decommissioning and restoration process comprises of the removal of below ground structures to a depth of ***three*** feet. In response to Commission Staff data request 2-3(c), the Applicant reaffirmed that it plans to remove equipment, structures, and cabling to a depth of four feet, and provided a revised decommissioning plan to reflect this change (Exhibit_JT-1, Pages 6 - 19).

Q. What is Triple H's estimate for the current cost of decommissioning?

A. Triple H estimates the current cost of decommissioning is approximately $75,386 per turbine, or $6,604,719 for the Project, in 2018 dollars, assuming salvage and no resale of project components. The detailed cost estimate breakdown is provided in Appendixes A and B of the decommissioning plan.

Q. Does Commission Staff believe the decommissioning cost estimate is reasonable?

A. The estimate of future decommissioning costs is based on a number of assumptions that can lead to a wide range of potential costs. Please see Appendix A of the

decommissioning plan for the assumptions incorporated in Triple H's estimate. Based on the decommissioning cost estimates provided to the Commission by other wind energy facilities in the last couple years (Dockets EL17-055, EL18-003, EL18-026, EL18-046, EL18-053), the estimate appears reasonable as a basis to establish the initial funding, with the caveat that the funding is reviewed and updated periodically based on the current cost estimate of decommissioning and restoration for the Project. Triple H committed to the review and update of the cost estimate every five years after Project commissioning on Page 4-11 of the Application.

Q. Triple H provided the decommissioning cost estimate in 2018 dollars in the Application. Did Triple H provide a decommissioning cost estimate at the time of decommissioning through discovery?

A. In its Application, Triple H anticipated the Project life to be approximately 25 years beyond the date of initiating commercial operations. Based on a commercial operation date of 2020, Commission Staff requested Triple H estimate the decommissioning cost in 2045 dollars. In response to Commission Staff data request 2-3(a)(ii), Triple H estimated the cost of decommission per turbine is $148,430 in 2045 dollars, assuming salvage and no resale.

Q. Did Triple H provide any decommissioning cost estimates that assumes no salvage and no resale?

A. Yes. In response to Commission Staff data request 2-3(a)(i) and 2-3(a)(iii), Triple H estimates the decommissioning cost per turbine is $146,440 and $288,332 in 2018 and 2045 dollars, respectively, assuming no salvage and no resale.

Q. What is the significance of the decommissioning cost estimate assuming no salvage and no resale?

A. Comparing the decommissioning cost estimate assuming no salvage and no resale in current dollars ($146,440) with the decommissioning cost estimate assuming salvage and no resale in current dollars ($75,386) shows that almost half of the decommissioning costs are expected to be offset by a salvage credit. The scrap value of steel, aluminum, and copper can be volatile, and using a cost estimate for decommissioning funding that incorporates a salvage credit as the basis for funding could result in inadequate funding for decommissioning. While Commission Staff supports using a decommissioning cost

estimate that includes a salvage value credit as the basis for the initial funding of the financial security, Commission Staff will analyze the salvage credit in subsequent reviews to ensure the credit reflected in the estimate is conservative.

Q. What type of financial assurance did Triple H propose in its Application for decommissioning?

A. Triple H appears to discuss three financial assurance options for decommissioning in the direct testimony of Casey Willis. On page 9, lines 110 – 114 of his direct testimony, Mr. Willis discusses a Restoration Fund for decommissioning that Triple H is contractually committed to in the event a governmental authority does not require Triple H to provide security. See Exhibit A to Mr. Willis testimony for the language included in the easement. Also, on page 9, lines 107 – 109, of his direct testimony, Mr. Willis states "that given the size and scale of Engie, utilizing a parent guarantee or letter of credit would be sufficient to guarantee decommissioning costs over the life of the Triple H Wind Project."

Q. Regarding the Restoration Fund provided in the easements, is Triple H recommending that the Commission require no security for decommissioning and utilize the Restoration Fund?

A. No. In response to Commission Staff data request 4-6, Triple H clarified that they are proposing that the Commission require a letter of credit to guarantee decommissioning costs.

Q. Does Commission Staff believe a letter of credit is a financial assurance that the legislature authorized the Commission to consider?

A. Yes. I believe a letter of credit is a type of guarantee as defined in SDCL 49-41B-35(3) and ARSD 20:10:22:33.01, based on the definition of a letter of credit in Merriam-Webster dictionary:

> Letter of credit: a letter addressed by a banker to a person to whom credit is given authorizing drafts on the issuing bank or on a bank in the person's country up to a certain sum and guaranteeing to accept the drafts if duly made.

Q. What is the Commission's preferred type of financial assurance for decommissioning in recent wind energy facility permits?

A. In Docket EL17-055, the Commission, on its own motion, ordered that the Crocker Wind Farm provide an escrow account as the financial assurance for decommissioning. For each subsequent wind energy facility permit application, Commission Staff has negotiated, and the Commission has approved, settlements including an escrow account to provide financial security for decommissioning. The escrow account condition in Docket EL17-055 was used as a template in all settlements. The Commission has also approved a condition that states the escrow account requirement does not apply if the applicant is purchased by an electric utility which is rate regulated by the Commission. In that case, the financial cost of decommissioning will be reviewed and recovered from customers through utility rates.

Q. Please provide a brief description of the decommissioning escrow account.

A. The decommissioning escrow account is a mechanism through which the applicant can gradually accumulate decommissioning funds over time. The applicant regularly sets money aside in a separate custodial account, segregated from the applicant's assets and outside the applicant's control, for the exclusive purpose of the payment of costs to fulfill its decommissioning obligation.

Q. Does Commission Staff believe the legislature granted the Commission the authority to order an escrow account to provide funding for the decommissioning and removal of wind energy facility?

A. Yes. I believe an escrow account serves as a guarantee as defined in SDCL 49-41B-35(3) and ARSD 20:10:22:33.01.

Q. Has the escrow account condition been a difficult issue to resolve in wind energy facility permits for Commission Staff?

A. Yes, the escrow account condition has been one of the most contentious issues to resolve during settlement negotiations. I believe all applicants since the Crocker Wind Farm decision have advocated for an alternative type of financial assurance with Commission Staff before ultimately agreeing to an escrow account.

Q. Did the Applicant explain why a letter of credit is a superior financial assurance option compared to the escrow agreement previously ordered by the Commission?

A. Commission Staff posed this question to Triple H in discovery, and Triple H provided a lengthy response to Commission Staff data request 2-3(d). See Exhibit_JT-1, Pages 3 – 4, for the response.

Q. Triple H stated that the escrow account method of financial assurance is an "inefficient use of capital." Do you have any response to this assertion?

A. The Applicant has provided no evidence comparing the cost of a letter of credit to an escrow account, so Commission Staff cannot form an opinion on this assertion.

Q. Triple H also identifies concerns that the escrow account method "will be problematic to maintain and disburse" and "attractive to creditors and litigants." Did the South Dakota legislature pass any recent legislation that may address these concerns?

A. While these concerns are more of a legal argument better addressed by Commission Staff attorneys, the South Dakota legislature passed Senate Bill 16 during the 2019 session to establish certain provisions regarding financial security for the decommissioning of wind turbines. Senate Bill 16 is provided as Exhibit_JT-3 attached. The Applicant should explain how this law will not alleviate their concerns regarding disbursements and attractiveness to creditors and litigants of an escrow account.

Q. Do you have any other comments on Triple H's letter of credit proposal?

A. The Applicant has not made a comprehensive letter of credit proposal for the Commission to consider. Commission Staff requests that the Applicant provide testimony from an expert in financial assurance with evidence to support their letter of credit proposal.

Q. Do you have an opinion on the Applicant's proposal to utilize a letter of credit to guarantee decommissioning costs?

A. I would like to review the Applicant's rebuttal testimony and evidence supporting a letter of credit proposal before making a recommendation.

Q. Do you have a recommended permit condition if the Commission determines an escrow account is the appropriate financial assurance to guarantee decommissioning costs?

A. Yes, please see Exhibit_JT-2 for Commission Staff's recommended permit condition for an escrow account. Commission Staff modified the escrow account included in the Deuel Harvest Wind Project (Docket EL18-053) conditions to reflect a 25-year useful life for the Project. The funding at a rate of $5,000 per turbine per year for the first 25 years is supported by the decommissioning cost estimate per turbine of $148,430 in 2045 dollars, assuming salvage and no resale. Although the Applicant offered to review and update the cost estimate every five years after Project commissioning, Commission Staff believes an initial review of decommissioning costs beginning in year ten following commercial operation of the Project and each fifth year thereafter is adequate oversight to ensure that decommissioning cost funding is updated periodically to reflect current estimates.

IV. ICE THROW

Q. What is Triple H proposing for a setback to mitigate the potential hazard associated with ice throw?

A. It appears that Triple H proposed setbacks consistent with Hyde County and South Dakota laws to address the risks associated with ice throw. According to Table 12-1 of the Application, the Project will be setback at least:

- 775 feet from any county gravel road, section line roads, highways, and minimum maintenance road consistent with the Hyde County zoning ordinance;
- 535 feet from nonparticipating landowner property lines consistent with the SDCL 43-13-24; and
- 256 feet from participating landowner property lines consistent with SDCL 43-13-24.

Q. How is the setback from participating landowner property lines of 256 feet consistent with SDCL 43-13-24?

A. SDCL 43-13-24 states:

> *Large wind energy system set back requirement--Exception. Each wind turbine tower of a large wind energy system shall be set back at least five hundred feet or 1.1 times the height of the tower, whichever distance is greater, from any surrounding property line. However, if the owner of the wind turbine tower has a written agreement with an adjacent land owner allowing the placement of the tower closer to the property line, the tower may be placed closer to the property line shared with that adjacent land owner.*

Triple H must have obtained written agreements from all participating landowners to place turbines 256 feet from their property lines.

Q. How did Triple H determine 256 feet to be an appropriate setback from participating landowner property lines?

A. Commission Staff issued discovery to Triple H to better understand the basis of the proposed setback from participating landowner property lines. See Exhibit_JT-6 for the additional discovery requests sent to the Applicant. Commission Staff did not receive responses to these requests prior to drafting testimony.

Q. How were the risks associated with ice throw explained to participating landowners when Triple H requested a written agreement for a setback of less distance than required by state law?

A. Commission Staff also inquired about this through discovery and will have more information at the evidentiary hearing.

Q. Does the proposed turbine manufacturer, General Electric ("GE"), make any setback recommendations in its safety manual associated with ice throw?

A. Yes. On Exhibit_JT-4, Page 45, GE provides the following information:

[BEGIN CONFIDENTIAL]

[redacted]

[END CONFIDENTIAL]

Q. Do the turbines proposed by the Applicant have an ice detector?

A. I do not believe so, but Commission Staff has issued discovery to confirm our understanding.

Q. If the Applicant is not utilizing a turbine with an ice detector, does the setback suggested in the safety manual apply to this Project?

A. Unless the Applicant can produce documentation from GE that confirms the setback in the safety manual does not apply because of the method Triple H is employing to sense and assess ice build-up on blades, Commission Staff will recommend that the Commission adopt the setback in the safety manual.

Q. Does GE make any other statements regarding an ice detector in the safety manual?

A. Yes, GE makes the following statements regarding an ice sensor or detector:

[BEGIN CONFIDENTIAL]

[redacted]

[redacted]

[END CONFIDENTIAL]

Commission Staff interprets these statements to mean that even with an appropriate ice detection system, there is residual risk for the reliable detection of ice build-up on the rotor blades that needs to be mitigated through appropriate setbacks.

Q. Does GE offer any setback considerations for wind turbine siting of the proposed turbines to minimize the residual risk of ice throw?

A. Yes. On Exhibit_JT-5, Page 6, GE recommends a setback of 1.1 x tip height, with a minimum setback distance of 170 meters (558 ft.), from "objects of concern" to address ice throw. GE listed objects of concern as public use areas, residences, office buildings, public buildings, parking lots, and public roads.

Q. Are the setbacks proposed by the Applicant consistent with the turbine manufacturer setback recommendations to cover the residual risk of ice throw?

A. While the setbacks from residences and roads proposed by the Applicant were greater than what GE recommended, GE's recommendations were silent on property lines. If property lines are considered an object of concern, the Project would need to be setback an additional 23 feet (558 ft. vs. 535 ft.) from non-participating landowner property lines. Commission Staff requested that Triple H provide additional information from GE regarding the manufacturer's recommended setback from property lines to address the risk of ice throw.

Q. Did Triple H provide additional information from GE regarding setbacks from property lines to protect landowners from ice throw risk?

A. Yes, please see Exhibit_JT-7 for a correspondence from GE to Triple H. GE confirmed that a property line is not considered an object of concern, and the recommended setback on Exhibit_JT-5, Page 6, for ice throw does not apply to property lines.

Q. Please summarize Commission Staff's position on the appropriate setback to address the risks associated with ice throw.

A. Commission Staff requests that Triple H provide evidence to show the setback discussed in Section 8.4.1 of the safety manual does not apply to this Project. Also, Commission Staff requests that Triple H explain the basis for a 256 ft. setback from participating landowner property lines and explain how the risks associated with ice throw are addressed by this setback.

V. COMMISSION STAFF'S PERMIT RECOMMENDATION

Q. Does Commission Staff recommend the Application be denied or rejected because of Commission Staff's issues and concerns?

A. Not at this time. Because Triple H still has the opportunity to address outstanding issues on rebuttal and, to an extent, through the evidentiary hearing, Commission Staff reserves any position until such time as we have a complete record upon which to base the position. I would also note that some of the outstanding issues may be addressed through conditions should the Commission grant a permit.

Q. Does this conclude your testimony?

A. Yes, this concludes my written testimony. However, I will supplement my written testimony with oral testimony at the hearing to respond to Triple H's rebuttal testimony and responses to discovery.

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:

2-3) 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:
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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 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

1. At least 60 days prior to commencement of commercial operation, Applicant shall file an escrow agreement with the Commission for Commission approval that provides a decommissioning escrow account. The escrow agreement shall incorporate the following requirements:

   a) The escrow account is funded by the turbine owner annually at a rate of $5,000 per turbine per year for the first 25 years, commencing no later than the commercial operation date.

   b) Beginning in year ten following commercial operation of the project and each fifth year thereafter, the turbine owner shall submit to the Commission an estimated decommissioning date, if established, and estimated decommissioning costs and salvage values. Based on the verification of the information in the filing the Commission may determine that funds in escrow are sufficient to cover the costs of decommissioning and that reduced or no additional deposits are required. The Commission also may determine that additional funding is required and may require additional funding equal to the estimated amount needed for decommissioning.

   c) All revenues earned by the account shall remain in the account.

   d) An account statement shall be provided annually to the Commission and become a public record in this docket.

   e) The escrow account obligations will be those of Triple H and the escrow agreement shall include terms providing that the agreement binds Triple H's successors, transferees, and assigns. A sale of project assets shall include the associated Permit that requires Commission approval per SDCL § 49-41B-29.

   f) The escrow account agent shall have an office located in South Dakota.

   g) The escrow agreement shall be subject to the laws of South Dakota and any disputes regarding the agreement shall be venued in South Dakota.

   h) To minimize the risk that the escrow account would be subject to foreclosure, lien, judgment, or bankruptcy, the escrow agreement will be structured to reflect the follow factors:

      1) That Triple H agreed to the creation of the escrow account;

      2) Triple H exercises no (or the least amount possible of) control over the escrow;

      3) The initial source of the escrow;

      4) The nature of the funds put into the escrow;

      5) The recipient of its remainder (if any);

      6) The target of all its benefit; and

7) The purpose and its creation.

i) Account funds are to be paid to the project owner at the time of decommissioning, to be paid out as decommissioning costs are incurred and paid.

j) If the project owner fails to execute the decommissioning requirement found in this section of the Conditions, the account is payable to the landowner who owns the land on which associated project facilities are located as the landowner incurs and pays decommissioning costs.

AN ACT

ENTITLED, An Act to establish certain provisions regarding financial security for the decommissioning of wind turbines.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. That chapter 49-41B be amended by adding a NEW SECTION to read:

All right and title in any financial security required by the commission for the decommissioning of wind turbines shall be controlled by the commission in accordance with the terms of the financial security agreement or instrument until the commission by order releases the security. The financial security of the person required to provide it may not be cancelled, assigned, revoked, disbursed, replaced, or allowed to terminate without commission approval.

The commission may require, accept, hold, or enter into any agreement or instrument for the provision of financial security, including any funds reserved or held by any person to satisfy or guarantee the obligation of an owner of wind turbines permitted under this chapter, to decommission and remove the wind turbines. The form, term, and conditions of the financial security are subject to the approval of the commission. The commission shall determine any claim upon the financial security made by any landowner for decommissioning and removal of turbines.

Any financial security provided under this chapter may not be pledged or used as security for any other obligation of the wind turbine owner, and is exempt from attachment or mesne process, from levy or sale on execution, and from any other final process issued from any court on behalf of third party creditors of the owner of the wind turbines. Any commission decision based on any claim made by the owner of the wind turbines for refund or return of the financial security, or for actual expenses of decommissioning, or any related agreements may be appealed.

In any case, the commission may appear in court and defend the integrity and viability of the financial security for purposes of decommissioning and removal of wind turbines. The commission

may not require any financial security from an owner of wind turbines who is also a public utility as defined in subdivision 49-34A-1(12).

GE Renewable Energy

Technical Documentation
Wind Turbine Generator Systems
All Onshore Turbine Types

General Description

Setback Considerations for Wind Turbine Siting

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All technical data is subject to change in line with ongoing technical development!

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Table of Contents

1 Introduction

This document provides setback guidance for the siting of wind turbines. This guidance considers potential safety risks associated with wind turbines such as objects (maintenance tools, ice, etc.) directly falling from the wind turbine, unlikely occurrences such as tower collapse and blade failure, and environmental / operational risks such as ice throw. The guidance is general in nature, and is based on the published advice of recognized industry associations. Local codes and other factors may dictate setbacks greater than the guidance in this document. The owner and the developer bear ultimate responsibility to determine whether a wind turbine should be installed at a particular location, and they are encouraged to seek the advice of qualified professionals for siting decisions. It is strongly suggested that wind developers site turbines so that they do not endanger the public.

2 Falling Objects

There is the potential for objects to directly fall from the turbine. The objects may be parts dislodged from the turbine, or dropped objects such as tools. Falling objects create a potential safety risk for anyone who is within close proximity to the turbine, i.e., within approximately a blade length from the turbine.

3 Tower Collapse

In very rare circumstances a tower may collapse due to unstable ground, a violent storm, an extreme earthquake, unpredictable structural fatigue, or other catastrophic events. Tower collapse presents a possible risk to anyone who is within the distance equal to the turbine tip height (hub height plus ½ rotor diameter) from the turbine.

4 Ice Shedding and Ice Throw

As with any structure, wind turbines can accumulate ice under certain atmospheric conditions. A wind turbine may shed accumulated ice due to gravity, and mechanical forces of the rotating blades. Accumulated ice on stationary components such as the tower and nacelle will typically fall directly below the turbine. Ice that has accumulated on the blades will likewise typically fall directly below the turbine, especially during start-up. However, during turbine operation under icing conditions, the mechanical forces of the blades have the potential to throw the ice beyond the immediate area of the turbine.

5 Blade Failure

During operation, there is the remote possibility of turbine blade failure due to fatigue, severe weather, or other events not related to the turbine itself. If one of these events should occur, pieces of the blade may be thrown from the turbine. The pieces may or may not break up in flight, and are expected to behave similarly to ice thrown from the blade. Blade failure presents a possible risk for anyone beyond the immediate area of the turbine.

6 Industry Best Practices

Recognized industry practices suggest the following actions be considered when siting turbines in order to mitigate risk resulting from the hazards listed above:

- Place physical and visual warnings such as fences and warning signs as appropriate for the protection of site personnel and the public.
- Remotely stop the turbine when ice accumulation is detected by site personnel or other means. Additionally, the wind turbine controller may have the capability to shut down or curtail an individual turbine based on the detection of certain atmospheric conditions or turbine operating characteristics.
- Restrict site personnel access to a wind turbine if ice is present on any turbine surface such as the tower, nacelle or blades. If site personnel absolutely must access a turbine with ice accumulation, safety precautions should include but are not limited to remotely shutting down the turbine, yawing the turbine to position the rotor on the side opposite from the tower door, parking vehicles at a safe distance from the turbine, and restarting the turbine remotely when the site is clear. As always, appropriate personnel protective gear must be worn.

7 Setback Considerations

Setback considerations include adjoining population density, usage frequency of adjoining roads, land availability, and proximity to other publicly accessed areas and buildings. Table 1 provides setback guidance for wind turbines given these considerations. GE recommends using the generally accepted guidelines listed in Table 1, in addition to any requirements from local codes or specific direction of the local authorities, when siting wind turbines.

Setback Distance from center of turbine tower	Objects of concern within the setback distance

All turbine sites (blade failure/ice throw):
1.1 x tip height[1], with a minimum setback distance of 170 meters
	- Public use areas
	- Residences
	- Office buildings
	- Public buildings
	- Parking lots
	- Public roads
	  - Moderately or heavily traveled roads if icing is likely
	  - Heavily traveled multi-lane freeways and motorways if icing is not likely
	- Passenger railroads

All turbine sites (tower collapse): 1.1 x tip height[1]	- Public use areas - Residences - Office buildings - Public buildings - Parking lots - Heavily traveled multi-lane freeways and motorways - Sensitive above ground services[2]
All turbine sites (rotor sweep/falling objects): 1.1 x blade length[3]	- Property not owned by wind farm participants[4] - Buildings - Non-building structures - Public and private roads - Railroads - Sensitive above ground services

Table 1: Setback recommendations

The wind turbine buyer should perform a safety review of the proposed turbine location(s). Note that there may be objects of concern within the recommended setback distances that may not create a significant safety risk, but may warrant further analysis. If the location of a particular wind turbine does not meet the Table 1 recommended guidelines, contact GE for guidance, and include the information listed in Table 2 as applicable.

1 The maximum height of any blade tip when the blade is straight up (hub height + ½ rotor diameter).

2 Services that if damaged could result in significant hazard to people or the environment or extended loss of services to a significant population. Examples include pipelines or electrical transmission lines.

3 Use ½ rotor diameter to approximate blade length for this calculation.

4 Property boundaries to vacant areas where there is a remote chance of future development or inhabitancy during the life of the wind farm.

Condition/object within setback circle	Data Required
If icing is likely at the wind turbine site	- Annual number of icing days
Residences	- Number of residences within recommended setback distance - Any abandoned residences within setback distance
For industrial buildings (warehouse/shop)	- Average number of persons-hours in area during shift - Number of work shifts per week - Any abandoned buildings within setback distance
For open industrial areas (storage/parking lot)	- Average number of persons-hours in area during shift - Number of shifts per week. - Any abandoned buildings within setback distance
For sports/assembly areas	- Average number of persons in area per day - Average number of hours occupied per day - Number of days area occupied per week - If area covered, what type of cover
For roads/waterways	- Plot of road/waterway vs. turbine(s) - Average number of vehicles per day - Type of road and speed limit (residential, country, # of lanes, etc.)
For paths/trails (walk, hike, run, bike, ski)	- Plot of paths/trails vs. turbine(s) - Average number # of persons per day by type of presence (walk, hike, etc.) - Flat or uneven/hilly terrain

Table 2: Setback recommendations

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY TRIPLE H WIND PROJECT, LLC FOR A PERMIT OF A WIND ENERGY FACILITY IN HYDE COUNTY, SOUTH DAKOTA	* * * * * * * *	**STAFF'S SIXTH SET OF DATA REQUESTS TO APPLICANT** **EL19-007**

Below, please find Staff's Sixth Set of Data Requests to Applicant. Please submit responses within 10 business days, or promptly contact Staff to discuss an alternative arrangement. In addition, please specify the responder when answering each interrogatory. Should any response have subparts answered by more than one individual, identify the respondent by subpart. Consider each question ongoing and update answers as they evolve or change.

6-1) Refer to Table 12-1 of the Application.
- a) Please explain the basis for a 256 ft. setback from participating landowner property lines.
- b) Has the Applicant received written agreements from all participating landowners to allow a shorter setback than required in SDCL 43-13-24? Please explain.
- c) For the landowners that signed the written agreements in (b), please explain how it was communicated to participating landowners that the risks associated with ice throw are mitigated with a 256 ft. setback from property lines.

6-2) Please describe the technology that will be employed at each turbine to detect and assess ice buildup.

6-3) Refer to the Safety Manual provided in response to Commission Staff data request 1-12.
- a) Refer to Section 8.4. Is Triple H installing an ice detector as discussed in the Safety Manual?
- b) If the answer to (a) is no, please provide documentation from General Electric confirming that the technology being employed by Triple H to assess and detect ice buildup alleviates the need to cordon off an area during freezing weather conditions pursuant to the formula identified in Section 8.4.1.

Dated this 28th day of May 2019.

Kristen N. Edwards
Staff Attorney
South Dakota Public Utilities Commission
500 East Capitol Avenue
Pierre, SD 57501
Phone (605)773-3201
Kristen.edwards@state.sd.us

From: tom.amirault@ge.com
To: Casey.Willis@engie.com; paul.parkes@ge.com
Cc: Bradley.Moore@ge.com; Joseph.Pederson@ge.com
Subject: RE: Triple H Wind Project - GE Ice throw recommendations
Date: Thursday, May 23, 2019 2:05:54 PM
Attachments: image002.png
ATT00001.txt

Casey –

I can confirm that GE did not include property lines in the category of "Objects of concern within the setback distance" with respect to the ice throw setback recommendation of 1.1* Tip Height (170m Minimum) in Table 1 of Setback Considerations for Wind Turbine Siting r4. The concern would be for any people-occupied homes, public-use buildings/areas or roadways to lie within that 1.1*tip height (170m Min) radius.

We have seen local AHJs work on issues related to the placement of wind turbines and property lines. The language below would be better stated as "from any object of concern as defined in Table 1 of document GE Setback Considerations for Wind Turbine Siting'' instead of "property line".

Regards,

Tom Amirault
Wind Technical Leader
GE Renewables
(518) 389-8197

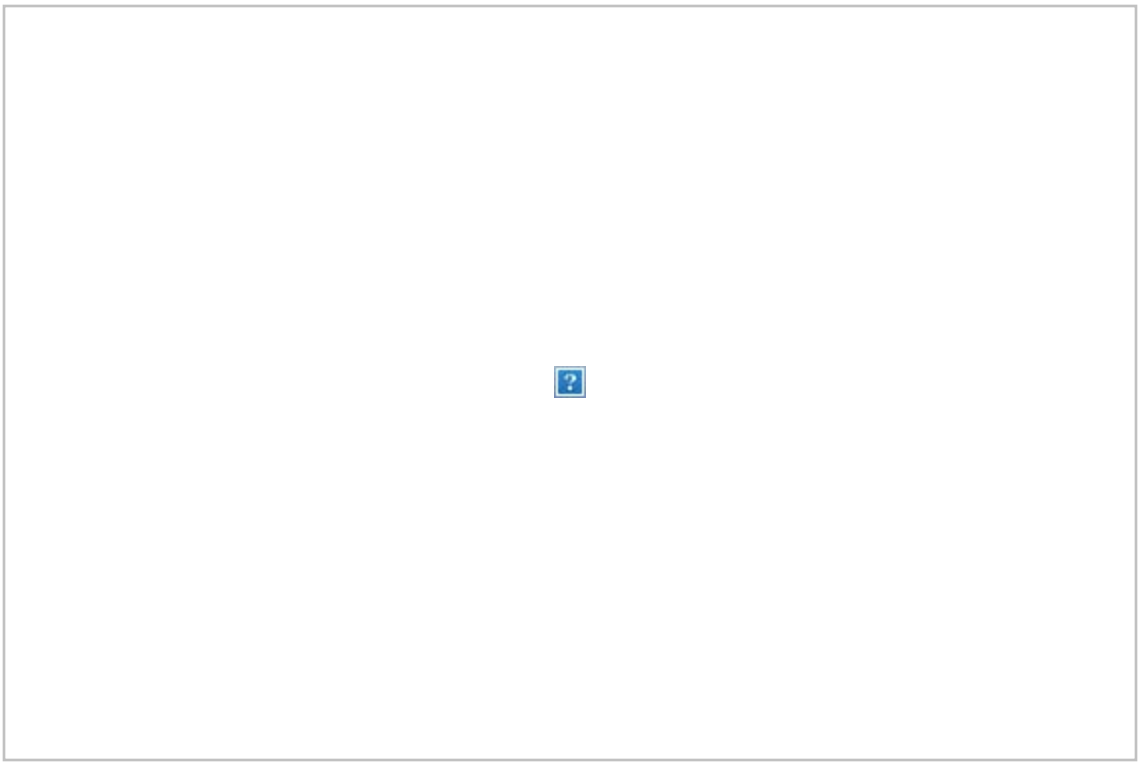
From: Casey.Willis@engie.com <Casey.Willis@engie.com>
Sent: Monday, May 20, 2019 6:56 PM
To: Amirault, Tom (GE Renewable Energy) <tom.amirault@ge.com>; Pederson, Joseph (GE Renewable Energy) <Joseph.Pederson@ge.com>; Parkes, Paul T (GE Renewable Energy) <paul.parkes@ge.com>
Cc: Moore, Bradley (GE Renewable Energy) <Bradley.Moore@ge.com>
Subject: EXT: Triple H Wind Project - GE Ice throw recommendations

Tom or Joseph, this is the worst week I realize, but I have a question I was hoping that you could quickly help me out with. The South Dakota PUC staff I think misinterpreted GE's Setback Considerations for Wind Turbine Siting Doc. They created the following condition for a project recently, which includes a setback to account for ice throw based on table 1 (copied below). GE's table does not call for a setback for property lines under the ice throw row. When I brought this up they felt that it could be silent on it. I don't think that is the case at all as the document accounts for property not owned by wind farm participants under the rotor sweep/falling objects section (third row).

My question for one of you, is can you please confirm that GE intentionally DID NOT include

property lines in the recommended setbacks pertaining to ice throw? Property lines are not an "object of concern" so I doubt that it should have been included. That would be help to help clarify this matter with staff.

Turbines shall be set back at least 1.1 times the tip height, with a minimum set back distance of 170 meters, from any property line. However, if the owner of the wind turbine tower has a written agreement with an adjacent land owner allowing the placement of the tower closer to the property line, the tower may be placed closer to the property line shared with that adjacent land owner.



https://puc.sd.gov/commission/dockets/electric/2018/el18-053/appendixV.pdf

Casey Willis
Senior Project Developer

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