



ABOVE: Construction is progressing on the Crofton Bluffs Wind Farm, located west of Crofton, Neb. The operation is expected to come online later this year.

Wind Potential Grows In Nebraska

The Crofton Bluffs Wind Farm Will Be The Latest Step In Nebraska Toward Tapping The Breeze For Energy

BY LINDA WUEBBEN
P&D Correspondent

Decked out with orange safety vests, hard hats and plastic glasses, officials from the City of Crofton and from Knox County recently checked out operations at Crofton Bluffs Wind Farm west of Crofton — got a first-hand glimpse of the 21st century energy opportunity.

Although the tour group didn't have to wear steel boots, safety is still a big priority at Edison Mission and the construction crew all want to go home the same way they came.

"In two weeks we hope to be operational; some of the turbines will be ready to go," said Ben Khali, construction site manager for Edison Mission Energy. The 22 turbines were in various stages of construction but many were popping up if Crofton residents take a quick look west.

"Wind farms are good for economic development," said Robert Stiens, public affairs manager for Edison International. "Not only are there \$9 million realized in taxes for the life of the project, but also \$7 million paid in leases to landowners. An indirect benefit is the influx of money spent by the 100 employees in area communities during the construction at eating establishments, grocery stores, motels and local businesses."

Crofton Bluffs is the fourth wind project in Nebraska and across the country, Edison has 31 projects in 11 states. Seven wind towers are in the air and the eighth tower is "hanging" Khali said because the last windy days prohibited erecting the towers, gear box, cone and blades. A breezy day down at ground level may see wind speeds of 60 mph at 300 foot up. Along with those famous Nebraska winds, the construction crew also has to deal with hot temperatures and dry weather this past summer but they are fairly close to schedule.

"Soon you will be seeing them spin," said Khali.

Besides erecting the turbines, there are crews digging the 3.5-foot trenches for collection and fiber optic cable which will connect all the turbines so they can "speak" to each other. As the cable is buried, more and more of the turbines will be operational.

Crofton Bluffs Wind project was established through a Request for Proposal put out by NPPD several years ago. The original owners of the farm signed a Power Purchase Agreement with NPPD that was eventually renegotiated with Edison Mission when they bought the facility. NPPD has a PPA in place for all the power. NPPD in turn sells power through a Power Sales Agreement. NPPD will retain 20 of the 40 megawatts of potential electricity. OPPD is taking 13 megawatts through the PSA with NPPD. The Municipal Energy Agency of Nebraska is buying 4 megawatts from NPPD and Lincoln Electric System is purchasing three.

The wind farm may be close to being completed and sounds like it will be generating electricity any day now, but it will not be available for commercial operation for some time, just as the Broken Bow Wind Farm is. NPPD operates the transmission system and the wind farms must go through an extensive testing program on relays, power levels, voltage regulators, etc., in order to protect the electric grid system before it can become truly operational. It is

still several months away before it can become operational, probably late in the final quarter of 2012.

In April, early crews came in to look at road construction, and in May, construction began on a substation. Crofton Bluffs will connect with the Elkhorn Wind Farm and Khali said they are so close they will share a fence line. Both projects are owned by Edison Mission, staffed by the Vestas maintenance crew but are operated under two different LLCs.

The power purchaser for the Crofton Bluffs 40MW wind farm will be Omaha Public Power District (OPPD). One megawatt will serve approximately 350 homes and Crofton Bluffs could potentially serve 14,000 home. It will create only half the energy of the Elkhorn Ridge wind farm but is just as important in the scheme of wind energy projects for Edison, Nebraska Public Power District (NPPD) and OPPD.

Two of the turbines are 3.0 MW units which were in storage and fit the Crofton Bluffs project design. The remaining 20 are 1.8 MW units fresh off of the factory assembly line at a plant in Colorado. These new models were specifically designed for the elevation and wind conditions in Knox County and are run by a more advanced computer system. The newer, smarter computer system monitors the turbines and the direction they need to point. It can tell the turbine to pull up and stop if the wind is too strong or rotate direction if the wind changes.

The concrete foundation, known in the industry as the "pad and pier design" is nine feet in depth, octagonal in shape and 54 feet in diameter. Eight and one-half foot long anchor bolts are placed in the "pier" portion of the foundation, secured at their base by a 1 1/2-ton ring, which is made just across the river in Yankton. The top of these 120 anchor bolts, 60 on the outside and 60 on the inside, protrude from the concrete and are the anchor points for securing the tower base to the foundation.

The pad and pier foundation for the 80 meter towers contains approximately 30,000 pounds of rebar and 300 cubic yards of 5000 PSI concrete. The 45-meter blades are lifted into place on the nacelle with a Demag 2800 crane which has a lifting capability of 660 tons and a lifting height of 300 feet. The blades are maneuvered into place with radio transmission between the crane operator and the erection crew.

"When a blade is going into position, you can tell by the tone of their voices how it's going," said Khali. The two crew members are in total sync and in a world of their own. During operations, it is estimated at its fastest speed, the tip of the blade is traveling approximately 100 mph.

Instrumentation located on the top of the turbine constantly measures wind speed/direction and can effect turbine operation based on changing conditions. The tower placement was submitted to the Federal Aviation Administration and the FAA determined only 18 towers needed the high technology LED flashing lights at the top of the towers.

"The turbines, if taken care of with timely maintenance, will last a long time," said Kahli. "It's just like a car, treat it right and you will get out of it what you put in it."

He estimated the life of a wind turbine to be 20 to 30 years. Vestas will possibly add three employees to current crew of four for the maintenance program for the Crofton Bluffs wind farm.



PHOTO: LINDA WUEBBEN



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Recently, officials from Crofton and Knox County inspected the work site for the Crofton Bluffs Wind Farm. The operation will feature 22 turbines and produce up to 40 megawatts of power.

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