
Appendix B
Design Data Report



**Rough Rider Wind I
Dickey County, North Dakota**

Design Data Report

Project Overview

- 175 MW Rough Rider I Wind Energy Center
- Up to 116 additional wind turbines
- Wind turbine generator model(s) to be used pending micrositing and wind resource optimization, but project generically based on use of General Electric 1.5 MW series
- PSC to receive final layout after turbine micrositing, but prior to construction

Wind Turbine Generator

General Electric 1.5 MW Series Technical Data	
Model Types	1.5se/1.5s/1.5sle/1.5xle
Rotor Diameter	70.5 m - 82.5 m
Swept Area	3,904 m ² - 5,346 m ²
Rotorspeed	10.2 rpm - 22.0 rpm
Blade Material	Fiberglass and epoxy or polyester resin
Pitch System	Independent blade pitch control
Approximate Minimum Wind Speed Necessary for Operation	3.5 m/s - 4.0 m/s
Approximate Wind Speed Necessary To Achieve Rated Electrical Output	14.5 m/s
Approximate Maximum Wind Gust Allowed During Operation	25 m/s
Maximum Wind Speed	> 45 m/s
Modular Tower System	2 conical & 2 cylindrical sections
Obstruction Marking and Lighting	Turbine and tower finish color RAL 7035 (light grey). Aviation lighting as required by FAA Determination
Foundations	Spread footing
Generator Type	Doubly-fed asynchronous Generator with slip rings
Rated Power	1,500 kW
Generator Rated Voltage	575 V

Balance of Plant Facilities

Wind Farm Power Collector System	
Construction Type	Ten (10) circuits of primarily underground direct-buried cable
Collector System Voltage	34.5 kV
Step-up Transformer at Tower Base	34.5 kV/575 V
Collection System Design Standards	National Electric Safety Code (NESC) / NextEra Energy Resources
Substation	
Approximate Substation Area	5 Ac
Main Transformer Rating	230/34.5 kV, 132/176/220 MVA
Major Equipment	One main transformer, 230 kV motor operated air break switch, 230 kV gas-insulated breaker, 230kV manual air break switch, 34.5 kV open-air breaker arrangement with control house, telemetry and metering to interconnecting utility
Substation Design Standards	NESPC/NextEra Energy Resources, Telemetry and metering in accordance with Interconnecting Utility requirements
Interconnecting Utility	Montana-Dakota Utility