



# Crowned Ridge Wind Project

South Dakota PUC  
Public Input Hearing  
Waverly, South Dakota  
March 20, 2018



# Applicant overview

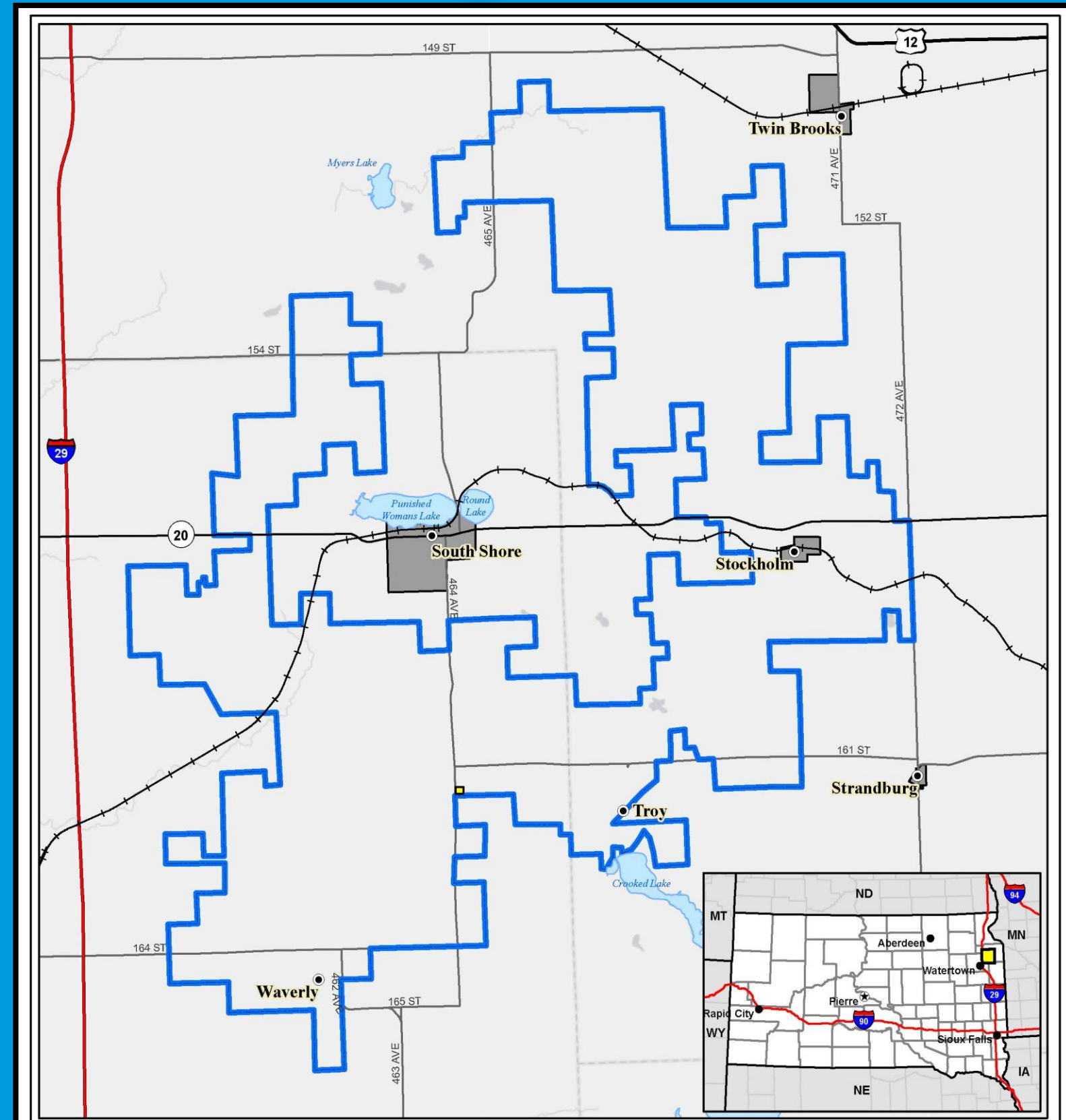
- ▶ Crowned Ridge Wind, LLC (CRW) is a wholly owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER)
- ▶ American owned and operated, NEER is the world's largest generator of renewable energy from the wind and sun
- ▶ NEER affiliates own and operate 118 wind farms across the United States and Canada
- ▶ NEER currently owns and operates three wind farms in the state of South Dakota
  - » South Dakota Wind, Day County Wind and Wessington Springs



**world's**  
**#1**  
generator of wind  
and solar energy  
2018

# Project overview – current filing

- » **Crowned Ridge Wind, LLC**  
PUC filing date: Jan. 2019  
PUC Status: Under review
- » CRW is seeking Facility Permit approval to construct, own and operate the up to 300 MW Crowned Ridge Wind project
- » CRW possesses a Power Purchase Agreement (PPA) with Northern States Power (NSP)
- » The Project is a \$400 million investment in the state of South Dakota and located in Codington County and Grant County, SD
- » The Project has a proposed Commercial Operations Date (COD) of December 2019



# Project overview – purpose of project

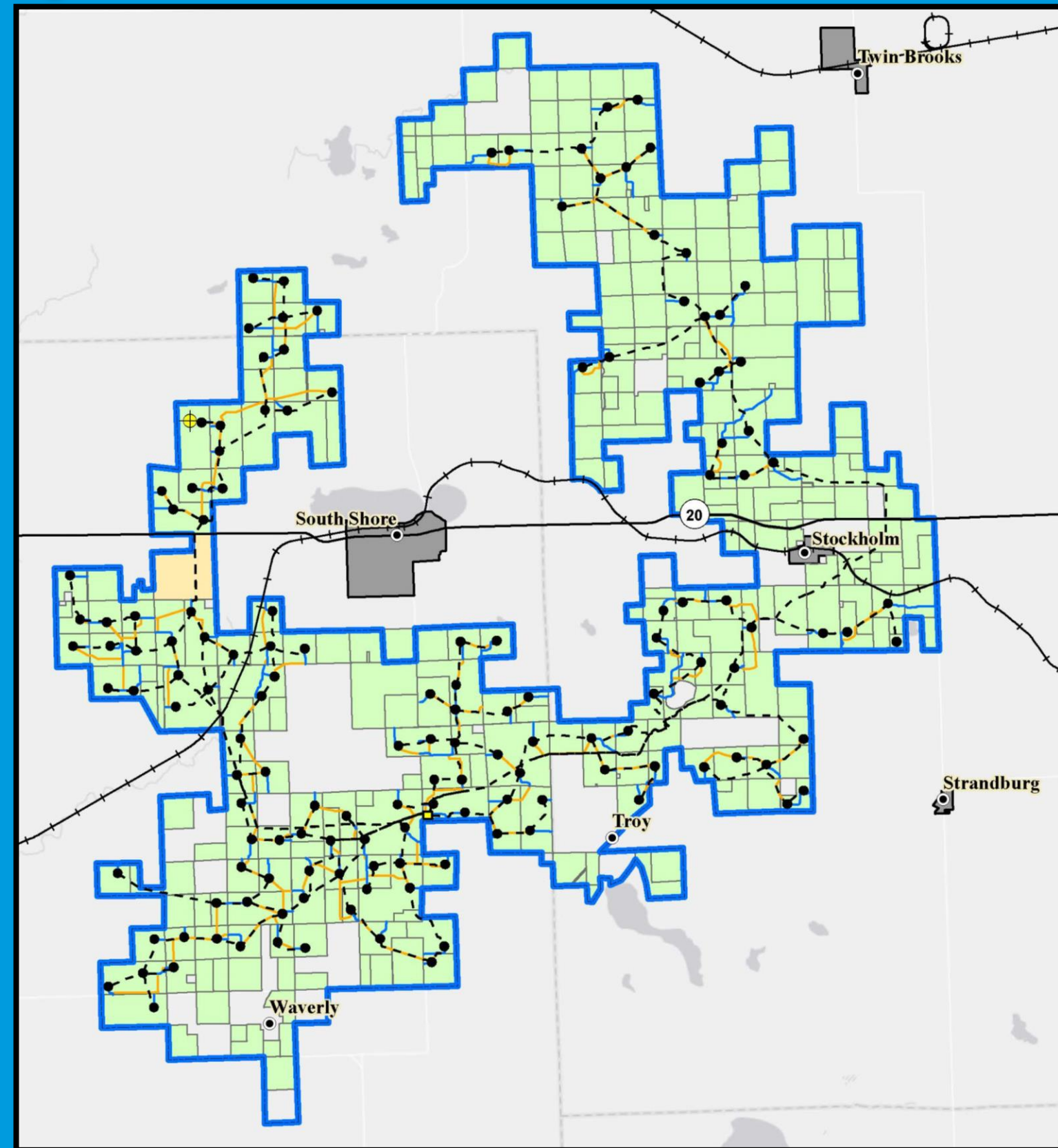
- ▶ Crowned Ridge Wind, LLC is seeking Facility permit approval for the proposed up to 300 MW Crowned Ridge Wind Farm located in Codington County and Grant County, South Dakota .....
- » To satisfy energy demands within NSP's service territory by delivering zero-emission, competitively priced electricity to the Midcontinent Independent System Operator, Inc (MISO) regional grid.
  - › Demand was recognized by the Minnesota Public Service Commission and North Dakota Public Service Commission
- » To supplement NSP's pursuit of a higher renewable energy generation mix across their generation output/consumption portfolio
- » To deliver a safe and reliable project to Codington and Grant County compatible with existing land uses, provides additional revenue streams, creates jobs and yields local benefits

# Project overview – why now?

- ▶ Crowned Ridge Wind, LLC elected to file the Crowned Ridge Wind Facility Permit application in January 2019 for a number of reasons:
  - » Both Codington County and Grant County have completed the review process of the existing local ordinances and successfully codified new siting requirements for Wind Energy Systems
  - » CRW has completed the necessary field surveys and micrositing of Project infrastructure and adopted changes to the Project site plan to ensure compliance with the newly codified county siting requirements for Wind Energy Systems
  - » Land easements have been obtained for 99% of the Project's proposed infrastructure
  - » The South Dakota PUC's application review process reflects a 6-month approval timeline which supports the Project's proposed COD of December 2019

# Project overview – site plan

- » **Project Size:** 300 MW
- » **Project Area:** 53,186 acres
- » **Participation:** 45,935 acres
- » **Project Turbines:** 130 GE 2.3 MW turbines
  - » (117) 2.3 MW 116-90 at 485' total height,  
(13) 2.3 MW 116-80 at 452' total height; and  
(20) alternate turbine locations
  - » 95 turbines proposed in Codington County;  
35 turbines proposed in Grant County
- » **Other Project Facilities:**
  - » Access roads to project facilities,  
underground collection cabling and an  
Operations and Maintenance (O&M) Facility



# Community Benefits

## ► Boost to local economy

- » 250 temporary construction jobs will increase local spend (hotels, dining, places to conduct general business)
- » 7-12 full time, long term O&M jobs created for the life of the project
- » \$400 million investment in the state of South Dakota

## ► Landowner benefits

- » Approx. \$40 million in payments to landowners over life of the project
- » Improvements to existing county and township roads



# Community Benefits

<b>Crowned Ridge Wind Project – 25 year Expected Tax Revenue</b>	
<i>Jurisdiction</i>	<i>Estimated Total Tax Revenue</i>
Grant County	\$2,170,000.00
Codington County	\$4,880,000.00
Mazeppa Township	\$30,000.00
Twin Brooks Township	\$40,000.00
Stockholm Township	\$30,000.00
Troy Township	\$60,000.00
German Township	\$90,000.00
Leola Township	\$280,000.00
Waverly Township	\$400,000.00
Rauville Township	\$50,000.00
Waverly School District	\$26,150,000.00
Milbank School District	\$3,190,000.00
	<b>\$37,370,000.00</b>



# Community Benefits

- ▶ Local support of organizations, groups and events
  - ▶ Crystal Springs Rodeo
  - ▶ South Dakota Wind for Schools program
  - ▶ Kite Day at the Capitol
  - ▶ SDSU Wind Application Center
  - ▶ Mitchell Tech / Lake Area Tech
  - ▶ Molded Fiber Glass (Aberdeen, SD)



FEATURED

## New contract keeps MFG open; 60 jobs to be added

By Elisa Sand, [esand@aberdeennews.com](mailto:esand@aberdeennews.com) Jul 2, 2018 0 1 min to read

# Stakeholder outreach

- ▶ Crowned Ridge Wind's stakeholder outreach has resulted in 99% completion in land acquisition (no eminent domain utilized)
- ▶ Stakeholder outreach involved communication with landowners, local tribes, wildlife agencies and government officials:
  - » Codington County Planning and Zoning
  - » Grant County Planning and Zoning
  - » Sisseton Wahpeton Oyate Tribe
  - » Spirit Lake Tribe
  - » United States Fish & Wildlife Service
  - » South Dakota Game, Fish & Parks
  - » Open House conducted on Nov. 16<sup>th</sup> 2017



# General Project Location Selection

- ▶ **Available wind energy resource**
  - » Wind resource data confirms viable wind resource suitability of Project Area
- ▶ **Access to viable transmission interconnection**
  - » Adequate proximity to the Big Stone South Substation with suitable infrastructure and available capacity
- ▶ **Landowner support for wind energy development**
  - » Voluntary participation from approx. 86% of all lands located within Project Area some of which have been participating for 10+ years
- ▶ **Land use and environmental resource compatibility**
  - » Project layout supplements existing land uses and avoids or minimizes the impacts to natural and cultural resources

# Project Compliance

- ▶ CRW has worked diligently to make the necessary changes to the Project site plan to meet and exceed local and state wind energy siting requirements

## Section 5.22.03 General Provisions - Codington County Requirements

<b>Setbacks</b>	<ul style="list-style-type: none"><li>- 550' from participating occupied residence, business, church, or school</li><li>- 1,500' from non-participating occupied residence, business, church, or school (within all Districts other than Town Districts)</li><li>- 5,280' from Municipal Boundaries at the time of Conditional Use Application</li><li>- 110% of the height of the wind turbine from Right-of-Way of public roads</li><li>- 110% the height of the wind turbines from any property line</li></ul>
<b>Noise</b>	<ul style="list-style-type: none"><li>- Shall not exceed 50 dBA, average A-weighted Sound pressure level effects at the property line of existing non participating residences, businesses, and buildings owned and/or maintained by a governmental entity</li></ul>
<b>Flicker Analysis</b>	<ul style="list-style-type: none"><li>- Flicker at any receptor shall not exceed thirty (30) hours per year within the analysis area for all schools, churches, businesses and occupied dwellings within a one (1) mile radius of each turbine within a project.</li></ul>

# Project Compliance

## Section 1211.0 General Provisions - Grant County Requirements

<b>Setbacks</b>	<ul style="list-style-type: none"><li>- 1,500' from participating residence, business, church, or school, building owner and/or operated by a governmental entity</li><li>- 1,500' from non-participating residence, business, church, or school, building owned and/or operated by a governmental entity</li><li>- 5,280' from Municipal Boundaries existing at the time of Conditional Use Permit Application</li><li>- 500' or 110% of the vertical height of the wind turbine, whichever is greater, from Public ROW</li><li>- 500' or 110% of the vertical height of the wind turbine, whichever is greater, from any property line</li></ul>
<b>Noise</b>	<ul style="list-style-type: none"><li>- Shall not exceed 45 dBA, average A-weighted Sound pressure including constructive interference effects measured twenty-five (25) feet from the perimeter of the existing non-participating residences, businesses, and buildings owned and/or maintained by a governmental entity.</li><li>- Shall not exceed 50 dBA, average A-weighted Sound pressure including constructive interference effects measured twenty-five (25) feet from the perimeter of participating residences, businesses, and buildings owned and/or maintained by a governmental entity.</li></ul>
<b>Flicker Analysis</b>	<ul style="list-style-type: none"><li>- Flicker at any receptor shall not exceed thirty (30) hours per year within the analysis area for all schools, churches, businesses and occupied dwellings within a one (1) mile radius of each turbine within a project.</li></ul>

# Wind farm description

- ▶ The project will consist of up to 130 turbines, a collector substation, under ground collection lines and an O&M facility:
  - » **Turbines** – 117 GE 2.3 MW, 90m HH and 13 GE 2.3 MW 80m HH
  - » **Collector substation** – 34.5kV to 230kV fenced area with breakers, switches, control house and two power transformers
  - » **Underground collection lines** – 34.5kV power cables buried at least 36 inches below the surface that connects the turbines to the substation. It also includes pad mount transformers and junction boxes
  - » **O&M facility** – Fenced area with a main building that accommodates offices, spare parts storage, maintenance shop and parking facilities

# Construction overview

- ▶ The construction process begins with a detailed engineering design for all the facets of the project including; access roads, turbine foundations, tower erection and electrical systems
- ▶ Turbine foundation
  - » Remove and stockpile top soil for future reclamation
  - » Install straw waddles and silt fences to control run-off during rain events
  - » Excavate turbine foundation to approx. 8' depth
  - » Install rebar and bolt cage
  - » Pour concrete supplied by on-site batch plant



# Construction overview

- Turbine towers are erected using special cranes that are capable of lifting up to 1,800 ton and reaching a height of 350 feet (107 meters)
  - Install down tower assembly including turbine converter
  - Install tower base including torqueing anchor bolts
  - Install mid and top tower sections
  - Install nacelle, hub and fly rotor





# Construction overview

- The collection lines are installed using a trencher or horizontal direction bores
  - Cables and communications line are simultaneous laid while trench is being cut
  - Trenches are back filled with native soil and compacted
- The collector substation is designed, constructed to meet all the applicable codes and standards
  - Clear and grub site, grade and compact site, install below grade infrastructure, equipment foundations, equipment, wire and termination, test and commissioned equipment



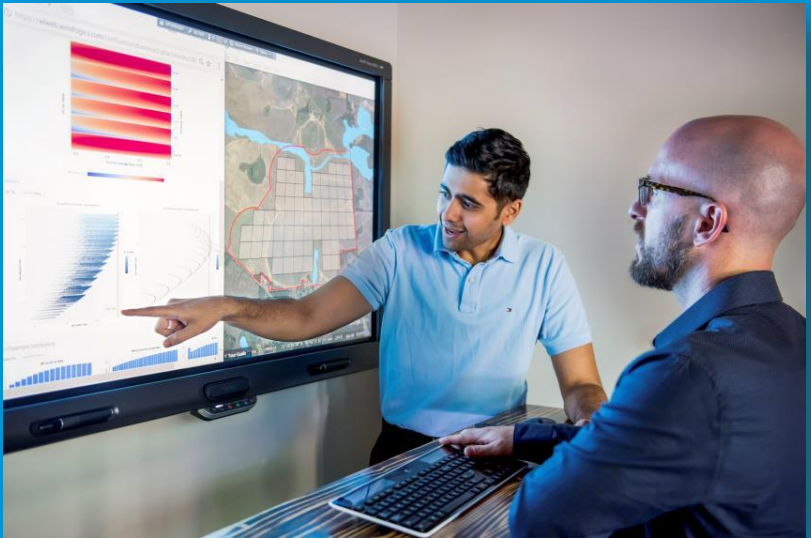
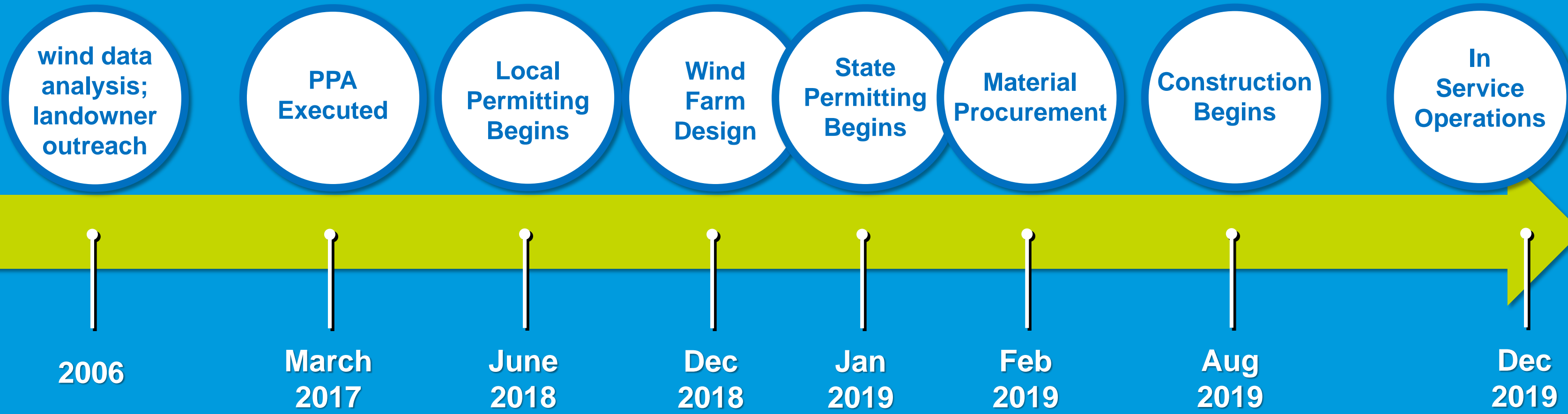
# Operations overview

- ▶ The project will be monitored 24/7 from the Renewable Operations Control Center by a SCADA system. In addition the site will be maintained and monitored locally from the O&M building by 12 wind technicians, technician site lead and a site manager
  - » Supervisory Control and Data Acquisition (SCADA) system collects real time data from wind farm and substation and feed information to controllers located in the turbine and substation
  - » Controllers make automatic adjustments based on *set points established for the safe, reliable and efficient operation of the site.*
- ▶ The O&M building provides accommodation for the operations personnel who are responsible to ensure that the facility is operated in accordance with North American Electric Reliability Corporation (NERC) standards

# Decommissioning overview

- ▶ CRW is responsible for decommissioning of the project and all costs associated with decommissioning associated facilities
  - » Removal of 130 wind turbines and all existing above ground facilities
  - » Remove roads and staging areas not desired by land owners to remain in place
  - » Restore property or properties to pre-construction conditions including:
    - › Vegetation, drainage and other environmental features
  - » Repair county roads impacted by movement of heavy vehicles and frequent vehicle trips

# Crowned Ridge Projects Timeline



# Contact information

## Crowned Ridge Wind, LLC

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## South Dakota PUC Website

<https://puc.sd.gov>

