

Final Technical Report

Project Title: Cloud County Community Wind Energy Technology Project and Renewable Energy Center of Excellence

DOE Award Number: DE-FG36-08GO88013.0002
Project Period (01:2008 – 11:2015)

Principal Investigator

Bruce Graham, 800-729-5101 ext 256, bgraham@cloud.edu

Recipient organization: Cloud County Community College, PO Box 1002, 2221 Campus Drive, Concordia, KS 66901

Date of Report: 2/26/2016

Executive Summary

This report provides a technical accounting of the total work performed, and is a comprehensive description of the results achieved.

Wind energy has propelled boats along rivers as early as 5000 BC. By 200 BC simple windmills were pumping water and grinding grain. Water pumping windmills by the millions were erected throughout the countryside in the U.S. starting around 1890. In the 1970's gasoline prices skyrocketed and thus started search for alternative forms of energy, and not rely solely on fossil fuels. President Carter signed the Public Utility Regulatory Policies Act of 1978 which required companies to buy certain amounts of electricity from renewable energy sources such as wind energy. In 1980 the first utility-scale wind farms were installed in California. Many lessons were learned from the early technology and regulatory policies to bring us to where we are today. In 2008 the U.S. Department of Energy published a 20% by 2030 report stating the U.S could provide for 20% of the electrical needs by utilizing the renewable energy of wind.

In 2004, Cloud County Community College (CCCC) made application to the Kansas Board of Regents to start the first collegiate Wind Energy Technology (WET) training program in the United States. The program was developed and the first four students enrolled in 2006. The WET program continued to grow in student numbers, instructors, training equipment, and facilities. In 2008 Horizon Wind Energy constructed the first wind farm in Cloud County located eight miles south of CCCC. This wind farm needed construction workers and hired some of the CCCC WET students on internship opportunities. Thus, started the demand for wind technicians and the demand continues to grow each year.

In January of 2008 Cloud County Community College (CCCC) was awarded a Department of Energy grant for the purpose of developing a wind energy center of excellence. The appropriation was included in the federal Energy and Water Development, Commerce, Justice and Science bills. U.S. Senator Sam Brownback backed CCCC's proposal as a way of helping decrease the nation's dependence on foreign oil.

Training to become a wind technician is very specific in nature and requires a broad skill set. There are five basic areas of training needed to become a highly trained employee: Electrical, Hydraulics, Mechanical, Computer Networking, and Safety. Much like in the automotive field of study when students need an automobile to work on, wind technicians need wind turbines to work on. So, bids were sent out and companies were selected to help provide a wind energy learning lab at CCCC.

In November of 2009 Cloud County Community College started construction of the Cloud Power Wind Farm which consists of three wind turbines (two Northwind 100, and one Nordtank 150). The Nordtank 150 was a pre-owned turbine purchased from Enertech and was located in Denmark and was shipped to the U.S. This turbine is utilized for training purposes only and does not produce electrical energy.

The first step in designing a wind farm is to find a location with a good wind resource. CCCC owns property south of the main campus which is an excellent location. Electrical plans were drawn up to provide an underground collection system for the electrical energy pathway back to the main campus building. The two Northwind 100's provide for electrical needs of the college and any excess electrical energy produced can be sold back to the utility through a two way metering system.

The first step in the installation of a wind turbine is to dig an excavation to house the concrete foundation. The Nordtank wind turbine utilizes a spread footer foundation design and the Northwind turbines utilize a caisson foundation design. All three foundations were poured at about the same time in December of 2008. It takes about thirty days for the concrete to cure, and then the assembly process can begin.

The wind turbine components were delivered to the construction site and offloaded. A construction crane was used to lift the wind turbine components into place. Three tower sections were separately lifted into place and bolted together. The nacelle (wind turbine head) was then lifted and bolted to the tower sections. The wind turbine rotor assembly (hub and blades) was assembled on the ground and lifted as one unit and bolted to the nacelle. All of the electrical systems were then properly connected to the grid.

Wind turbines rely on a computer networking system for the communication needs. A wireless computer networking system was installed. Once communication was established then the wind turbine commissioning process began. This was the startup sequence for the turbine. The Northwind 100 Kw turbines were brought online in April of 2010 at a Ribbon Cutting Ceremony.

CCCC was awarded an additional Department of Energy grant to expand the WET program in the area of wind turbine blade repair training. Both Department of Energy grants for the purchase and installation of the wind turbines and the program expansion were tied together into one grant opportunity. A Program Director was hired to manage both grants.

The CCCC WET program located and leased a facility which met the needs of the expanded wind turbine blade repair program. This program was the first collegiate blade repair program of its kind in the U.S. Wind turbines across the nation need to be inspected on a yearly basis and if found to have damage or defects need to be repaired as soon as possible. This training is highly specialized and requires specific equipment and supplies. Grant funding provided the specific equipment, supplies, tools, and testing equipment necessary to offer this training.

After the building was leased, the instructors were hired and trained, the equipment purchased, and the next step was to aggressively recruit students to fill the seats in this program and meet the huge new employee demand of the wind industry. A CCCC WET Marketing Associate was hired to help recruit students. This Marketing Associate designed brochures, scheduled presentations, contacted industry representatives, hosted visits, developed media advertisements, and highly recruited prospective students. Hundreds of CCCC WET students are located throughout the U.S. as Wind Farm managers, turbine technicians, and blade repair technicians.

The CCCC Board of Trustees were faced with replacing the aging heating and cooling system for the main campus building and voted to install a highly efficient geothermal system because of the move toward renewables with the installation of the wind turbines. The wind turbines provide the electrical energy to power the geothermal system and the natural gas supply to the CCCC main campus was discontinued. The geothermal system consists of 99 wells drilled 400 feet deep for the heat exchange system. This one of a kind system (wind/geothermal) was made possible because of a Department of Energy Grant opportunity to install wind turbine on CCCC's campus. From startup of the wind turbines in April of 2010 to the end of the grant period in November of 2015 the wind turbines have produced 2,172,748 kilowatt-hours of electrical energy. To put this in perspective, the 2 million plus kilowatt-hours of electrical energy equates to the electrical needs for 217 households for a year.

Wind energy is a clean energy source which releases no pollution into the air, does not utilize water like fossil fuel generation, and does not contribute to global warming. Wind is free and an inexhaustible (renewable) source of energy. Wind energy stabilizes the cost of electricity, reduces the vulnerability to price spikes in fossil fuels, and is an excellent source of local jobs, from construction to the operation and maintenance and management of a wind farm. The CCCC WET program was developed to train a workforce to meet the needs of this industry.

Cloud County Community College (Cloud) is a leader in the renewable energy movement for the state of Kansas and the Midwest. Cloud's *Wind Energy Technology Project* increases the viability of wind energy technology in our Nation's energy economy and meets the EERE Wind Energy Program's mission supporting the President's National Energy priorities to "increase the viability and deployment of renewable energy; lead the Nation's efforts to improve wind energy technology through public-private partnerships that enhance domestic economic benefit from wind power development; and coordinate with stakeholders on activities that address barriers to the use of wind energy".

PROJECT OBJECTIVES

Throughout the Department of Energy grant project, the Cloud County Community College (CCCC) Wind Energy Technology (WET) program has continued to increase the viability and development of renewable energies by successfully installing the Cloud Power Wind Farm and developing the first-of-its-kind wind turbine blade repair program. Many business partnerships were formed during the grant period which allowed mutual benefits to both Cloud and the partners. The industry partners have become a network of individuals who serve to advise the WET program and keep the program on the cutting edge of technology and educational curriculum. The WET Blade Repair program is a great example of how industry and education can work together to produce a highly qualified workforce in the area of renewable energy. To supply the renewable energy industry with employees Cloud developed a Cloud WET Marketing Plan. This plan has been vital to the successful recruitment of prospective students into the program.

Industry partnerships continue to play a very important role in the success of the wind turbine blade repair training facility. To train students in the proper procedures and techniques of blade repair a great deal of technical information is needed. Manufacturers of wind turbine blades are the only ones who can provide the highly technical information as to the proper procedures and materials needed to repair the blades. This requires industry partnerships so the technical information can be shared without the possibility of the information being disclosed to other competitors. The industry derives benefits from these relationships, as well, by being able to employ properly trained employees. Industry provided paid internships are great way for students to know if this career is what they are looking for. They also provide the industry a trial period to evaluate the interns as prospective employees. Actual wind turbine blades are very difficult to obtain and high transportation cost becomes a big factor in being able to provide actual blades for student to repair. Partnerships provide the WET Blade Repair program with actual wind turbine blades.

The WET Blade Repair program has been fortunate to have high quality instructors and good facilities for this program. The Department of Energy grant has helped provide the state-of-the-art equipment necessary to provide high quality training opportunities for the students.

All of the projected objectives established for this grant have been met.

TASKS TO BE PERFORMED

Task 1.0 - Educational Training

The College is the only college in Kansas approved to offer an Associate of Applied Science degree in Wind Energy Technology. Graduates of the program possess the necessary skills to secure a position with a modern commercial wind farm operation or an industry career related to the production and utilization of wind

energy. Individual course and workshop training is also available for industry personnel. The addition of wind turbines and a training lab will provide students with industry-specific training.

Task 1.0 - Work Completed

The CCCC WET Program achieved the award of the American Wind Energy Association (AWEA) Seal of Approval with only six other schools in the USA with this distinction. This achievement assures that the CCCC WET training program's students possess the standardized skill set necessary to be a successful service technician in the wind industry. The WET program at CCCC installed two working wind turbines and one training only wind turbine for industry-specific training. These wind turbines provide an on-site learn lab which gives each student hands-on operation and maintenance training opportunities.

Task 2.0 - Acquisition of Wind Turbines

The College will purchase two (2) 100kW community-scale wind turbines with funding from the Department of Energy. Cost-share funding provides for instructional costs and necessary monitoring and equipment for these turbines, a 130 kW community-scale turbine, and a 750 kW (non-energy producing) training turbine.

Task 2.0 - Work Completed

A "Request for Proposal" (RFP) was developed with the necessary specifications for prospective sales representatives to submit sealed bids for the purchase of two operational 100 kilowatt wind turbines by CCCC. Northern Power Systems (NPS) was selected as the supplier and an agreement was signed between NPS and CCCC. The wind turbine components were delivered from Barre, Vermont to CCCC.

Task 3 - Erection of Wind Turbines

Installation of these two 100kW turbines, and the 130 kW turbine includes all labor, mobilization and equipment expenses; engineering for site turbine placement; electrical layout, or foundation designs; installation of tower foundation, standard tower grounding system and conduits; installation of fiber optics; installation of custom monopole towers and 100 kW and 130 kW turbines; installation of turbine control panels, cabling, and connection; procurement and installation of two transformers; assistance during testing of turbine and control panels to ensure proper installation and operation; and site clean-up and restoration.

Task 3 – Work Completed

Two Northern Power Systems Northwind 100 wind turbines were installed on the CCCC campus to provide clean electrical energy for the campus and provide an on-site wind turbine training lab for the students to learn firsthand how to operate and maintain wind turbines. Students are able to practice their classroom training when they were allowed to help with the wind turbine erection process. Safety is always considered the number one concern in the wind industry and being part of a team working together on a wind turbine site is an invaluable opportunity.

Task 4 – Production of Energy

The 130kW wind turbine will be used for student training and not provide electricity. Electricity produced from the 100kw turbines will be delivered and utilized by Cloud's Concordia campus, with excess energy to be purchased by a Kansas cooperative utility.

Task 4 – Work Completed

The Cloud Power Wind Farm project consisted of the installation of two Northern Power Systems Northwind 100 wind turbines and the erection of a Nordtank educational training wind turbine. The Northwind 100 turbines are installed so they produce electrical energy which is supplied to the college's geo-thermal HVAC system. The newly installed geo-thermal HVAC system (not part of the grant, but a spin off from it) was installed as a result of the CCCC Board of Trustees wanting to fully utilize the energy produced by the wind turbines in the best possible renewable energy way.

The Northwind wind turbines, at the end 2015 produced over 2 million kilowatt-hours of clean renewable electrical energy and the two turbines have achieved 91,193 hours of production which equates into 3800 days or 10.4 years of production (total for both turbines). This time excludes all the

time the turbines were turned off for educational training purposes or scheduled service and maintenance work.

Task 5 – Business and Industry Partnerships (New and ongoing)

With committed industry partners, Cloud is able to identify necessary upgrades to equipment and curriculum that meet training and industry standards for highly skilled technical personnel. The Director of Wind Energy Development and WET staff will meet with industry partners through state and national conferences, Wind Alliance meetings, AWEA Education Working Group meetings and travel to business partners. Collaboration through travel to industry partners allows Cloud to identify necessary equipment and curriculum upgrades to meet industry standards, secure internship sites for students and dialogue about upcoming trends and developments in the wind industry. Future funding sources will be identified for future upgrades and curriculum revisions.

Task 5 – Work Completed

The CCCC WET faculty and administration continually work towards improving and upgrading equipment and facilities. The WET Department meets semiannually with the CCCC WET Advisory Council for suggestions on ways to keep pace with ever changing wind energy industry. This Advisory Council is made up of industry professionals from many different sectors of the energy industry. Many partnerships start with these professionals with their ideas and suggestions. Other partnerships and collaborations are developed while in attendance at national and state conferences, business meetings, conventions, presentations, and training events. Students as well as instructors and administrators all benefit from traveling to these events and making contacts and developing lasting relationships.

Student and faculty internships are a vital part of staying current with the fast paced wind energy industry. These internships are derived from business contacts and partnerships. Following is a list of businesses who have offered to employ our WET students in a paid internship program: General Electric, Vestas Americas, Solomon Corporation, Sunflower Electric Power Corporation, Westar Energy, TPI Composites, RMT, Kansas City Power and Light, and WindIngen, and EDP Renewables.

Task 6 – Prepare a qualified workforce for the wind industry

Evaluate and revise as necessary the Cloud County Community College Wind Energy Technology (WET) program (including on-campus, online and distance learning, land-lab, and field training opportunities). Review and make changes as necessary to the “Wind Energy Applied Science” degree, “Wind Energy Assessment & Development,” “Wind Energy Blade Repair,” or “Wind Energy” certificate programs and curriculum. Graduates are qualified for the wind industry in careers such as: Wind Technician, Site Assessment and Development, Project Manager.

Task 6 – Work Completed

Course curriculum is developed by the full time faculty in consultation with professional organizations and the WET Advisory Council. When new courses are developed they are approved by the WET Department, the Math and Science Division, CCCC Instructional Services, and finally the Kansas Board of Regents before they are included in WET Department offerings.

The WET faculty attends state and national conferences, which keeps the WET Department current in the field. Once each semester the CCCC WET Advisory Council meets where specific wind energy related members review the CCCC WET curriculum and course content. The Advisory Council members tour the facilities and survey the training equipment which is used to provide support for the course curriculum. As new curriculum is developed it is sent out to professionals in the wind energy field for their suggestions and approval.

The WET Department is a member of the Kansas Energy Workforce Consortium which meets in Topeka, Kansas on a quarterly basis. This Consortium includes representatives from all the Kansas utilities and Kansas colleges with an emphasis in technical training. The Kansas utilities are very concerned about the supply chain of prospective employees for the high number of Baby Boomer

retirees who will be leaving the workforce within the next five years. To help meet the needs of the Kansas electrical utilities the WET Department in partnership with Westar Energy designed and constructed an electrical substation training facility. This substation training lab is a first of its kind and will be used to train the WET students to become substation relay technicians and substation mechanical technicians.

The amount of wind energy projects in Kansas, across the US, and worldwide continues to grow each year. This continued growth spurs high demand for wind turbine technicians and also wind turbine blade technicians. Each wind turbine's blades need to be inspected regularly and if found to have defects they need to be repaired as soon as possible. As the number of wind turbines continues to increase the demand for highly specialized wind turbine blade technicians also increases. The WET program was the first in the US to develop a program to meet the industry's needs. The WET Blade Repair program offers students the very specific training on the proper procedures, required materials, means to gain access to the blades, and all the safety requirements to repair wind turbine blades.

The WET Department keeps current with the industry by scheduling field trips to wind and electrical related industries. These field trips give the students a taste of the real world and allow the instructors to network with people in the industry. The recent field trips have included the following: Siemens Wind Turbine Nacelle Manufacturing Plant, Siemens Blade Manufacturing Facility, TPI Composites blade manufacturing plant, Kaman Composite Lab, trips to local utility scale wind farms, trips to local utility substations, Solomon Corp transformer refurbishing plant, and a trip to the Topeka Capitol Building in support of clean electrical energy generation.

Program graduates often plan return visits to the CCCC WET program. They speak to classes and provide feedback to faculty about their experiences concerning what they were prepared for and what additional curriculum would be beneficial to future students.

Task 7 – Meet AWEA standards for “Wind Energy Blade Repair Program”

In order to continue to meet AWEA standards, the College will secure lease agreements and equipment for the “Wind Energy Blade Repair Program.” These blade repair courses require a facility that will allow for adequate ventilation and room for state-of-the-art equipment, including creating and repairing blades with composite materials.

Task 7 – Work Completed

Cloud County Community College signed a lease agreement with an individual for a facility which was transformed into a WET Composite Laboratory. This facility has two offices, restroom facilities, two classrooms, and a laboratory area. The classrooms function as training areas for much of the new equipment purchased. The debulking table, tensile testing equipment, compression testers are located in the clean classroom area where students can work in a dust free environment. A flammables storage cabinet is located in this area for the proper storage of composite resin supplies.

The laboratory area is located next to the clean classroom area but separated by sealed doors. The laboratory area is utilized for composite cutting, composite material grinding, mixing purposes, resin application, and painting. Air pressure lines, vacuum lines and electrical service were installed for the new equipment needs. Downdraft grinding tables and an overhead air filtration system were necessary to provide proper air cleaning and ventilation for the laboratory area. New composite laboratory benches were designed and built for the students to complete training exercises upon.

The laboratory area also serves as a storage area for the composite supplies and hand tools which are necessary to complete composite projects. New storage racks were installed to house the many composite materials and to provide an adequate area for hand tool storage. Additional portable storage units were installed outside the building to house supplies which are not temperature and humidity sensitive. The new laboratory oven is located in the composite laboratory area and is utilized for composite curing operations.

Task 8 – Build Capacity for statewide curriculum delivery with the AWEA Education Working Group Consortium

Cloud will continue participation with the AWEA Education Working Group and continue work toward statewide delivery of the *WET* Wind Energy Blade Repair Certificate program. The Wind Energy Blade Repair Certificate will prepare students for positions with a specific focus to properly prepare students for blade inspection, repair, service, blade and tower cleaning. Courses incorporate introductory wind energy information, report writing skills, foundational information on design, construction and maintenance of blades, aerodynamic properties and quality control and inspection of blades.

Task 8 – Work Completed

The *WET* instructors have attended each of the yearly AWEA National Conferences since 2008. The AWEA Education Working Group met regularly at each of these conferences until 2011 when this group then became part of the AWEA Workforce Development, Training and Education Group. This new group works to formulate policies and work cooperatively with various government agencies on workforce development initiatives and policy in relationship to the wind industry. This committee works with various issues such as the following: Training initiatives and development, Educational opportunities (pre-k through grade 12, community colleges, and universities), and Workforce development policy.

The *WET* Department is partnering with the American Composite Manufacturers Association (ACMA) to offer certification for our students in the area of wind turbine blade repair. ACMA is the world's largest composites industry trade group. The ACMA offers the Certified Composite Technician (CCT) training program which is designed to strengthen industry standards and upgrade individual levels of composites knowledge and skill level. A specific wind blade repair CCT designation has been developed and is being offered within the CCCC *WET* Blade Repair Certificate. This certification curriculum was developed to serve the growing demand for composites training in the wind energy sector for servicing and repairing wind turbine blades.

Students who complete the *WET* Blade Repair program have been trained in the following areas:

- Operation of wind turbines and the aerodynamic properties of wind turbine blades
- The different types of wind turbine blade design and operation
- The manufacturing and construction processes and techniques for wind turbine blades
- Inspection procedures and damage report writing for wind turbine blades
- Methods and safety procedures to gain access to a blade which is located on the turbine at an extreme height
- Proper procedures and techniques for the repair and finish of wind turbine blades

The *WET* Department attends and participates in the AWEA Operations & Maintenance Working Group. AWEA estimates over the next 20 years the growth of wind power will require 80,000 new highly-trained wind technicians. Operating and maintaining wind turbines requires technicians to have extensive technical knowledge and safety training. Attendance at the AWEA Operations & Maintenance Conferences helps our *WET* Department stay current with the wind industry so we can offer cutting-edge training opportunities.

The amount of wind energy projects in Kansas, across the US, and worldwide continues to grow each year. This continued growth spurs high demand for wind turbine technicians and also wind turbine blade technicians. Each wind turbine's blades need to be inspected regularly and if found to have defects need to be repaired as soon as possible. As the number of wind turbines continues to increase the demand for highly specialized wind turbine blade technicians also increases. The *WET* program was the first in the US to develop a program to meet the industry's needs.

Task 9 – Not Utilized

Task 10 – Oversee operation and maintenance of the Cloud Power Wind Farm

The Project Director and one additional staff person will coordinate and facilitate operation and maintenance of the Cloud Power Wind Farm. The wind farm not only provides environmental benefits, but also provides the on-site laboratory. Students utilize the on-site equipment for lab training, climb testing, rope rescue training, and routine maintenance work.

Task 10 – Work Completed

Wind energy utilizes a renewable resource to produce electrical power at or below the cost of non-renewable fossil fuels. Wind energy is plentiful, free, renewable, clean, and uses no water resources, and produces no greenhouse gas emissions during operation. It is a sustainable way to help meet the growing need for electrical power.

The purpose of the WET program is to provide highly trained and qualified employees for the wind industry to meet the needs of this workplace. The graduates of the WET program possess a high level skill set to be critical thinkers and problem solvers. The wind energy industry is an innovative field of study which requires continual education to stay current with the quickly changing technology. The WET program partners with many electrical and wind energy related companies to stay on the cutting edge of this industry and help provide for a sustainable future for the US and the entire world.

Cloud County Community College installed two operational Northern Power Systems (NPS) Northwind 100 kilowatt wind turbines and a Nordtank 150 wind turbine. The Northwind 100 wind turbines produce electrical energy which is used by the CCCC campus. This electrical energy provides energy for a deep well geothermal heating and cooling system for the College's main campus building along with providing for other electrical needs. The Nordtank 150 wind turbine is utilized for training purposes only. All three wind turbines provide students with an on-site laboratory where they gain firsthand experiences in climb testing, rope rescue training, and help provide the routine maintenance to keep the wind turbines operational. The Project Director and an associate oversee the safety requirements, maintenance, repair, and operation of the Cloud Power Wind Farm.

Task 11 – Develop a Marketing and Implementation plan

A comprehensive marketing strategy will be developed for the College reaching out to students, industry, and government entities. This plan will be developed and implemented by the grant staff and College faculty and will serve as an operational instrument for the ongoing marketing objectives, strategies and implementation activities. The Plan will remain flexible for continuous refinement of future marketing efforts.

Task 11 – Work Completed

The WET Department developed and implemented a marketing plan for recruitment of prospective students and to showcase the WET Blade Repair Certificate program to industry leaders. The demand for high quality technicians in the wind energy sector has remained high all the way through the grant period of 2008 through the end of 2015. In December of 2015, US Congress passed an extension to the Production Tax Credit and Investment Tax Credit laws which will continue the growth of wind energy well into the next five years. The multiyear incentive provides wind energy developers and supply-chain partners with the time necessary to develop additional wind projects. The demand for wind energy technicians, lead technicians, and site managers will increase with the installation of additional wind farm projects.

The purpose of the Marketing Plan is to recruit new students into the WET program at Cloud County Community College, both on campus and online, and to increase enrollment in order to meet the demand for highly qualified and trained technicians in the wind energy field.

Cloud County Community College is the only college in Kansas approved by the Kansas Board of Regents to offer an Associate of Applied Science degree in Wind Energy Technology. The Wind Energy Technology program is one of only seven in the entire nation that has been awarded the American Wind Energy Association (AWEA) Seal of Approval. As of 2015, no other community college or technical college in the nation provides Wind Energy Blade Repair Certification.

The target audience for the Marketing Plan is for both traditional and non-traditional (part-time status or older than a high school graduate) students, focusing on those students currently in

middle school, junior high and high school. While this is the target audience, many of the marketing activities are designed to also reach a larger audience of non-traditional students, industry, government entities, and community groups.

There are four basic objectives to the Marketing Plan: 1) reach out to students, 2) reach out to industry, 3) reach out to government entities, and 4) attract more students to the Blade Repair Program. These objectives are addressed in two ways, through education and recruiting. The most up to date facts and industry information concerning the value of wind energy and a career in the wind energy field will be delivered to the target and larger audience. For recruiting purposes, the unique features and high quality of training in the Wind Energy Technology Program will be highlighted and promoted.

The WET Department hosted many promotional wind energy events at the WET facilities and at other locations for prospective students, parents, community groups, elementary schools, junior high schools, high schools, and other community colleges. These events usually consisted of an hour to two hour presentation of wind energy related information, hands-on activities, demonstrations, and tours of the facilities and state-of-the-art equipment.

Following is a list of some of the schools and community groups who attended the presentations:

Frankfort High School
Centralia High School
Smith Center High School
McPherson High School
Sylvan Grove High School
Lincoln High School
Clay Center Middle School
Clay Center 7th Grade
Clay Center 2nd Grade
Concordia High School
Centre High School
Burton High School
Junction City High School
Junction City Rotary Club
El Saline High School
Sacred Heart High School
Salina West High School
Highland Community College
Bennington High School Career Fair
Abilene High School
Clay Center High School
Rock Hills Schools
Concordia Progressive Citizens
STEM Institute for USD 475 teachers in Junction City
Cloud's Kids College
Topeka Public Schools
Solomon High School
Buhler High School
Sterling High School
Victoria High School
Marysville High School
Central Heights School System

The WET Department utilizes social media to promote the wind energy industry with a Facebook and Twitter account. A quarterly newsletter keeps the graduates of the program, prospective students, business partners, and community members informed as to the current events of the WET Department. Two popular events hosted by the WET Department are the School Counselor Day and Student Wind Day. Both of these yearly events are well attended and two different times a second session needed to be added because of large numbers of attendees.

The WET Department hosted booths at the Cloud County Fair, Republic County Fair, the Mother Earth News Fair in Topeka, and at the Kansas State Fair in Hutchinson, Kansas. These events run for several days and allow a large number of people to gain information about wind energy, ask specific questions, and voice their concerns. WET brochures of the Wind Energy Technology Program, the Electrical Substation Certification, and the Wind Energy Blade Repair Program were developed and hundreds of these documents have been distributed to interested individuals.

The wind energy industry is very political in nature because of its ties to electrical generation policies and legislation. The WET Department is active in providing the students opportunities to be involved by providing field trips to the Kansas State Capitol to better understand how policies are developed and implemented. Students attended the Wind Day event at the Capitol where students, industry leaders, and legislators work together to provide a good future for the wind industry.

Partnerships with industry are a vital part of the WET Program. These relationships provide the students with field trips, internships, scholarships, equipment and supplies, current technical information, and career opportunities. Listed below are some of the major company and department partnerships we continue to work with:

- US Department of Energy
- Meridian Way Wind Farm
- Westar Energy
- Sunflower Electric Corporation
- Solomon Corporation
- ITC Transmission
- TPI Composites

The WET Department awarded both the Meridian Way Wind Farm owned by EDP Renewables and Westar Energy the Kansas Board of Regents Employment Engagement Initiative award for providing so many opportunities and resources to the WET Program. Because of the US Department of Energy grants, company donations, and industry partnerships the WET Program has been extremely successful and could not have achieved the high level of success without this much appreciated help.