CIELO WIND®

Home of the Wind Ranch



BUG TUSSLE WIND RANCH™

PROJECT FACTS



Source: Enercon Energy for the World

WE ARE WIND FARM EXPERTS

Our expertise is in creating long-term relationships with investors, landowners, communities, utility companies, and turbine manufacturers.

CIELO WIND

Home of the Wind Ranch

BUG TUSSLE PROJECT FACTS

BUG TUSSLE WIND, LLC AND THE PROJECT

DEVELOPMENT

During development, the project has secured land and permits to build and operate a first class wind power facility to provide 60Hz 345kV electricity to the Texas wholesale electricity market. The majority of the project's work is to customize land agreements to provide for both wind turbine locations and continued farming, hunting or grazing use of the rural property.

CONSTRUCTION

The project schedule is to start construction in 2024 and hopes to be complete in 2026. About 300 workers are planned to be on site during peak construction. Work includes equipment operators for improving roads in the area, building concrete foundations for the turbines, trenching underground electrical cables between the turbines and assembling the turbines with large cranes. An operations and maintenance building is planned to be built on Highway 82 and serve as the project construction office temporarily. About $25 million in payroll, landowner payments and local contracts for engineering, procurement of materials and construction are planned to be let with Lamar County residents and companies. Similarly, about $3 million in local payments are expected for Fannin County local landowners and constructors.

Source: Oncor





OPERATION

Once operating, the facilities have a design life of about 25 years. But similar to an airplane, the turbines can simply be maintained and operated indefinitely. The project is expected to directly spend an additional $50 million in salaries, landowner payments and contracts with Lamar County residents and contractors during the operating phase of the project. In Fannin County, the project is planned to spend an additional $5 million in local contracts.

THE LANDOWNERS

A total of 80 landowners are a part of the project with about 60% of those being residents of Lamar County. Only about half of the landowners that are part of the project have turbines. There are planned to be about 70 turbines in Lamar County with a total county investment of about $250 million. The majority of the land is actively farmed for cotton, sorghum and hay, or grazed for beef cattle. The Lamar County part of the project is planned take about 60 agricultural acres out of production. This is less than 1 acre per turbine. The Fannin County portion of the project is planned to take less than 10 acres out of farm or grazing once the project construction work is complete. During construction, there will be substantial temporary construction roads and crane pads built on private lease land, but these will be removed and the soil brought back to productive farm or grazing condition. All landowner agreements with turbines have terms and conditions for the remediation of the property when the lease is complete with provisions to secure this obligation with financial security or bonds. Many landowners without turbines are paid to simply provide the project with clear access to high winds above the property with the project not allowed to enter the property or do any work on the property. Other landowners are compensated for roads or underground electrical lines to access turbines on neighbors' land.

INFRASTRUCTURE IMPROVEMENTS

An estimated 30 miles of Lamar County roads in the area of the project will be improved to all weather gravel 20' riding surface. In Fannin County, only a few miles of county roads near the eastern county boundary are proposed to be improved as part of the project. Further, the roads will not just be improved to project turbine driveways, but continue in many cases past project needs to nearest county or state road intersection. At the end of construction, county roads are proposed to be reworked to good condition using extra gravel materials. Many of the landowners will be provided with extra construction gravel to improve farm drives to barns, equipment sheds and homes. The project has planned on regular "dust control" through watering roads as well as road maintenance in the area of the project. The road work improvements and the adjacent shoulder area is at the expense of the project during construction. The roads are located in Precinct 2 of Lamar County's road system and Precinct 3 of Fannin County.

EDUCATION IMPACT

The wind project will provide tax revenue to Chisum ISD and Honey Grove ISD once built. The tax revenue projected over the life of the project is estimated at:

Chisum ISD	$250 million investment	$30 million
Honey Grove ISD	$50 million investment	$6 million

Each turbine is estimated to produce over $400,000 in school tax revenue over the first 20 years of operations. Each turn of a turbine blade will drop a penny into the treasury of the Chisum ISD and Honey Grove ISD.

REVENUE FOR THE COUNTY

The project has proposed to enter an agreement to reduce Lamar County property taxes in exchange for the project contributing work / road material to the county and documenting the amount of local spending on the project. The project has not made a proposal to Fannin County at this time. With or without a tax agreement, the goal of the project is to be a welcome local addition of tax revenue, county road improvements, local spending and high tech job creation.

There are planned to be about 70 turbines in Lamar County with a total county investment of about $250 million.

LAND VALUES

Numerous third-party reports on research have determined that wind turbines do not have a significant long term impact on property values. In the short term, the project is interested in sharing accurate and fact based information to eliminate land value impacts from inaccurate information. Reference cielowind.com for project facts. As further reference, some reports suggested are:

- The Impact of Wind Power Project on Residential Property Values in the United States: A Multi-State Hedonic Analysis. Lawrence Berkley National Laboratory. (12/08)
- Wind Farm Proximity and Property Values: A Pooled Hedonistic Regression Analysis of Property Values in Central Illinois. Jennifer L Hinman (05/10)
  National Association of Realtors (NAR) reference page nar.realtor/wind-farms
- New Study Identifies Wind Energy Developments' Impact on Home Property Values
  Energy.gov/eere/wind/articles (12/23)

Key attributes of the project that are traditional enhancements to property values are:

- Upgrade of over 30 miles of county roads to two lane (20' width) all weather condition
- Large addition to property tax base to expand programs of County/ schools, accelerate bond repayment, increase reserves or lower taxes as public officials determine is best for community.
- Economic development from local jobs during construction and operations driving increased demand for housing. Project has committed to $28 million of Lamar and Fannin County spending with local based contractors or residents during construction alone.
- Landowners using project revenue to make agricultural investments such as irrigation, crop storage facilities and similar.
- Contributions to enhance local fire and school facilities.

Also, the project ADLS that darkens aviation lights on turbines is an industry leading best practice feature that enhances the compatibility of the project with neighbors.


Source: Vestas







Source: Siemens Turbines

The permit secured by the project allows for 788’ total height of the turbine blade tip

CIELO WIND

Home of the Wind Ranch

PROJECT FACTS

The Bug Tussle Wind Ranch™ is a wind project development of Bug Tussle Wind, LLC planned to supply long term electricity to the Texas electricity market. The project is planned to be about a $300 million investment with most of the project located in Lamar County and the rest in Fannin County. About 80 landowners have reached agreement with the project to both allow for turbine construction in exchange for revenue to supplement their farm and ranch operations. The approximate 80 turbines are planned to be located in the area south of Highway 82 between Paris and Honey Grove, Texas. The project will bring hundreds of construction jobs and millions in local spending and local school/county tax revenue. The project represents one of the most environmentally responsible power generation facilities to date with tall towers to get blades well above the ground and an ADLS system to darken turbine aviation lights at night. The project uses no water and has no air/chemical waste streams to generate electricity only using the wind. The winds in the area will turn the turbines 92% of the time at a speed of 4-11 RPM. The turbines are made in the US and are planned to be partially financed using federal infrastructure bill tax credits which only pay for performance tax credits based on kWh's produced. The project will deliver reliable electricity for decades to come with this state-of-the-art facility.

THE HEIGHT OF THE TURBINES

The turbines are tall to harness the high level winds. They will operate over 90% of the time. The blades will turn at a rate of between 4 and 11 RPM (revolutions per minute.) The taller turbines are more efficient to provide energy during more hours to capture high elevation winds. Whether a turbine is 200' or 788', in clear conditions a turbine will be visible for a long distance (up to 10 miles) from the project as each turbine will be above the tree line. The permit secured by the project allows for 788' total height of the turbine blade tip (or a maximum 544' for the turbine nacelle.) In contrast, short turbines are less efficient, require more turbines to make the same amount of electricity, the blades are closer to the ground and do not operate during as many hours when energy is needed in Texas. The tall tower heights are considered best practice in the industry to reduce the number of locations and improve efficiency of the turbines.

ILLUMINATION

The turbines are required to be lit at night for aviation safety, but an ADLS (Aviation Detection Lighting System) reduces the visual impact of the project on neighbors and birds. The project is committed to an industry best practice of an 'ADLS' system for the project. This ADLS is designed to darken FAA required warning lights when there are no area aircraft. Planes flying low in the project area are a low probability at night. The turbine lights are expected to be operating only when repairs are being made to the ADLS radar system or the occasional night plane flight in the area. Note that three (3) area private plane grass landing strips have been accommodated with the project relocating turbines and reserving "no build" areas at the landing and take-off end of the landing strip runways. These areas are 1000' wide and 1 mile long.

DECIBELS AND WIND ENERGY

Further, the noise from the turbines is significant, but reduces with distance. No turbine will be located closer than 4 football fields to a house. At that distance the turbine produces noise similar to a GE refrigerator or about 40db. Even at one football field and just outside of the edge of the turbine blade area, the turbine noise is about 50db or similar to the noise of a Mitsubishi window AC unit. Reference ge.com for noise information on GE turbines as an example of turbine noise. GE is one of many turbine manufacturers that make turbines for US wind projects.

No turbine will be located closer than 4 football fields to a house. At that distance the turbine produces noise similar to a GE refrigerator or about 40db.



MADE IN THE USA

The turbines are planned to be manufactured in the US with components being sourced from assembly facilities in Florida, New York, Colorado, Texas or Iowa. There are federal tax benefits from building a new wind power plant that only accrue in full to an owner if the project documents that fair wages are paid during construction and the turbines are made 100% in the US. Further, these tax benefits only flow to the project as each kWh is produced during the first years of the project to incentivize performance. The energy used to manufacture a wind turbine is repaid through production in less than 2 years, making wind power one of the most energy efficient generation technologies available. Reference americanstatesman.com (FACT CHECK: Do wind turbines cost more to build then the energy they produce? By Jon Greenberg)

WHOLESALE ELECTRIC MARKET

The energy from the project is delivered at 60Hz and 345kV to the wholesale electric market. Fannin and Lamar County industrial buyers like WalMart, Campbell Soup, and Kimberly Clark are active in the wholesale electricity market and buy electricity from renewable power projects. The attraction to a renewable project purchase of electricity is the ability to fix the cost of electricity long term without risk of the price of fuel (natural gas or coal) going up and down. But wind power electricity sells at a discount in the market as it has less reliability than natural gas or coal. Large electricity buyers have a mix of sources of electricity. Wind is just an option, not a requirement, in the competitive Texas wholesale electricity market. While Texas electricity system is interconnected, the majority of energy from the project never travels more than 150 miles from the project and generally serves the growing electricity needs of the Dallas Forth Worth area. The project produces enough electricity to meet the annual electricity needs of about 50,000 homes.

Source: Broadwind



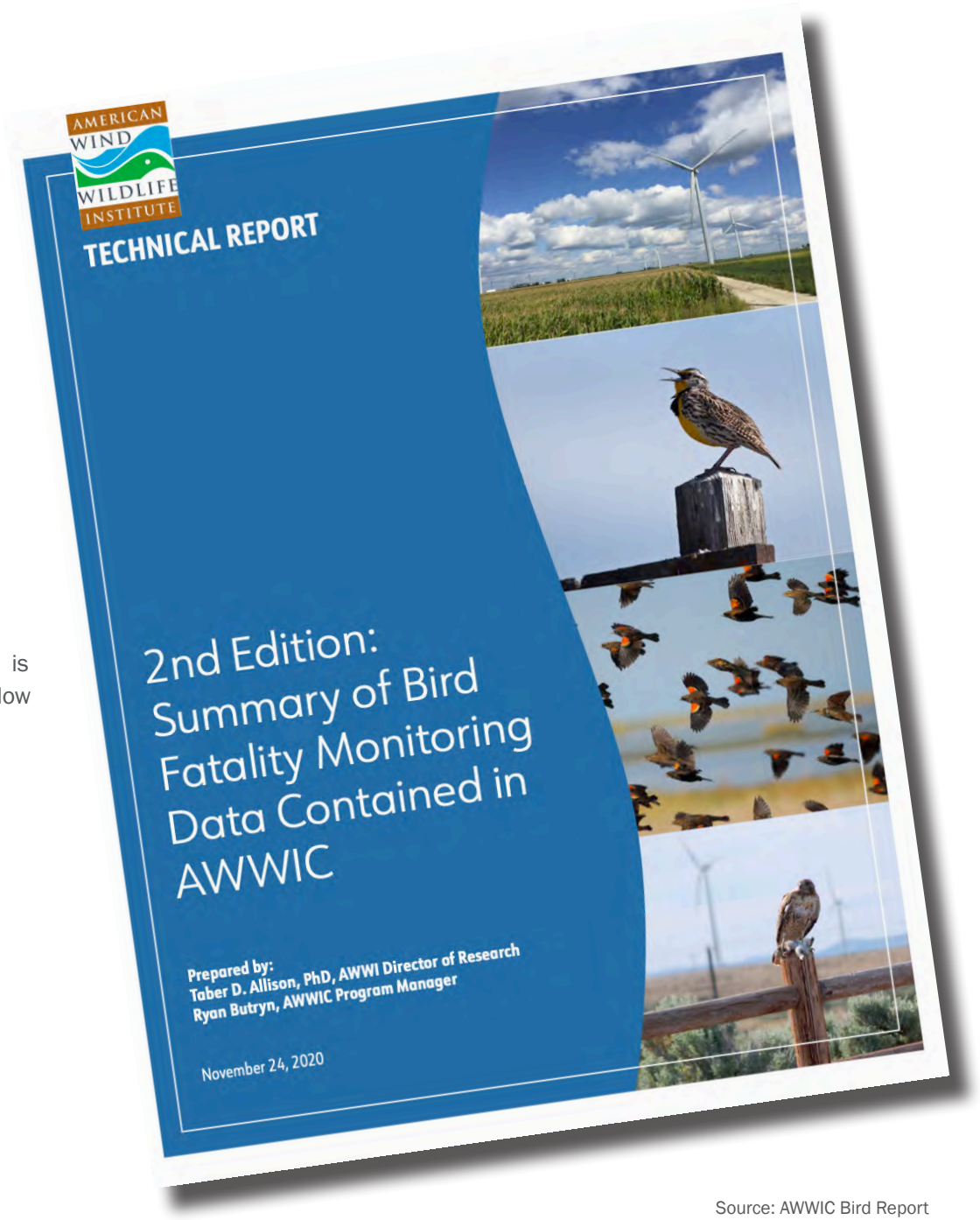
The project produces enough electricity to meet the annual electricity needs of about 50,000 homes.

WIND ENERGY AND BIRDS

During operations and low visibility conditions such as night time or fog, the turbines can kill a bird or bat. Industry wide, this is estimated to be about 2 avians killed each year by a turbine. Reference the *American Wind Wildlife Institute (2nd Edition AWWIC Bird Report)* for bird mortality research from about a quarter of the wind projects built in the US. This project has committed to design the turbines to reduce bird strikes from these industry average rates. Specifically, the project is committed to:

- Buried all low/medium voltage electric cables below ground (reduces bird strikes),
- Towers and blades with high UV reflective white (birds see UV light at night),
- Tall towers to lift turbine blades above the tree line
- Install ADLS to not attract bugs/ birds at night.
- Single pole tube tower transmission line

With these industry best practice precautions, the project is confident that these measures can reduce the avian strikes below these industry averages.



Source: AWWIC Bird Report

CIELO WIND
Home of the Wind Ranch


Source: Liebherr

DECOMMISSIONING WIND ENERGY

Near the end of the design life, the project owners may consider options to continue operations vs rebuild the project with more efficient turbines.

Eventually, the project will enter a decommission phase. The lease agreements with landowners provide terms for returning the farm and ranch land to a condition comparable to its pre-construction condition. Foundations are required to be demolished so that deep plows can pass over the turbine location. The concrete removed is either recycled or used as fill/ cover at offside dumps. Valuable top soil is repaired to useful condition if damaged by the decommissioning process. The tower, turbine and blades are all recycled/ scrapped. The tons of steel, copper and other metals are valuable and help defray decommissioning costs. While there may be companies that take the old fiberglass blades to landfills, like an old boat, Cielo is committed to the recycling of the fiberglass materials. Wind projects have used companies like ReGen Fiber (regenfiber.com) in Fairfield, IA in the past to recycle wind turbine blades and keep them out of landfills as part of its best practices on projects.

landowners provide terms for returning the farm and ranch land to a condition comparable to its pre construction condition



The Bug Tussle Wind Ranch™ and the company Bug Tussle Wind, LLC is a wind power development of Cielo Wind Power, LLC (Cielo). Cielo was formed in 1998 and is based in Austin, Texas. Cielo's sole business is the development, engineering, construction and operation of quality utility scale wind power facilities. Cielo is a privately held company in its 27TH year of operations focused solely on the wind power industry. Cielo and affiliate companies have a track record of developing, constructing and operating first class wind projects in Texas for the benefit of the local economy and electric rate payers.