

Project Development Plan

North Bend Wind Project

Hughes and Hyde County, South Dakota



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1	INTRODUCTION	1
1.1	Conditional Use Permit (CUP) Request	1
1.2	Project Overview	1
1.3	Qualifications of ENGIE	2
1.4	Approval Process Overview.....	2
2	PROJECT DESCRIPTION	3
2.1	Wind Power Technology	3
2.2	Project Area.....	3
2.3	Associated Facilities	4
2.4	Schedule	4
2.5	Project Maintenance.....	5
2.6	Local Communication Plan.....	5
2.7	Decommissioning Plan	5
3	Hughes County Zoning Ordinance.....	6
3.1	Setbacks.....	6
3.2	North Bend Wind Project Turbine Coordinates	6
3.3	Noise and Shadow Flicker Analysis	7
4	Additional Enclosures with this Application.....	7

1 INTRODUCTION

1.1 Conditional Use Permit (CUP) Request

North Bend Wind Project, LLC (NBWP) is requesting the following approvals from Hughes County for the North Bend Wind Project in conjunction with this Conditional Use Permit request.

- Approval to construct and operate up to 27 wind turbine generators (WTG) in Hughes County.
- No variances are requested or required for the North Bend Wind Project from the Hughes County Zoning Standards. The project has been sited to be in compliance with all standards included in Ordinances No. 2017-06 and 2020-05 as approved by the Hughes County Commissioners.
- Request for the ability to move the turbines up to 250 feet from the locations specified in Table 1 based on modifications that may become necessary due to final engineering, geotechnical studies or other factors that necessitate a slight move. All movements will comply setbacks required by the County Zoning Ordinance.
- One (1) Permanent Met Tower is required to support the Project. The permanent met tower would be up to 100 meters (328 feet) in height. There are two proposed locations in Hughes County that we are requested to be approved at this time as a final location has not been determined. Maps are enclosed that show the proposed locations.

1.2 Project Overview

The North Bend Wind Project is a 200 MW project that is proposed in Hughes and Hyde Counties, South Dakota. As proposed, the project would be interconnected to Western Area Power Authority's (WAPA) existing Fort Thompson to Oahe 230 kV transmission line at a new switchyard that would be constructed in Hyde County adjacent to the existing line by WAPA within E/2 of Section 16, T 110N R 73W just south of the project substation.

The project would have a maximum nameplate capacity of 200 megawatts (MW) consisting of up to 71 General Electric 2.72-116 wind turbine generators (WTGs). Within Hughes County, ENGIE is requesting the approval to construct up to 27 turbine locations. Each WTG would have a hub height of 88.5 meters (290 feet) and a rotor diameter of 127 meters (416 feet) with a total height with the blade tip at its highest position of 152 meters (499 feet). The WTG turbine model that is being proposed to be used at North Bend is slightly taller than the turbine model that was installed in conjunction with the Triple H Wind Project. A map of the proposed layout is included in Appendix A of this development plan.

The Project will include additional infrastructure and facilities, including but not limited to 16-foot-wide permanent access roads leading to each turbine, a permanent meteorological tower, a temporary construction laydown yard, and a 34.5 kV underground electrical collection system. Electricity generated by the WTGs will be collected at a central project substation where the

voltage will be stepped up from 34.5kV to 230 kV.

The request to interconnect the Project has been under study with the Southwest Power Pool (SPP) for quite some time. The full generator interconnection agreement was executed with WAPA via SPP at the end of 2020. At the present time, the NBWP does not have any executed power purchase agreements (PPAs) for the Project.

1.3 Qualifications of ENGIE

North Bend Wind Project, LLC is a wholly owned subsidiary of ENGIE North America, Inc. (ENGIE). In North America, ENGIE has over 6,000 employees who manage a range of energy business in the United States and Canada, including retail energy sales and energy services to commercial, industrial, and residential customers; natural gas and liquefied natural gas distribution and sales; and electrical generation. In the United States and Canada, ENGIE's renewables portfolio has a capacity of over 3,200 MW consisting of wind, ground-mounted solar and distributed rooftop solar assets. ENGIE has over 8,000 MW of wind and solar projects in various stages of development in these two countries.

ENGIE has completed construction of 10 wind projects in the United States in the past few years.

Operating Projects in the United States

- Jumbo Hill: 160 MW Wind Project located in Andrews County, TX
- Seymour Hills: 30 MW Wind Project located in Baylor County, TX
- Solomon Forks: 276 MW Wind Project located in Thomas County, KS
- Live Oak, Texas: 200 MW Wind Project located in Schleicher County, TX
- East Fork: 195.8 MW Wind Project located in Thomas County, KS
- Dakota Range III: 151.2 MW Wind Project in Grant and Roberts Counties, SD
- Prairie Hill: 300 MW Wind Project in Limestone and McLennan Counties, TX
- Las Lomas: 201.6 MW Wind Project in Starr and Zapata Counties, TX
- Triple H: 250 MW Wind Project in Hyde County, SD
- King Plains: 248.2 MW Wind Project in Garfield and Noble Counties, OK

In addition, Engie has two additional wind projects that are presently in construction in Kansas and Texas. These projects are all anticipated to be operational by the end of 2021.

1.4 Approval Process Overview

The North Bend Wind Project requires discretionary approvals from Hughes and Hyde Counties and a Facilities Permit from the South Dakota Public Utilities Commission. WAPA as a federal agency must complete an environmental review under the National Environmental Policy Act (NEPA) in conjunction with the construction of the proposed switchyard. Additional ministerial permits are also required from a variety of Federal, State and Local agencies that are principally tied to construction activities.

2 PROJECT DESCRIPTION

2.1 Wind Power Technology

Table 1. Wind Turbine Design Features

Design Features	GE 2.82-127
Nameplate Capacity	2.82 MW
Hub Height	88.5 m (290 ft)
Rotor Diameter	127 m (416 ft)
Blade Length	63.5 m (208 ft)
Total Height	152 m (499 ft)
Minimum distance between Blade Tip and Concrete Foundation	25 m (82 ft)

WTGs will be painted white with a matte or non-reflective finish unless otherwise required by FAA or other Federal or State agency regulations. There will be no additional lights on the wind turbines beyond those required for the safe and efficient operation of the wind turbines by the FAA or other Federal or State agencies.

WTGs and associated facilities will be sited on land that is signed with 100% voluntary participating property owners to reach the maximum project size of 200 MW between the two counties. Approximately 2-3% of that area is expected to be impacted by the project during the operations period. The foundations of the wind turbines will be constructed of concrete and steel and will be approximately 60 feet in diameter with an 18-foot diameter above-ground pedestal. The foundation depth will be approximately 8 feet deep. After turbines have been constructed and inspected, the foundation excavations will be backfilled to match the surrounding topography, and gravel rings approximately 50 feet in diameter will be installed around the base of each tower. These gravel rings are needed to accommodate positive drainage in addition to ongoing operation and maintenance efforts.

The electric output from each turbine generator will be transformed to 34.5 kV via pad-mounted transformers located at the base of each turbine.

2.2 Project Area

Voluntary easements have been signed with landowners that have elected to participate in the Project. The general descriptions noted below include the locations where primary and alternative turbines are proposed. Please note, the locations noted below do not imply that every landowner within the section has signed an agreement to participate in the Project, only that there is sufficient participation within that section to site turbines.

County Name	Township Name	Township	Range	Sections
Hughes	Harrold	T112N	R74W	22, 25-36
Hughes	Pleasant Valley	T111N	R75W	12
Hughes	Webster	T111N	R74W	1-6, 8-26, 34-36
Hughes	Butte	T110N	R74W	1, 2, 11-14

2.3 Associated Facilities

The energy produced by the WTGs will be transmitted below ground through a network of 34.5 kV electrical collection lines at the project substation, where the electricity will be stepped up via transformer from 34.5 kV to 230 kV where it would be transferred over to WAPA’s new switchyard on the existing Fort Thompson to Oahe 230 kV transmission line.

In addition to the project substation, underground collection systems, a temporary project laydown yard that will be used to store WTG components and other materials during construction, and gravel access roads will be constructed to each WTG location for year-round use. The existing operations and maintenance (O&M) building that was constructed for the Triple H Wind Project will also likely service the North Bend Wind Project.

WTG permanent access roads will generally be 16 feet wide, constructed with high quality aggregate, and may include a stabilization material such as lime or concrete powder. All facilities will be designed to minimize impacts to existing land uses and in coordination with landowner preferences whenever feasible. Permanent meteorological towers will also be constructed to help monitor the performance of the project.

The final electrical system design and interconnection details will be determined through discussions between the SPP, Basin and NBWP. The project will be designed to meet all electrical codes and standards, including power factor, voltage control, communications, and grid system protection measures as required by the Federal Energy Regulatory Commission (“FERC”), the SPP, and NBWP.

NBWP facilities and equipment will not be used for displaying any advertising except for reasonable identification of the manufacturer and/or operator of the NBWP.

2.4 Schedule

NBWP anticipates that project construction will begin as early as the beginning of 2022 and that commercial operation could be as early as the late fall of 2022. The timing is subject to securing necessary project approvals, executing power purchase agreements, and other development activities. This schedule is based on information known as of the date of this Plan and is contingent upon planning assumptions that balance implementation timing with the availability of crews, construction materials, and other practical considerations. This schedule may be subject to adjustment and revision as further information is developed.

2.5 Project Maintenance

An O&M building was recently completed on Highway 47 for the Triple H Wind Project in Hyde County. This facility is likely going to be used to also support the North Bend Wind Project. The O&M field duties include performing scheduled and unscheduled maintenance; periodic operational checks and tests; and regular preventive maintenance on WTGs, related facilities and equipment, safety systems, controls, instruments, and machinery.

NBWP will remotely monitor the Project 24 hours a day, every day of the year. This will be accompanied by a visual inspection performed by on-site operating staff. The Project will be continuously monitored during initial commercial operation to see that the Project is operating within expected parameters.

Once operational, Project service and maintenance is carefully planned and divided into the following intervals, further discussed below:

1. First Service Inspection – The first service inspection will take place one to three months after the WTGs have been commissioned. At this inspection, particular attention is paid to tightening bolts and full greasing.
2. Semi-Annual Service Inspection – Regular service inspections commence six months after commissioning. The semi-annual inspection consists of lubrication and a safety test of each WTG.
3. Annual Service Inspection – The yearly service inspection consists of lubrication, safety checks, checking bolt assemblies, and tightening and logging loose bolts if they are detected.
4. Two Year Service Inspection – The two-year service inspection consists of the annual inspection, plus checking and tightening of terminal connectors.

2.6 Local Communication Plan

NBWP plans to provide timely information to the County, local emergency services, and to the public as necessary during construction and operation of the Project. NBWP will appoint an Operations Manager who will be responsible for communicating and coordinating with the County and local emergency services as needed. Upon completion of final engineering, the County and local emergency service agencies will be provided with a detailed Site Plan showing the location of WTGs and related facilities, and geographic coordinates will be provided to supplement the facilities map.

2.7 Decommissioning Plan

As found in its landowner agreements and elsewhere, NBWP will decommission the facility at the

end of its commercial life. The decommissioning process is similar in length to the construction process. Decommissioning will involve removal of all wind facilities including foundations, footings, concrete pads, anchors, guy wires, fences, towers and other fixtures to not less than 42 inches below grade or such greater depth as otherwise required by local ordinance, within 12 months from the date the Commercial Operation Period expires. Access roads will be removed unless the affected landowner provides written notice that they would like the road or portions of the road retained. Disturbed surfaces will be restored as close to preconstruction conditions as is commercially practicable. The project expects that the PUC will require decommissioning financing arrangements which will secure the entire future expense of decommissioning.

3 Hughes County Zoning Ordinance

3.1 Setbacks

All of the turbines are sited in compliance with Ordinance No. 2017-06 and 2020-05 as adopted by Hughes County.

- Established dwelling – The greater of 2,640 feet or 4.9 times the tower height. Written permission has been obtained to decrease this distance from a few landowners per the County’s ordinance.
- County roads – 1.1 times the system height.
- Highways – ¼ mile.
- Exterior boundary – 1.1 times the system height.

3.2 North Bend Wind Project Turbine Coordinates

Table 1 identifies the coordinates associated with the proposed layout for the North Bend Wind Project.

**Table 1 – Turbine Coordinates for the North Bend Wind Project
Includes Coordinates from Locations in Both Hughes and Hyde Counties**

WTG ID	Latitude	Longitude	WTG ID	Latitude	Longitude	WTG ID	Latitude	Longitude
1	44.45951	-99.6517	27	44.41562	-99.7365	53	44.3505	-99.5914
2	44.45628	-99.6567	28	44.41663	-99.6755	54	44.3405	-99.691
3	44.44972	-99.6604	29	44.41314	-99.6472	55	44.34309	-99.6718
4	44.45063	-99.6476	30	44.40391	-99.7603	56	44.34055	-99.6488
5	44.45139	-99.6399	31	44.40826	-99.7571	57	44.34064	-99.6342
6	44.44599	-99.691	32	44.40143	-99.6494	58	44.34071	-99.607
7	44.44343	-99.6776	33	44.38434	-99.6563	59	44.34385	-99.5989
8	44.43449	-99.701	34	44.38423	-99.6166	60	44.3344	-99.6547
9	44.43725	-99.692	35	44.37735	-99.6602	61	44.33586	-99.607
10	44.43685	-99.6804	36	44.37946	-99.6272	62	44.32776	-99.688
11	44.43721	-99.6603	37	44.36986	-99.6472	63	44.32768	-99.6798
12	44.43741	-99.6516	38	44.37255	-99.6308	64	44.33015	-99.6754
13	44.43643	-99.6388	39	44.36966	-99.6106	65	44.33003	-99.6671
14	44.43003	-99.7081	40	44.3698	-99.5939	66	44.32685	-99.6389
15	44.43173	-99.6911	41	44.3707	-99.5864	67	44.33035	-99.6354

16	44.42999	-99.6678	42	44.37197	-99.576	68	44.3265	-99.6176
17	44.42769	-99.6552	43	44.37233	-99.5665	69	44.32591	-99.6097
18	44.4294	-99.6362	44	44.36212	-99.6682	70	44.33097	-99.6083
19	44.41925	-99.7298	45	44.36445	-99.6563	71	44.31866	-99.6404
20	44.42294	-99.7212	46	44.361	-99.631	72	44.31692	-99.6272
21	44.42284	-99.7081	47	44.36211	-99.5664	73	44.31518	-99.6599
22	44.42282	-99.6968	48	44.35659	-99.6112	74	44.31511	-99.6493
23	44.41925	-99.6669	49	44.3494	-99.6672	75	44.31163	-99.638
24	44.42212	-99.6598	50	44.35029	-99.6193	76	44.30635	-99.6604
25	44.41309	-99.7529	51	44.35015	-99.6068	77	44.30478	-99.6472
26	44.41614	-99.7478	52	44.34745	-99.5954	78	44.29692	-99.6603

3.3 Noise and Shadow Flicker Analysis

As required by the County Ordinance, a sound study and shadowflicker study were completed for the North Bend Wind Project. The Project would comply with the 45-decibel threshold at the perimeter of all occupied residences in proximity to the Project. There are a couple of locations that slightly exceedance the 45-decibel level however these locations are owned by property owners that are participating in the Project. These landowners have agreed to allow this exceedance in compliance with Section 9-104, A. 18.

As a reference point, 45 decibels is the approximate noise level that is generated in a quiet rural residential area with no activity.

The shadowflicker analysis that was completed found that all receptors in proximity to the Project would not exceed the 30 hour per year threshold noted in Section 9-104, A. 20 of the County's Zoning Ordinance.

4 Additional Enclosures with this Application

- North Bend Project Map (both Counties)
- North Bend Project Map (Hughes County only)
- Proposed Permanent Met Tower Map
- Public Road Execution Plan
- Acoustic Study
- Shadowflicker Study
- Useable Turbine Area Slides