Final Report

For

Colorado Department of Agriculture
Advancing Colorado's Renewable Energy:
Farm Scale Wind Implementation

to

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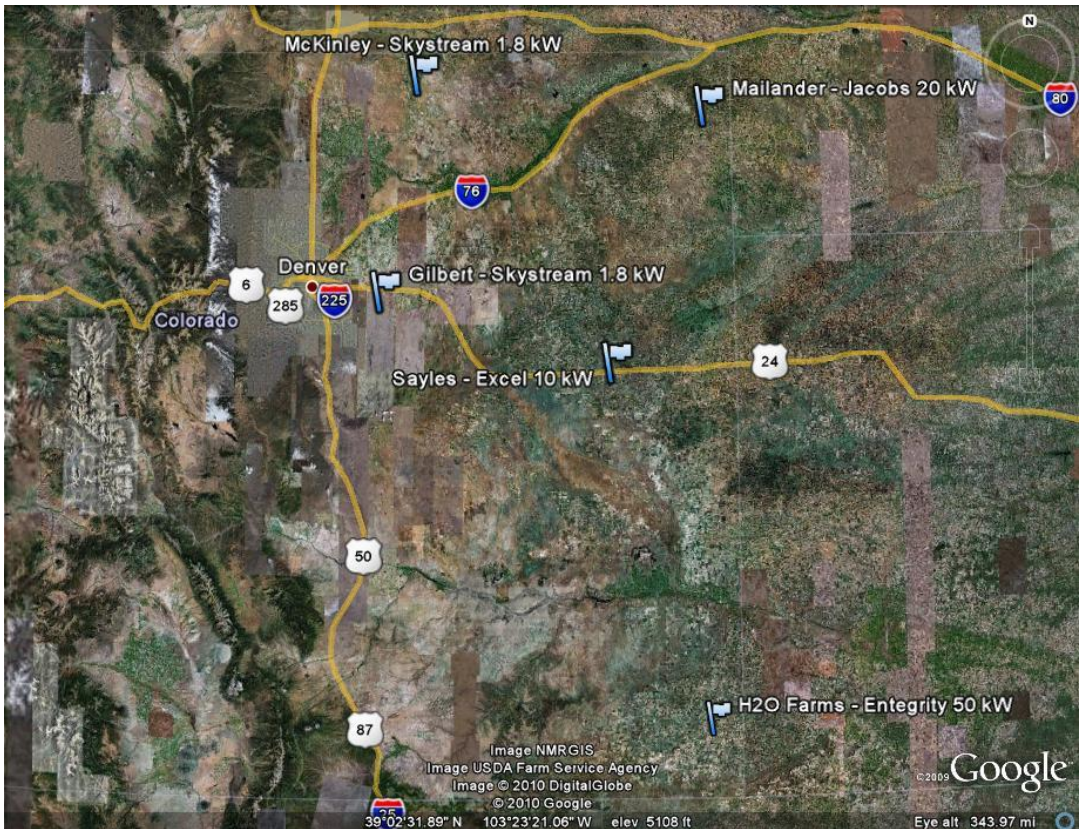
CDA-ACRE Farm Scale Wind Implementation Project

I. Project Overview

The ACRE grant awarded to RC&D was a pilot project to demonstrate various sizes of wind turbines on a diverse set of agriculture applications across the Eastern Plains. Through a competitive application process experts in the wind technology industry selected five agriculture producers as award recipients. These five farm-scale wind energy projects blazed new trails working with local rural electric providers and large power companies, while linking turbine companies with producers, and thus *Advancing Colorado's Renewable Energy*. These projects will become the template for other agriculture producers to use as more farmers and ranchers step into the brave new world of small-scale wind generation for agriculture applications.

Producers received awards of up to 25% of the expected expenses on each project. In Bennett, Dallas Gilbert with Eastern Plains Natural Food Co-op was the first to complete the turbine installation: a 1.8kW Skystream turbine to offset energy cost at his all-natural heritage poultry farm. In Walsh, Fred and Kay Lynn Hefley are using their Entegrity 50kW turbine to help pump water for an irrigation sprinkler. In Grover, Diane and Phil McKinley installed a Skystream 1.8kW turbine for farm use to pump water for livestock on their cow/calf operation. In Holyoke, Paul Mailander's 20kW Jacobs turbine is generating power for their farmstead greenhouses used to grow vegetables. In Seibert, Curtis Sayles installed a Bergey 10kW to offset energy cost for their farmstead feedlot and seed business.

This ACRE grant was administered by Southeast Colorado Resource Conservation & Development along with partners: iCAST (International Center for Appropriate & Sustainable Technology), Rocky Mountain Farmers Union, and Baca County Conservation District.



II. Summary of Projects Developed

In order to be eligible for the funds, applicants were required to submit an application including:

- A feasibility study
- At least one year of utility usage bills
- Micrositing information
- Wind resource information for their site
- Details about the wind turbine they were considering, including manufacturer, rated power, blade swept area, installer information, and grid information.
- Permit information for building, electrical, zoning, and interconnect agreements
- Utility Company information
- Environmental concerns
- An economic assessment: total installation costs and projected annual savings based on Net Metering

iCAST provided technical assistance to landowners with many of these items, i.e. feasibility studies and micrositing. The Request for Applications was very successful. We received applications totaling $166,203.

A review committee was organized with representatives from the National Renewable Energy Lab in Golden, South West Energy Efficiency Project, Southeast Colorado RC&D, Rocky Mountain Farmers Union, Baca County Conservation District and iCAST. In July of 2008, $84,000 was awarded to 5 projects in five different rural electric associations.

A. Eastern Plains Natural Food Co-op/Dallas Gilbert - 1.8kW Skystream, Bennett, CO

Dallas Gilbert operates Eastern Plains Natural Food Coop in Arapahoe County, near Bennett, CO. On this farm Dallas raises APA certified heritage Blue Slate turkeys, which are free-ranged, raised without the use of antibiotics or hormones, and chemically free processed by air chilling. Dallas has the largest flock of this rare heritage breed in the United States.

Dallas' heritage Blue Slate turkeys with the Skystream visible in the background.

The farm has grid-connected service provided by Intermountain Rural Electric Association. Dallas purchased a Skystream system with installation from Eastern Plains Wind Energy, LLC of Bennett, CO. The total project cost was $13,960. His award from this ACRE grant was $3500.

The electric consumption on the farm is greatest in the spring: for powering incubators, hatchers and brooder lamps. Some additional electricity is used for freezers. A wind generator was a reasonable solution because spring time is a high wind period for eastern Colorado, allowing a significant amount of the operation's power needs to be met using this renewable resource. The average

Commissioner of Agriculture John Stulp congratulates Dallas on being a pioneer of on-farm wind generation during the October 29, 2008 press conference.

annual electric consumption is 14,737 kWh, and it was estimated that a Skystream 3.7 system would provide 4,800 kWh annually, or approximately 33% of the power consumed. Dallas is reporting the actual production at 400kWh per month, which is exactly on track with the projected production.

The foundation for the Skystream was poured in September of 2008. On October 8, 2008 the Skystream wind turbine was standing and grid-connected. Dallas excitedly announced to the project partners, "The meter is running backwards!" Dallas' project was the first completed, and his project had the least challenges.

In March of 2009 the turbine blades began to suffer from "de-lamination," as seen in the photo to the right. Southwest Windpower warrantied and replaced the blades. Apparently this is a known issue with Skystream blades.

The Dallas Gilbert project has been operational for 17 months now. This project has been the fulfillment of Dallas' longstanding goal to generate his own electricity. His advice to others is "just do it. Costs will continually go up and the sooner they get on board, the better off everyone is. Jump off the fence and make your meter run backwards."

Dallas reports he has increased his business operations due to the energy savings. His revenues have increased, which allowed him to purchase more equipment. He also reports utilizing green power on his farm has been "really good for business because the socially responsible energy production makes people like my farm product even more."

Intermountain Rural Electric Association installed one meter on the Skystream. Some rural electric associations like to "dual meter" the turbines, so they can see the actual production of the turbine versus the energy consumption. In IREA's case, the single meter just runs backwards when the turbine is producing more kWh than Dallas' farm consumes. As such, we were unable to provide the same type of technical information for this site, as for some of the other demonstration projects. See technical information below.

Site Information

Operation	Heritage poultry farm; single-phase grid connected
Location	Arapahoe County near Bennett, Colorado
Latitude	39°35'43"N
Longitude	104°28'18"W
Elevation	5,877 ft
Power Company	Intermountain Rural Electric Assoc.

See next page for map.

System Information

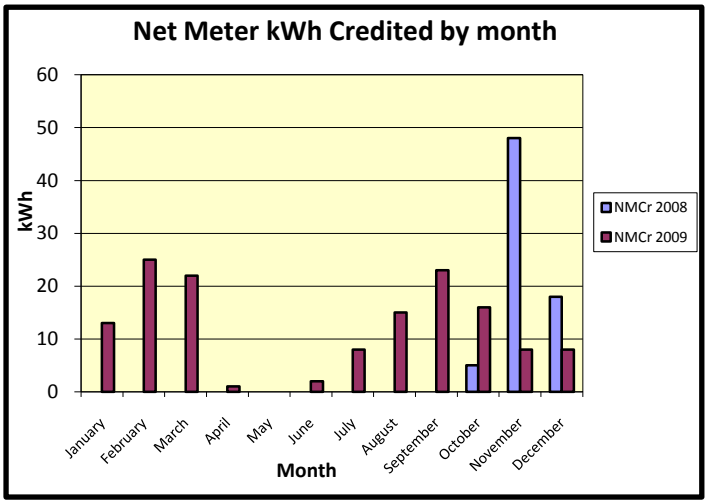
Wind Turbine Model	Skystream 3.7
Wind Turbine Rating	1.8 kW, 2.4 kW peak
Wind Turbine Quantity	1
Tower	10 m monopole tower
Installed Cost	$13,960
Installer	Eastern Plains Wind Energy, LLC of Bennett, CO

Power Usage and Cost

Usage Scenario	Residential rate
Average Electricity Usage/Year	14,737kWh
Normal Peak Electricity Demand	kW
Average Electricity Cost/Year	$1754
Average Electricity Rate/Year	$0.119/kWh

Technical Synopsis

Historical energy data from Dallas' wind turbine was not available for this study. It's likely that the installation of the energy monitoring system for the wind turbine was overlooked. Attempts to estimate wind energy production were inconclusive because Mr. Gilbert expanded his business operations after the installation of the wind turbine, thus increasing electricity use.



However, Mr. Gilbert provided data, including the chart seen above, showing the export of energy from his turbine to the grid for every month other than May 2009 between October 2008 and December 2009. Dallas created this chart to represent his Net Meter Credits for kWh above his consumption. This demonstrates that the wind turbine was producing power during those months. Also, there was a 72% decrease in grid energy used in March 2009

compared to the average of previous Marches from 2005 to 2008. This difference was likely caused by the wind turbine -- a wind energy model suggested Mr. Gilbert would have seen a decrease of 59% in March based on his historical energy use. A final proof point suggesting that the wind turbine is successfully producing energy is anecdotal evidence from Mr. Gilbert who estimates that the wind turbine is generating an average of 400 kWh per month. This figure is consistent with the wind energy model prediction.

B. Diane & Phil McKinley - 1.8kW Skystream, Grover, CO

Diane and Phil McKinley operate a ranch in Weld County, near Grover, CO. The ranch has grid-connected service provided by Morgan County REA. The McKinley's enlisted Mike Crook from MWC Home Energy (Cheyenne, WY) to erect two Skystream 3.7 turbines on their property. The turbines are offsetting the energy needs of pumping livestock water for their cow/calf operation. McKinley's ACRE grant award was $3500 towards one of the turbines. McKinley's total project cost for the turbine related to this grant was $13,049.

In the McKinley's application Diane estimated their average annual electric consumption at 16,750 kWh, and it was initially estimated that a system with two Skystream 3.7 turbines would provide 7,200 kWh annually, or approximately 43% of the power consumed. So far the actual production has not born this out, only appearing to offset 27% of the consumption. See technical data below for more details.

The foundations for the Skystreams were poured in early September 2008. Due to demand, the Skystreams were on backorder for a few weeks. The turbine erection, electrical work, and interconnection with Morgan County REA also added a few delays to the project. On November 7, 2008 the Skystreams were interconnected and generating power.

McKinley Ranch Skystreams. Photo courtesy of Morgan County REA.

The McKinley project has been generating power for 15 months now. Overall Diane has been disappointed in the production. She felt the turbine company over projected how many kWh the turbines would produce monthly. So far the monthly production on each turbine has averaged closer to 200kWh, instead of the expected 300kWh per month. See technical information below.

Site Information

Operation	Ranch; single-phase grid connected
Location	Weld County near Grover, Colorado
Latitude	104°13'18"W
Longitude	40°45'27"N
Elevation	4,983 ft
Power Company	Morgan County REA

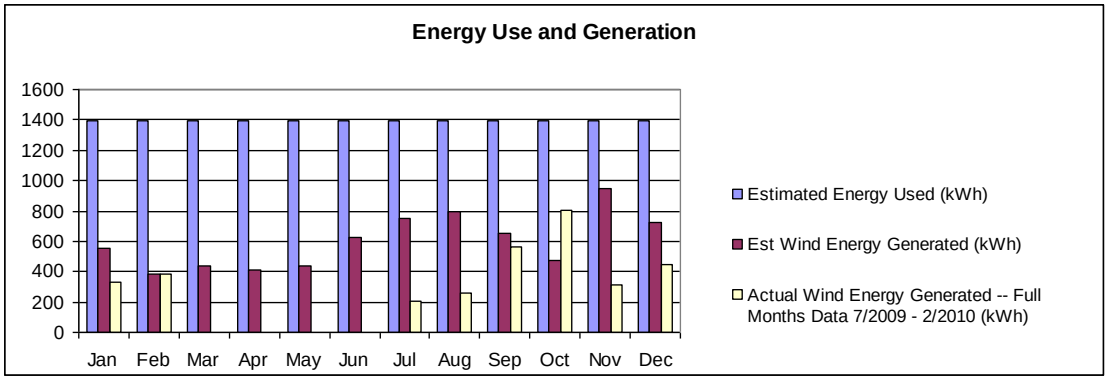
System Information

Wind Turbine Model	Skystream 3.7
Wind Turbine Rating	1.8 kW, 2.4 kW peak
Wind Turbine Quantity	2 (ACRE grant funded $3500 for 1 Skystream)
Tower	10 m monopole tower
Installed Cost	$13,049 for turbine related to this ACRE grant
Installer	Mike Crook from MWC Home Energy (Cheyenne, WY)

Power Usage and Cost

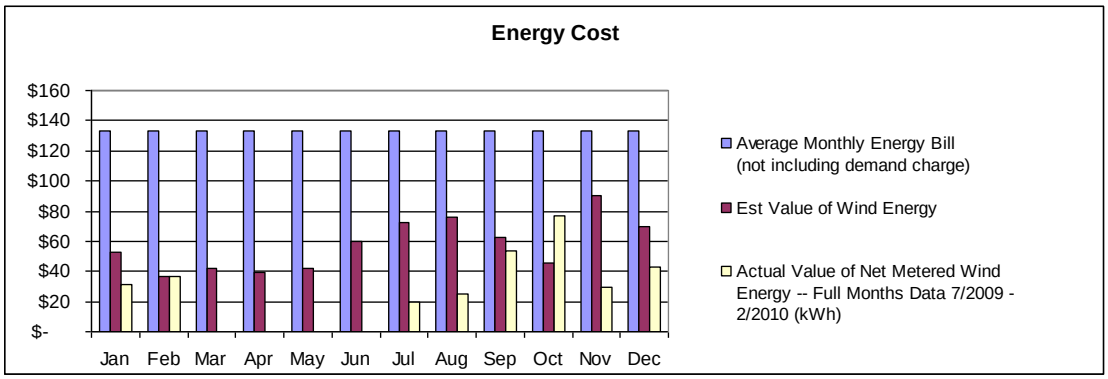
Usage Scenario	Residential rate
Average Electricity Usage/Year	16,750 kWh
Normal Peak Electricity Demand	n/a
Average Electricity Cost/Year	$1515
Average Electricity Rate/Year	$0.116/kWh (including demand and fees)

See next page for Energy Use and Generation.

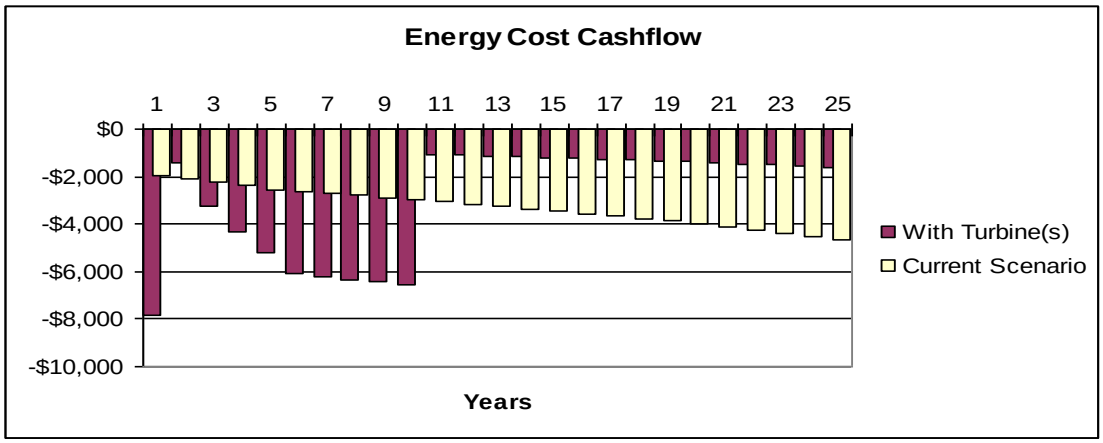


Eight full months of measured data suggest that the wind turbines at this site are generating approximately 70% of the energy they were estimated to produce.

Load profile data was not available for this site, so it was assumed to be constant throughout the year because of the daily need to provide water to cattle. Wind data from Grover was not available so data from Julesburg, also in northeast Colorado, was used as proxy.



With net metering, the measured performance of the wind turbine thus far suggests that approximately 27% of the yearly cost of electricity will be displaced.



The cost of the wind turbines combined with their production measured thus far are expected to result in a total cost of $8,000 less than the cost of grid energy over the 25 year life of the system.

This assumes tax benefits for accelerated depreciation, standard maintenance costs, a conservative loan interest rate of 8% on a 10 year loan with 10% down, the installed cost and grant noted, and estimated energy inflation of nearly 4% per annum.

C. Curtis Sayles - 10kW Bergey, Seibert, CO

Curtis Sayles and his family operate a farm in Kit Carson County, near Siebert, CO. The farm has 3-phase service provided by KC Electric. iCAST completed a Wind Power Assessment featuring a Bergey Wind BWC Excel-S 10 kW wind turbine. The system with installation was purchased from Aerofire Windpower of Lafayette, CO. Project receipts totaled $47,966. The ACRE grant award was $11,500 for Curtis' project. The Bergey 10kW will be offsetting the energy needs of their farmstead feedlot and seed business.

The Wind Power Assessment identified the average annual electric consumption as 27,007 kWh, and estimated that a Bergey 10kW system would provide 18,829 kWh annually, or approximately 70% of the power consumed. Since the turbine has only been in production a few months, early projections only indicate a 40% offset, but we are just going into the high wind season and this percentage will change with additional months of data.

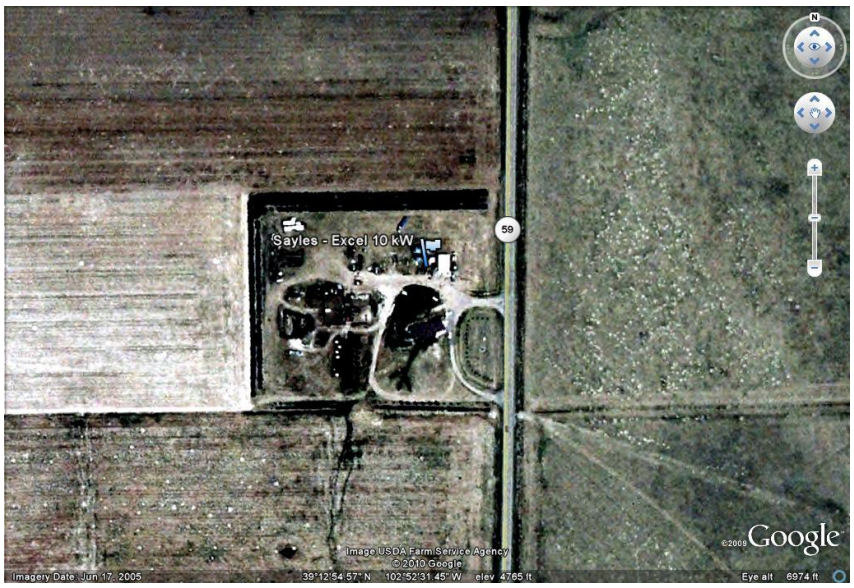
Curtis' 10kW Bergey was erected and on-line as of July 10, 2009. Curtis' biggest challenge was educating the banking system about the turbines, and getting loan approval. It took several months for his local bank, Colorado East Bank and Trust in Stratton, to approve the loan. This ACRE grant project forced lenders across the Eastern Plains to identify what classification the turbines would have, as an additional piece of farm equipment.

On an ancillary grant to the ACRE grant, Southeast Colorado RC&D was awarded funds from the Governor's Energy Office to install a wind data tracking device on Curtis' turbine, which allows the information to be viewed on the RC&D website. The Fat Spaniel data tracking device was installed in mid-September 2009. Current data from this turbine can now be seen on our web-site: www.secrcd.org. See a screen print of the website's wind data at the end of Appendix A (page 34).

Curtis' project has been generating power for 8 ½ months now. He has been "very happy with our turbine. It is working flawlessly and its production is above expectation." Thus far it is producing 107% of the expected generation. See technical information below.

Site Information

Operation	Farm; 3-phase grid connected
Location	Near Seibert, Colorado
Latitude	39°12'55"N
Longitude	102°52'31"W
Elevation	4,765 ft
Power Company	KC Electric



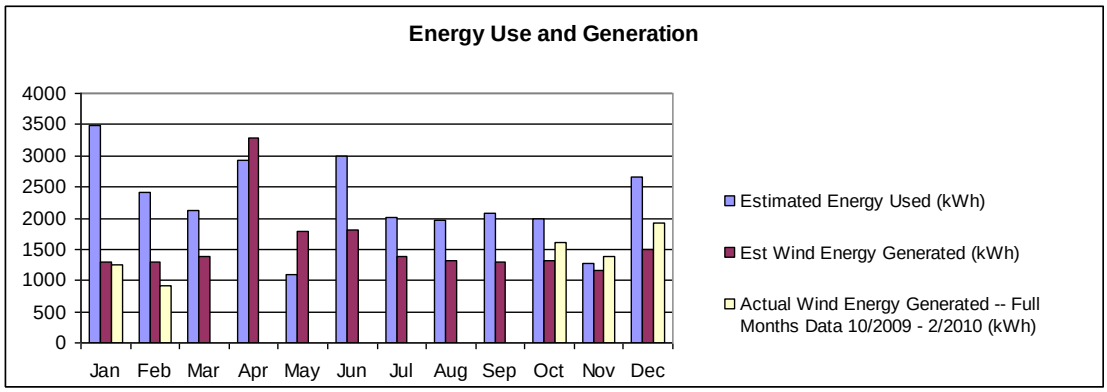
System Information

Wind Turbine Model	BWC Excel-S (Bergey Wind Company)
Wind Turbine Rating	10 kW
Wind Turbine Quantity	1
Tower	24 m guyed lattice tower
Installed Cost	$47,966
Installer	Aerofire Windpower, Lafayette, CO

Power Usage and Cost

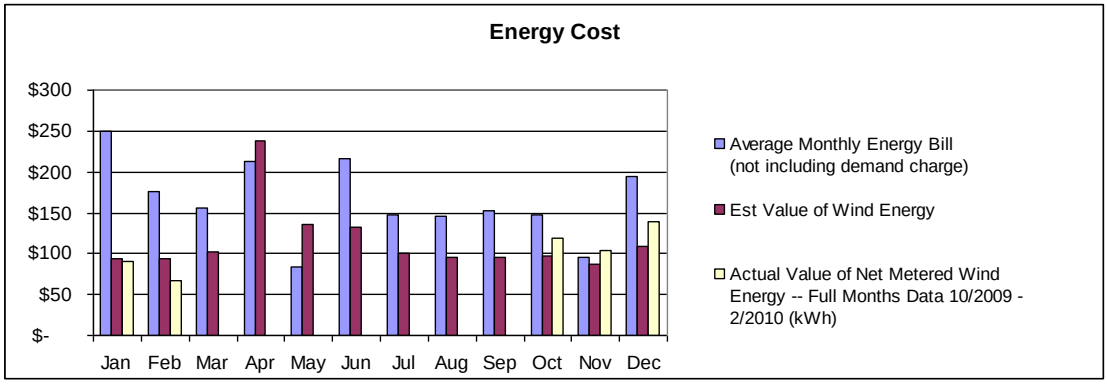
Usage Scenario	Residential rate
Average Electricity Usage/Year	27,007 kWh
Normal Peak Electricity Demand	18.15 kW
Average Electricity Cost/Year	$3,282
Grid Connection Capacity	25 kVA

See next page for Energy Use and Generation.

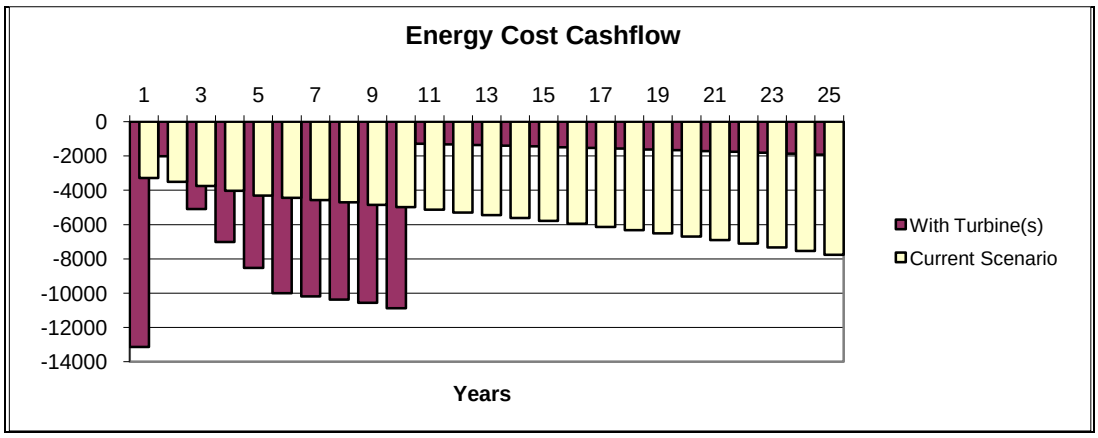


Although only four full months of measured data was available, the average wind energy produced was measured to be 107% of the estimated wind energy.

Please note that Typical Meteorological Year weather data used for estimation has a +/-9% margin of error; the measured wind energy produced is within this margin.



With net metering, the measured performance of the wind turbine thus far suggests that approximately 40% of the yearly cost of electricity will be displaced.



The cost of the wind turbine combined with its production measured thus far is headed to result in a cost of approximately $26,000 less than the cost of grid energy over the 25 year life of the system.

This assumes tax benefits for accelerated depreciation, standard maintenance costs, a conservative loan interest rate of 8% on a 10 year loan with 10% down, the installed cost and grant noted, and estimated energy inflation of nearly 4% per annum.

D. H_2O Farms, Fred Hefley - 50kW Entegrity, Walsh, CO

Fred and Kay Lynn Hefley own and operate H_2O Farms in Baca County, south of Walsh, CO. The farm has 3-phase service provided by Southeast Colorado Power Association. Entegrity completed a Wind Power Assessment featuring an Entegrity EW50 50kW wind turbine. Two 50kW systems with installation were purchased from Entegrity Wind Systems of Boulder, CO. Project receipts for the turbine related to this ACRE grant totaled $175,127. The turbines are offsetting the energy needs of pumping water for two sprinkler irrigation systems. The ACRE grant award was $49,000 towards the north turbine.

Commissioner of Ag John Stulp dedicated the Hefley's 50kW during a July 17, 2009 ceremony.

The Wind Power Assessment identified the average annual electric consumption as 469,392 kWh, and estimated that an Entegrity EW50 system would provide 126,117 kWh annually, or approximately 27% of the power consumed. Since the turbine has only been generating since mid-August, it is too soon to project the true offset. See technical data below.

As this 50kW turbine was a much larger project than the other turbines, it was a more complicated installation process. The turbine was delivered March 20, 2009. It took four days at the end of April 2009 to bore and fill the three piers for the foundation. The piers were 30" x 30' deep. It took two days in July 2009 for Woofter Construction from Colby, KS, to put the lattice tower together. The turbine was erected on July 16, 2009. The electrical interconnection occurred in mid-August 2009.

As this was the largest turbine installed on this ACRE grant, this 50kW project faced more challenges than the smaller demonstration projects:

- Financing - lenders were hesitant to loan on equipment that was expensive, a relatively new technology, and an unfamiliar technology to the banking industry, especially during the economic crisis. After 9 months of searching unsuccessfully for a participating bank, the local Colorado State Bank in Walsh decided to fund the loan on its own.

- Insurance - again the new technology had insurance companies struggling to find the right farm classification and how to make the coverage affordable.
- Hefley's had to negotiate net metering for this 50kW system with Southeast Colorado Power Association. SECPA's net metering policy was in place for 25kW and under. SECPA agreed to use the same rules for the 50kW turbine.
- Entegrity Wind Systems filed for bankruptcy - In October 2009 the turbine manufacturer filed for bankruptcy. Owner Jim Heath cited "delays in businesses receiving federal stimulus program dollars, and a bad economy" as causes. Heath is still working with H_2O Farms. Hefley's are hopeful that the warranty and maintenance will be taken care of.

The H_2O Farms project has been operational for 7 ½ months. This project has been very challenging, every step of the way. There are still many uncertainties, all related to who will warranty and maintain the turbine. Fred's recommendation to farmers interested in larger turbines is to "make the manufacturer or sales people bond the sales contract." See technical information below.

Site Information

Operation	Farm; 3-phase grid connected
Location	Baca County south of Walsh, Colorado
Latitude	102°12'40"W
Longitude	37°19'26"N
Elevation	3,830 ft
Power Company	Southeast Colorado Power Association

System Information

Wind Turbine Model	Entegrity EW50, 50 kW system
Wind Turbine Rating	50 kW
Wind Turbine Quantity	2 (ACRE grant funded $49,000 for 1 Entegrity)
Tower	30 m self-supporting lattice tower
Installed Cost	$175,127
Installer	Woofter Construction, Colby, KS

Power Use and Cost

Usage Scenario	Energy Demand Irrigation Rate
Average Electricity Usage/Year	469,392 kWh
Normal Peak Electricity Demand	n/a
Average Electricity Cost/Year	$31,789
Average Electricity Rate/Year	$0.067/kWh (including demand and fees)
Grid Connection Capacity	160 kVA

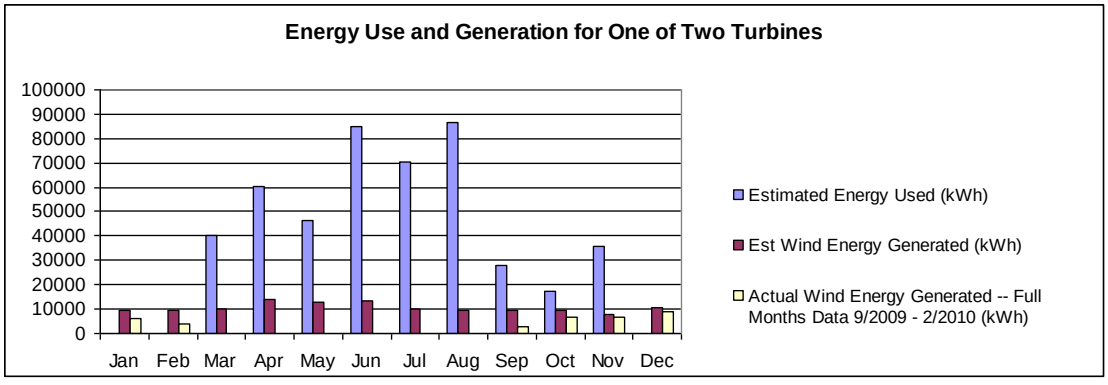
Power Generation

Yearly Estimated Production	126,117 kWh
Renewable Energy Fraction	27 %
Total capacity:	65.1 kW
Average output:	18.39 kW
Minimum output:	0.000 kW
Maximum output:	58.5 kW
Wind penetration:	34.3 %
Capacity factor:	28.3 %

Net Metering and Economics

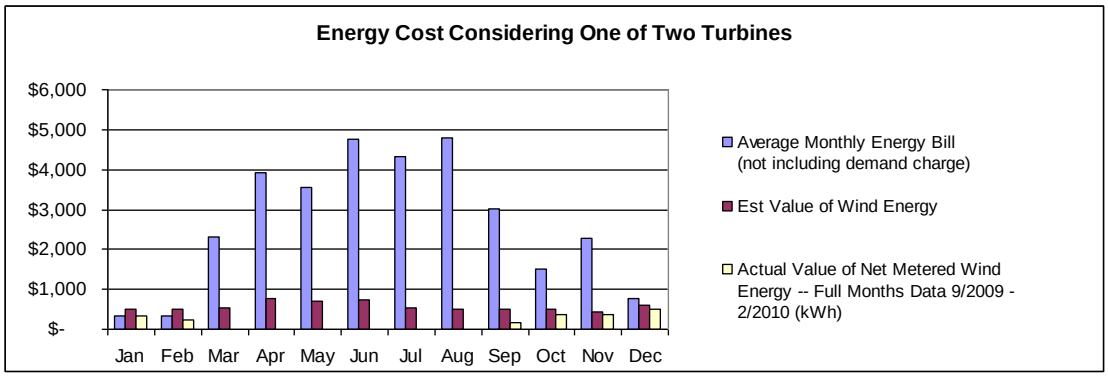
First set of 100 kWh	$0.095
Rest of kWh	$0.055
Access Charge	$329
Demand Charge ($/kW)	$0

* *Because the wind does not blow all the time, a wind turbine will not reduce demand charges. As such, it is advantageous to adopt a usage rate structure with little or no demand charges.*

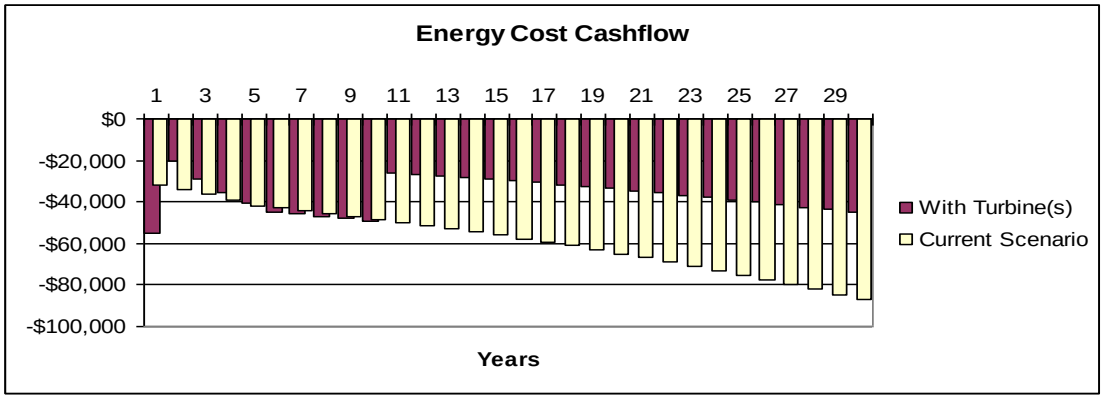


Six full months of measured data for one of two turbines suggest that the wind turbine at this site is generating approximately 62% of the energy one was estimated to produce.

However, it is important to note that many zeros were present in the data. It is not known if this was due to the turbines being stowed purposely, malfunctioning or a data error. Also, this geographic region experiences higher wind velocities during the summer, but the turbine was only in production since mid-August. As such, wind energy production during the summer may compensate for a deficiency in generation over the winter months measured. Data for the second turbine is not included in this report.



With net metering, the measured performance of one of two wind turbines thus far suggests that approximately 14% of the yearly cost of electricity will be displaced. Presuming that both turbines operate normally, displaced grid energy would double to 32%. These percentages would change with actual production data in the coming months.



The cost of the wind turbine combined with its production measured thus far is headed to result in a cost of approximately $640,000 less than the cost of grid energy over the 30 year life of the system.

This assumes tax benefits for accelerated depreciation, standard maintenance costs, a conservative loan interest rate of 8% on a 10 year loan with 10% down, the installed cost and grant noted, and estimated energy inflation of nearly 4% per annum.

E. Paul Mailander - 20kW Jacobs, Holyoke, CO

Paul Mailander operates a farm in Phillips County, near Holyoke, CO. The farm has 3-phase service provided by Highline Electric. iCAST completed a Wind Power Assessment featuring a Wind Turbine Industries WTIC 31-20 Jacobs wind turbine. The system with installation was purchased from Chinook Energy of Haxtun, CO. Project receipts totaled $84,236. The turbine is offsetting energy use for the farmstead and greenhouses used to grow vegetables. The ACRE grant award was $16,500 on this project.

The Wind Power Assessment identified the average annual electric consumption as 62,620 kWh, and estimated that a Wind Turbine Industries WTIC 31-20 Jacobs system would provide 36,420 kWh annually, or approximately 58% of the power consumed.

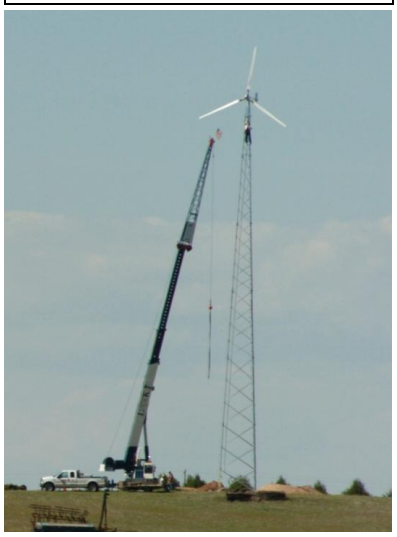
Mailander's turbine was erected on July 16, 2009. The new Jacobs inverter became the major challenge with this project. Even though the turbine was standing the generator was not producing yet because the inverter lacked the appropriate testing and certification from Underwriter Laboratories. After two months of challenges the inverter passed Underwriter Laboratories testing on 9/16/09. Another 6 weeks passed before the inverter Underwriters Lab paperwork was finished. The inverter finally shipped on 11/6/09.

On 12/11/09 the installer completed the connections on the Jacobs. It took the electrical inspector until 12/21/09 to make a site visit. When they powered the turbine, a circuit board on the brand new inverter blew. The installer received and installed the new circuit board on 12/29/09. The wind died down that afternoon, so electrical inspection was not possible. The same lack of wind on 12/30/09 hindered the interconnection. On the last day of 2009, 12/31/09, the Jacobs turbine passed the electrical inspection.

Commissioner of Agriculture John Stulp, Paul Mailander, and Deputy Commissioner Jim Miller under Mailander's 20kW Jacobs on April 14, 2010. Photo courtesy of Jenifer Gurr, CDA.

A Fat Spaniel data tracker is also installed on this turbine and downloading data to our RC&D website: www.secrcd.org. See a screen print of the website's wind data at the end of Appendix A (page 34).

The Mailander project has been operational for 3 months. It is very early to make any production assumptions on this turbine. See technical information below.



Site Information

Operation	Farm; 3-phase grid connected
Location	Holyoke, Colorado
Latitude	102°13'41"W
Longitude	40°34'46"N
Elevation	3,713 ft
Power Company	Highline Electric

See map on next page.

System Information

Wind Turbine Model	WTIC 31-20 (Jacobs Wind Systems)
Wind Turbine Rating	20 kW
Wind Turbine Quantity	1
Tower	30 m self-supporting lattice tower
Installed Cost	$84,236
Installer	Chinook Energy, Haxtun, CO

Power Usage and Cost

Usage Scenario	Residential operation.
Average Electricity Usage/Year	62,620 kWh
Normal Peak Electricity Demand	54.9 kW
Average Electricity Cost/Year	$4,937
Average Electricity Rate/Year	$0.077/kWh (including demand and fees)
Grid Connection Capacity	37 kVA

Power Generation

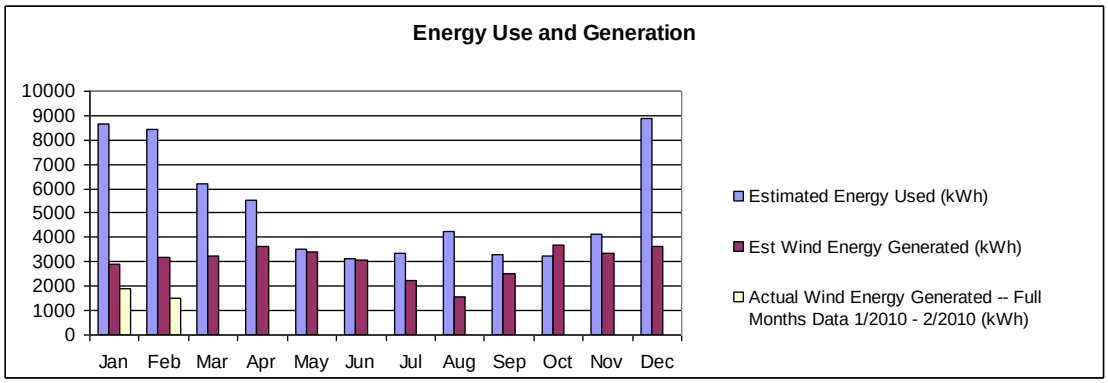
Yearly Estimated Production	36,420 kWh
Renewable Energy Fraction	46 %
Total capacity	65.1 kW
Average output	4.16 kW
Minimum output	0.000 kW
Maximum output	17.88 kW
Wind penetration	58.9 %
Capacity factor	20.8 %
Hours of operation	7,153 hr/yr

Net Metering and Economics

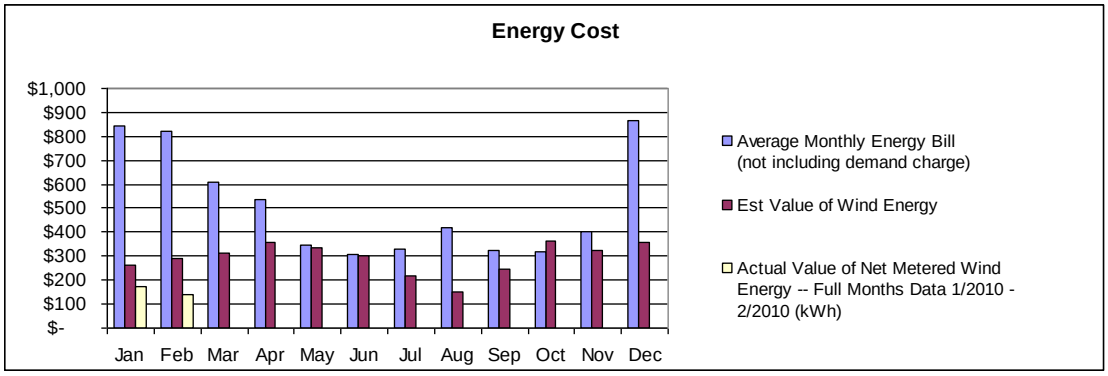
*Highline Small Commercial Annual Usage, 3 phase**

First set of 300 kWh	$0.1131
Next set of 300 kWh	$0.0857
Rest of kWh	$0.0694
Access Charge	$19.80
Demand Charge ($/kW)	$0

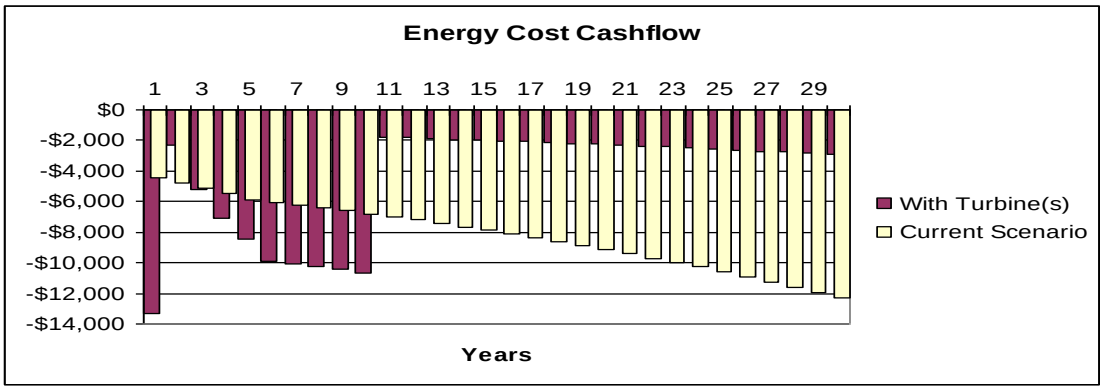
* *Because the wind does not blow all the time, a wind turbine will not reduce demand charges. As such, it is advantageous to adopt a usage rate structure with little or no demand charges.*



Only two full months of measured were available for this site, so the analysis should be considered inconclusive. However, the data suggest that the wind turbines at this site are generating approximately 57% of the energy they were estimated to produce. Again, we are moving into the high wind season, so these percentages will change with actual production numbers in the coming months.



With net metering, the measured performance of the wind turbine thus far suggests that approximately 6% of the yearly cost of electricity will be displaced.



The cost of the wind turbine combined with its production measured thus far is headed to result in a cost of approximately $111,000 less than the cost of grid energy over the 25 year life of the system.

This assumes tax benefits for accelerated depreciation, standard maintenance costs, a conservative loan interest rate of 8% on a 10 year loan with 10% down, the installed cost and grant noted, and estimated energy inflation of nearly 4% per annum.

III. Lessons Learned & Recommendations (for others contemplating small scale wind projects)

A. In Colorado it only makes sense to size a wind turbine to offset your consumption needs, with the current Net Metering laws.

Must Rural Electric Associations (REA) allow operators of small generation systems (25 kilowatts or less) to feed their power into the electric grid and spin their meters backwards (or some will dual meter the turbine). The member gets credit at the retail rate for the power generated up to the member's monthly usage. Beyond this point, the member is credited at the REAs average wholesale cost (avoided cost). You will NOT make money selling power back to the grid. It only pays to offset your usage. And most REAs require the turbine to be tied to one meter, so you can only offset the kWh use at that single meter. Sizing the turbine appropriately is critical to a favorable Return on Investment.

B. Have a Feasibility Study done, including micro-siting by a professional installer or distributor.

The study should be based on at least one year of electric bills (2 is better). A site visit from a professional will help the landowner discover the best location for a turbine. The study should show if the Return on Investment encourages the landowner to proceed.

C. Research the turbine manufacturer/companies & dealers you are considering.

Curtis Sayles said installing his turbine was a positive experience, but he did have one concern: "One thing I'm troubled with is some of the upstart wind turbine manufactures. We need them, but I fear there will be bad experiences that will make good negative press. I guess my advice would be to stick with a known product and installer." Curtis is right. Here are some questions to ask:

- How long has the company been producing turbines?
- How many turbines do they have out on the ground generating power for customers like yourself (not prototypes being researched at a lab or wind tunnel)?
- Get customer references you can speak with someone that owns one of their turbines (the longer the ownership the better).
- What is the energy output of the turbine measured in kilowatt-hours or kWh?
- Was their testing performed in the field (do they have them on the ground working), or only in a lab or wind tunnel?
- Warranty (industry standard is 5 years, some come with 10 years) and maintenance information.
- Has the turbine/tower ever gone through a reliability test? By whom? For how long? What were the results?
- How many turbines been sold, and for how many years? How many of these turbines are still running?
- Have there been recent model changes? Why? (Was it because of problems, etc.)
- What kind of production data tracking/logging technology is included with the turbine, and will it download production data to your home computer? (This is how you will know what the true production is and what your Return on Investment will be.)
- Will the turbine company remotely monitor the turbine via Remote Sensing System (i.e. Hawk-Eye) technology?

- What problems have other customers encountered and how has the company responded to those problems?
- A quick Google search on a turbine company or a particular turbine with the word "problem" included in the search can shed light on some issues to be aware of.

D. Communication PRIOR to beginning the project is key.
   - Talk personally to your Rural Electric Association and see what the interconnect paperwork, net metering, physical process, and insurance requirements are. Will they dual meter your turbine so you can see production vs. consumption?
   - Talk to your banker. They will want to know the equipment value, what its expected life span is, and how long the payback will be. Most lenders are unfamiliar with the on-farm wind industry, and will struggle with what the equipment worth is for collateral.
     - ✓ Have your bank call Colorado State Bank in Walsh, Fort Morgan State Bank, or Colorado East Bank and Trust in Stratton to see how they structured these turbine loans.
   - Talk to your insurance agent. Because of this ACRE grant Colorado Farm Bureau, American Family Insurance, Travelers Insurance, and Scottsdale Insurance now have experience insuring small, on-farm turbines. They will have many of the same questions as your banker: the equipment value, what its expected life span is, and how long the payback will be.

E. Small-scale, on-farm wind generation is new, expect challenges along the way.
   The technology is new, interconnection with utility companies is a new concept for REAs, insuring them is a new concept to insurance companies, financing is new to the banking industry, etc. Each of these five demonstration projects had difficulties along the way: faulty inverters, de-laminated blades, bad weather delayed construction, interconnection holdups due to electrical inspector delays, turbine software not communicating with computers, financing delays with banks, high insurance rates, etc. It's a perfect recipe for challenges. Each of the five families successfully navigated the process, but it took a significant amount of effort from a multitude of players to accomplish.

F. The larger the wind turbine, the more time and challanges you will face.
   The smaller 1.8kW Skystreams (now available as 2.4kW) install in a few hours, once the foundation (a pier 30" x 12' deep) has cured (28 days). But a 50kW project takes three piers 30" x 30' deep, a crane to erect, and 7 - 10 days to construct and erect. The larger scale projects require a significant amount of project coordination and take more time.

G. Have one person "on the ground" as the primary contact on the project.
   Well executed projects are facilitated by one person (the landowner, or his designated representative) knowing all of the details. You may have a turbine manufacturer, a dealer, an installer, an electrician, a backhoe operator, a utility company, a bank, an insurance agent, and an electrical inspector all with detailed questions. If they only have to call a single contact, the project will be completed efficiently and effectively.

H. Do data collection to see how much you are really offsetting.
   Each turbine comes with different data tracking technology. Understand and utilize the turbine's production data logging/tracking system. Check your actual energy production versus the turbine companies projected production. This information will allow you to figure your true Return on Investment. You can also request that your Rural Electric Companies dual meter the turbine so you can see kWh produced separately from consumption.

IV. Notable Successes/Accomplishments

A. We have five wind turbines successfully offsetting the energy needs of five agriculture producers across the Eastern Plains.
B. The partners and landowners leveraged the ACRE dollars at an investment ratio of 2.5: 1.
C. Five REAs had the opportunity to interconnect a wind turbine to their grid: Southeast Colorado Power, Intermountain Rural Electric Association, Morgan County REA, Highline Electric, and KC Electric. These demonstration projects have become the template for grid interconnection.
D. More insurance agencies and lending institutions were introduced to small-scale, on-farm wind generation. These businesses are now references for other agencies, on how they insured on-farm wind and built loan packages for wind turbines.
E. When the partners began educating the public about small-wind for agricultural applications in 2005, there were very few wind turbines in southeast Colorado, with very limited public understanding of farm wind generation. In 2010 there are a growing number of turbines throughout the Eastern Plains. These ACRE turbines were the first in their areas to blaze the trails. As neighbor talked to neighbor about the installation process, the interest in capturing the wind for green energy generation has become an ever increasing reality. More and more turbines are cropping up across the plains.
F. We generated a significant amount of media exposure to the CDA ACRE program.
   1) The local papers, REA publications, USDA publications, and conservation district publications carried stories about this project. See articles in Appendix A.
   2) We held two press conferences: one at Eastern Plains Natural Food Co-op near Bennet and one at the National Renewable Energy Lab in Golden. Commissioner of Agriculture John Stulp was in attendance and spoke at both events. Denver's News2 covered the Golden press conference. Print articles covering these events can be found in Appendix A.
   3) Commissioner of Agriculture John Stulp also spoke at the turbine dedication ceremony in Walsh. See article in Appendix A.
   4) Fox 21 News carried a story on Dallas Gilbert's Skystream project: "Colorado farmer goes green with wind power". Text and video can be found at: http://www.coloradoconnection.com/news/news_story.aspx?id=223560
   5) Charles Zuller from NRCS West National Technology Support Center toured the 10kW and 50kW projects on July 17, 2009.
   6) Information about this project can be found on both the Southeast Colorado RC&D website at www.secrcd.org and on the Western RC&D Association website at www.westernrcd.org under Success Stories.

V. Closing Comments

During the 8/18/08 press conference in Golden, Commissioner of Agriculture John Stulp described ACRE grants as being "designed to help rural communities in Colorado by developing agricultural energy related projects which benefit both agriculture and the environment." The project partners feel very strongly that this project embodies that statement. It has been a privilege to be part of a project that has lasting impact by helping landowners combat ever rising energy costs, while enhancing their environment.

While neither wind nor wind generators are new to the Plains the advanced technology of today used to convert wind energy to electricity is. At the Golden press conference RC&D Councilman Kim Siefkas likened the award recipients to Columbus, striking out into the great unknown, and paving the way for others to follow. The partners believe these projects are a working template for others to follow.

The partners and landowners appreciate the Colorado Department of Ag's ACRE Program, and thank CDA for providing this opportunity. Without this funding, the project would not have been possible.

VI. Final Accounting of Project Expenditures (ACRE, cash & in-kind)

Below are the line item expenditures as of 3/31/10. The final $10,000 will be released to RC&D upon acceptance of this Final Report. $8700 of those funds will go to Paul Mailander for his final reimbursement on his 20kW Jacobs. $1300 will cover RC&D's final project management and final reporting expenses.

Description	Amount
Consultant Fees (iCAST)	$ 10,000.00
Salaries & Personnel (RC&D)	$ 4,700.00
Direct Costs (wind turbines)	$ 75,300.00
ACRE Program	**$ 90,000.00**

CASH MATCH

Landowners	$ 250,338.47
RC&D Indirect Costs	$ 1,045.00
Cash Match	**$ 251,383.47**

IN-KIND MATCH

Baca County Conservation Dist	$ 600.00
In-Kind Match	**$ 600.00**
Total Budget	**$ 341,983.47**

See 3/31/10 Claim for Reimbursement form on next page.

ADVANCING COLORADO'S RENEWABLE ENERGY (ACRE) PROGRAM
Claim for Reimbursement
FY08 Program

Contractor Submitting Claim: Southeast Colorado RC&D, Inc. (a 501(c)(3) organization)
(name and mailing address) Jim Valliant, Chairman of SE Colo RC&D, Inc.
3505 S Main St
Lamar, CO 81052

Amount of Claim ($): $100,000

Claim Summary

	ACRE Funding		Contractor Match
Approved Contract Amount	$100,000	Total Match Required	$219,750
Amount Previously Claimed	81,375	Match Previously Reported	184,082
Amount Requested This Claim	**8,625**	Match Reported This Claim	67,901
Total Amount Claimed to Date (including this claim)	90,000	Total Match Reported to Date (including this claim)	251,983
Contract Funds Remaining	10,000	Match Requirement Remaining	(32,233)

Please attach supporting documentation and evidence of payment relating to all amounts claimed.

Certification: I certify that, to the best of my knowledge, the information and amounts stated in this claim are complete, true, and accurate, that the expenditures claimed on this form were in fact incurred by the Contractor for the purpose authorized and that the expenses claimed were necessary and reasonable for the purpose and verifiable and supported by detailed records which are available for inspection.

Name*: Gary L. Anderson Title: CPA, accountant for S.E.Colo RC&D, Inc.

Signature [signature] Date: 3/20/10

Telephone: 719-336-7785 FAX: 719-336-7786 E-mail: garyandersoncpa@bresnan.net

*Please list the name of the person to contact with regard to this claim for reimbursement.

For Office Use Only:

Fund: _____ Agency Code: _____ Appropriation Code: _____

Organization Unit: _____ Object Code: _____ Contract #: _____

APPENDIX A
Press Release distributed on 8/20/08 to 15 area newspapers.

Photo Caption: Farmers and ranchers across the Eastern Plains of Colorado continue in the pioneer spirit by installing small-scale wind turbines on their operations. August 18th a press conference was held at the National Renewable Energy Lab's Wind Technology Center in Golden, to honor these cutting edge agriculture producers. Pictured from left to right: award recipients Kay Lynn and Fred Hefley (Walsh), Curtis Sayles (Seibert), Dallas Gilbert (Bennett), Phil McKinley (Grover), and Paul Mailander (Holyoke); RC&D Council Member Kim Siefkas; Commissioner of Agriculture John Stulp; and iCAST Community Sustainability Manager Raphael Shay.

SEC RC&D funds On-Farm Turbines

The Colorado Department of Agriculture (CDA) recently awarded an *Advancing Colorado's Renewable Energy* (ACRE) implementation grant to Southeast Colorado RC&D Council, and their partners: Baca County Conservation District (BCCD), Rocky Mountain Farmers Union (RMFU), and the International Center for Appropriate & Sustainable Technology (iCAST). John Stulp, Commissioner of Agriculture, spoke at the August 18th press conference, describing ACRE grants as being "designed to help rural communities in Colorado by developing agricultural energy related projects which benefit both agriculture and the environment." While neither wind nor wind generators are new to the Plains the advanced technology of today used to convert wind energy to electricity is. RC&D Councilmen Kim Siefkas likened the award recipients to Columbus, striking out into the great unknown, and paving the way for others to follow.

The ACRE grant awarded to RC&D is a pilot project to demonstrate various sizes of wind turbines on a diverse set of agriculture applications across the Eastern Plains. Through a competitive application process experts in the wind technology industry selected five ag producers as award recipients. These five farm-scale wind energy projects will blaze the trail working with local rural electric providers and large power companies, while linking turbine companies with producers, and thus Advancing Colorado's Renewable Energy. These projects will become the template for other ag producers to use as more farmers and ranchers step into the brave new world of small-scale wind generation for agriculture applications.

Producers received awards of up to 25% of the expected expenses on each project. In Bennett, Dallas Gilbert with Eastern Plains Natural Food Co-op will be installing a 1.8kW turbine at their natural poultry operation. In Walsh, Fred and Kay Lynn Hefley will be use a 50kW turbine to help power an irrigation sprinkler. In Grover, Diane and Phil McKinley will install a 1.8kW turbine for farmstead use, and to pump water for livestock on their cow/calf operation. In Holyoke, Paul Mailander's 20kW turbine will help power their farmstead as well as greenhouses used to grow vegetables. In Seibert, Curtis Sayles is installing a 10kW to offset energy cost for their farmstead, feedlot and seed business. The Commissioner of Agriculture, RC&D, RMFU, iCAST, BCCD and the award recipients echoed elation at being part of charting new waters for small-wind generation in Colorado.

APPENDIX A

The Pueblo Chieftain
Your print and online news source for Southern Colorado

Wind power reaches the farm

A Baca County farmer is using a grant to help pay for a wind-power generator to run electrical machinery.

Posted: Thursday, July 24, 2008 12:00 am
ANTHONY A. MESTAS THE PUEBLO CHIEFTAIN |

WALSH - Fred Hefley's 5,000-acre grain farm sits just shy of the Kansas border in the far Southeastern corner of the state.

He says he savors the long vistas, quiet country, friendly atmosphere and even the incessant, relentless wind.

In Baca County, the landscape for farming may be changing. In order to preserve his way of life, Hefley is seeking to add wind to his list of things to farm.

To harvest the wind, Hefley soon will be erecting a single wind turbine that will power one of his eight deep-water wells.

For the past 36 years Hefley, 59, and his family have farmed the land using the wells to irrigate crops.

"I thought placing a wind turbine would be good to help offset the cost of electricity to pump the wells by using wind. I've been interested in this for quite some time," Hefley said.

Hefley is receiving a grant for 25 percent of the cost to install a 50 kilowatt wind turbine. The turbine will cost between $150,000 and $200,000.

"The major disadvantage to wind energy is the initial capital investment. But once you get that generator up and running, the maintenance of it is not bad," he said.

"The fuel doesn't cost a thing," he said. "It's the wind, and we have plenty of wind out here. It blows all the time and it's pretty consistent."

Hefley said that he has not decided which company will install his turbine.

The grant money is from a pilot project to demonstrate the applicability of small wind for agricultural uses. The cost-share money was awarded Southeast Colorado Resource Conservation and Development, which is running an Advancing Colorado's Renewable Energy implementation grant from the Colorado Department of Agriculture.

Tim Macklin, the Conservation and Development agency's area coordinator who applied for the grant, said that four other turbines funded from this project will be installed throughout Eastern Colorado in Arapahoe, Kit Carson, Phillips, and Weld counties.Power will be generated at those locations using 1.8-kilowatt tower, 10-kilowatt or 20-kilowatt towers.

"The idea of this project is to demonstrate (to other producers) various sizes of small wind turbines for various uses on farm applications or in rural locations across Eastern Colorado," Macklin said.

Project partners include the Rocky Mountain Farmers Union, International Center for Appropriate and Sustainable Technology and the Baca County Conservation District.

Macklin said Hefley was one of 15 applicants chosen by a committee to receive the grant. Currently, Hefley operates his water pumps using electricity from Southeast Colorado Power Association. Hefley estimates that it costs up to 7.5 cents per kilowatt hour to run a water pump on his farm. "Anything that can reduce our cost will make it easier for us," the farmer said. "If this works we can possibly put up seven more turbines to generate electricity for irrigation."

"It's not so much for me as it is for my son, Kevin, and my grandchildren, the next generation," he said. Hefley said he hopes that if the turbine project works for him, that other farmers and ranchers also will use the wind as a power supply.

"To think about how much money this country sends overseas for foreign oil makes me sick," he said. "There seems to be a better solution and I think wind power is part of that solution."

He said that when he is not pumping water from his well, the turbine will continue to produce electricity that will be sent back to his electrical power provider. "We plan on net metering this generator with our local suppliers," Hefley said.

When a net metering customer's generator is producing more power than is being consumed, the customer's electric meter runs backward, generating credit for the consumer. When the customer uses more power than is being produced, the meter runs forward normally.

"We still have negotiations with our power supplier, but we think that those kilowatt hours that we produce will offset the hours we use when we are pumping," he said. "We only use those pumps six or seven months a year."

Once the turbine is up and running, the Baca County Conservation District will conduct field days to show farmers and ranchers what a turbine can do for them.

APPENDIX A

I-70 Scout Article – Nov. 11, 2008

STEVEN VETTER/The I-70 Scout

Lucky the guard donkey takes one of Dallas Gilbert's Blue Slate turkeys on a ride to the hay feeder Oct. 29.

Wind energy system brings Colorado ag commissioner to I-70 Corridor poultry farm

STEVEN VETTER
Managing Editor

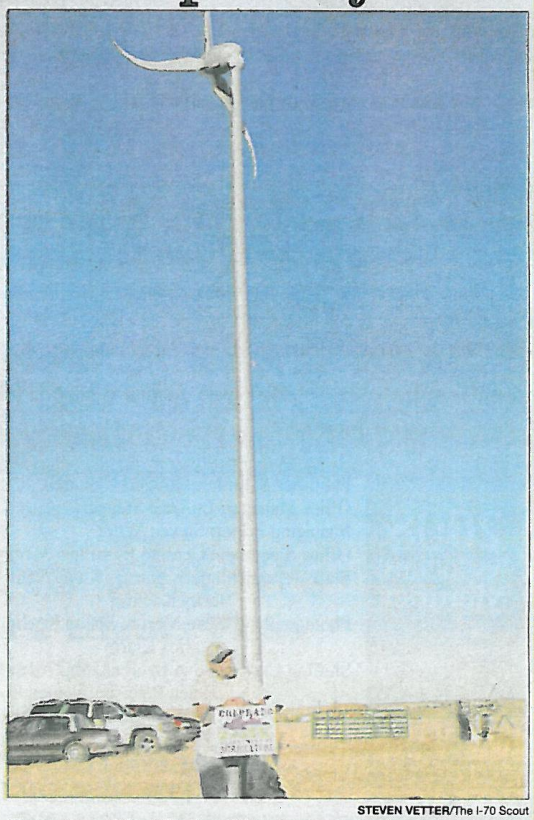
BENNETT — An I-70 Corridor poultry producer is the first ag entity in the state to install an alternative energy system under the auspices of a fledgling Colorado grant program.

In early October, Dallas Gilbert had a wind generator installed at his organic, free-range poultry farm southwest of Bennett and, during an Oct. 29 media event, Colorado Commissioner of Agriculture John Stulp and other state ag officials toured Gilbert's farm.

Gilbert's wind-powered system is partially funded by the Colorado Department of Agriculture's Advancing Colorado's Renewable Energy (ACRE) Program, meaning 25 percent of the project's approximate $15,000 pricetag is shared by the state.

"I've been interested in renewable energy for sometime. I was especially interested in and thought

SEE WIND POWER PAGE 22



STEVEN VETTER/The I-70 Scout

Bennett resident Dallas Gilbert speaks before his 1.8-kilowatt wind generator at an Oct. 29 press conference.

APPENDIX A

PHOTOS BY STEVEN VETTER/The I-70 Scout

Left photo, Blue Slate turkeys inhabit a pen at the Bennett home of Dallas Gilbert. Right photo, Gilbert, left, talks with Yuma County Economic Director Pat Duran and Colorado Commissioner of Agriculture John Stulp Oct. 29. Gilbert is one of five agricultural producers to install an alternative energy source with the help of the state-funded ACRE grant program. Gilbert installed a 1.8-kilowatt wind generator with the assistance of the grant.

WIND POWER

FROM PAGE 1

photovoltaic power would be the way to go, but the price of that technology hasn't come down," Gilbert said. "I also deliver the mail out here and, one day, I noticed one of my customers, Richard Van Slyke, had what looked like a wind generator on his property. He said he sells and installs them and I found out about this (ACRE) grant and it went from there."

Van Slyke, who owns Eastern Plains Wind Energy, installed a 1.8-kilowatt Skystream wind turbine while Intermountain REA installed a digital meter to measure the amount of power the turbine provides Gilbert's operation.

"IREA is not real supportive about this renewable energy thing but, given that circumstance, they were really pretty good about this project — replacing the old meter with a digital one," Gilbert said. "We're looking at saving me about one-third of my monthly electric bill. My heavy electricity season is the spring when I have my brooders, incubators and lamps all going and, fortunately, that's one of our heavy wind periods. It appeared to be a perfect match."

Stulp lauded Gilbert and four other Colorado ag producers for their proactive efforts in finding alternative energy sources and decreasing their "carbon footprints."

"I really think Dallas should be commended for being a pioneer with this technology in a production ag setting in this state. He is doing his part to utilize a resource that has been so underutilized in the past and that there is such a great potential for and helping reduce the reliance on coal and other nonrenewable fossil fuels," Stulp said. "He is the first of five projects in Eastern Colorado for wind turbines under the ACRE program and the first of many other alternative energy projects to be implemented statewide under the grant program. We are trying to get the ACRE program extended and hope the state legislature finds a way to get that done."

Other ACRE-sponsored wind-turbine projects in Eastern Colorado are a 50kW turbine at the Fred and Kay Hefley farm near Walsh to help power an irrigation sprinkler; a 1.8kW project for Diane and Phil McKinley near Grover for farmstead use and to provide water for their cow/calf operation; a 20kW generator near Holyoke to provide power to Paul Mailander's farmstead and greenhouses; and a 10kW project near Seibert to offset the energy costs of Curtis Sayles' farmstead, feedlot and seed business.

In addition to the Colorado Department of Agriculture, the Eastern Colorado wind ACRE grants are administered by the Southeast Colorado Resource Conservation & Development, International Center for Appropriate & Sustainable Technology (iCAST), Rocky Mountain Farmers Union, and Baca County Conservation District.

Raphael Shay, project manager from iCAST, said Gilbert's decision to utilize wind energy means approximately 9,000 pounds of carbon dioxide equivalent in emissions will be saved annually.

"That includes anything that coal-powered plants would emit," Shay said. "There is more good to the environment to come from this type of technology and, the best thing, it's there to be utilized right now."

Gilbert's operation consists of bird and egg production with much effort focused on producing organically raised turkeys and chickens. Gilbert is the only "certified humane" producer in Colorado under the Animal Welfare Institute's Animal Welfare Approved Program. Currently, Gilbert has 300 head of Blue Slate turkeys for the upcoming holiday season.

"They are preferred for their extra flavor, but they aren't a real uniform bird — they can range between 17 and 30 pounds. I don't have as many this year as I did last — I had around 500 I grew out last season," Gilbert said. "Twenty-five percent of the birds are sold directly to customers, but about 75 percent are marketed to Maverick Ranch Natural Meats. They are processed at a USDA-inspected plant at Sterling."

APPENDIX A

The Colorado Connection Newsletter — Summer Issue 2009

Commissioner of Agriculture Dedicates the First 50kW On-Farm Wind Turbine from the Department's ACRE Grant

by Misty George, District Manager
Baca County Conservation District

Colorado Commissioner of Agriculture John Stulp dedicated the first Entegrity 50kW wind turbine erected on a farm in Walsh, Colorado, on Friday, July 17, 2009.

In front of a crowd of 100 people, Commissioner Stulp congratulated H20 Farms and the Fred Hefley family for being pioneers.

Commissioner of Agriculture John Stulp dedicated the first Entegrity 50kW wind turbine erected on a farm in Walsh, Colorado.

The 50kW turbine will offset approximately 30 percent of the energy needs of pumping irrigation water for a center pivot sprinkler.

Farm owner Fred Hefley spoke of the many hurdles they circumnavigated to complete a project of this scope, and the many partners it took working together to make it happen.

Because this is the first turbine of its size in the state, the Hefleys were the first to attempt feasibility studies, find insurance coverage, finance from banks, and interconnect with the local utility company.

Mr. Hefley stated with the current economy, "we couldn't have picked a worse time." But with much perspiration, perseverance, and a solid network of committed partners they pulled it off.

Mr. Hefley expressed gratitude to those collaborators: Southeast Colorado Resource Conservation and Development, Baca County Conservation District, Colorado State Bank, the Colorado Department of Agriculture's "Advancing Colorado's Renewable Energy" (ACRE) grant, the International Center for Appropriate and Sustainable Technology, Southeast Colorado Power Association, Entegrity Wind Systems, Rocky Mountain Farmer's Union, Baca County Farm Bureau, and McDonald Electric.

Commissioner Stulp said the ACRE program is "designed to help rural communities in Colorado by developing agricultural energy related projects which benefit both agriculture and the environment."

H20 Farms' project will become the template for other agriculture producers to use as more farmers and ranchers step into the brave new world of small-scale wind generation for agriculture applications.

One to Grow On

He that is good for making excuses is seldom good for anything else.
~ Benjamin Franklin

Happiness is the art of learning how to get joy from your substance.
~ Jim Rohn

Look at everything as though you were seeing it either for the first or last time.
~ Betty Smith

That some achieve great success, is proof to all that others can achieve it as well.
~ Abraham Lincoln

A lot of people run full speed with incredible urgency in the wrong direction.
~ Justin Menkes

Be nice to people on your way up because you'll need them on your way down.
~ W. Migner

The difference between a mountain and a molehill is your perspective.
~ Al Neuharth

It's not what you've got, it's what you use that makes a difference.
~ Zig Ziglar

Motivation is a fire from within. If someone else tries to light that fire under you, chances are it will burn very briefly.
Stephen R. Covey

APPENDIX A

APPENDIX A

MORGAN COUNTY RURAL ELECTRIC ASSOCIATION

MCREA News

INSIDE ...

Morgan County Rural Electric Association is a member-owned cooperative that exists to provide goods and services that enhance the quality of life in rural America.

MAILING ADDRESS
P.O. Box 738
Fort Morgan, CO 80701-0738

STREET ADDRESS
20169 U.S. Highway 34
Fort Morgan, CO 80701-4401

970-867-5688 Phone
970-867-3277 Fax

memberservices@mcrea.org Email
www.mcrea.org Web

Touchstone Energy®

Two small-scale wind turbines are turning at the McKinley Ranch, south of Grover.

First Wind Turbines in MCREA's Territory Up and Running

BY GEOFF BAUMGARTNER, COMMUNICATIONS SPECIALIST

If you've driven near Grover anytime recently, you've surely noticed the large-scale wind farm running along Pawnee Buttes. The massive wind turbines that dot the landscape seem a fitting backdrop to the newest additions at the home of Phil and Diane McKinley.

"We're very excited," said Diane about the two small-scale wind turbines that were recently constructed at the McKinley Ranch, eight miles north of Highway 14 on Weld County Road 89. "It took a while to get the project done, and we're thrilled to have them up."

The McKinleys began thinking about purchasing the turbines in May of 2008 to help offset electricity used in their home but weren't able to complete the project until November, due in part to back ordered equipment. "The supplies were limited because the demand for them was so high," Phil explained. The two turbines came online in early December and represent the first of their kind in [continued on page 8]

Phil McKinley (left) and Mike Crook from MWC Home Energy (right) stand at the base of one of the McKinley's new wind turbines.

APPENDIX A

MCREA NEWS

First Wind Turbines in MCREA's Territory Up and Running

[continued from page 7] Morgan County Rural Electric Association's service territory.

According to Mike Crook from MWC Home Energy (the wind developer the McKinleys employed for the project), the two 1.9-kilowatt turbines are anchored by a concrete base that travels 11 feet into the ground, while the hub stretches some 35 feet into the air. Crook reported that his company, based in Cheyenne, Wyoming, has constructed 11 turbines (including the two at the McKinleys) since March, 2008.

In addition to the turbines, the McKinleys installed emergency shut-offs for each turbine. "That's for safety reasons," Phil explained. "We don't want to have anyone hurt when working on the REA's electrical system while the turbines could be putting energy back onto the system." A net meter was also installed by MCREA, which records both the energy produced by a renewable energy source and the electricity used that's provided by Morgan County REA. Credits are then issued for the energy produced by the renewable energy source. Additionally, the couple has installed software on their computer that monitors the energy output from the two turbines.

Phil, a rancher, and Diane, a nurse, said that monetary savings was a consideration in putting up the turbines but wasn't necessarily the chief motivating factor. "It's also about the environment. The wind farm (near Grover) made me really start to think about it," Diane said. "The transmission line for that wind farm runs across our land. So, I thought if it works for them, why wouldn't it work for us?" (Howard Reid, Acct. # 547902)

The McKinleys went on to praise MCREA. "The power from Morgan County REA is pretty darn dependable. Really, we don't have any complaints about the REA's service or rates," Phil stated. "It's about us doing things better."

Since the McKinleys are billed annually for their electricity, any actual cost savings won't be realized by the couple until they get their bill next year. But Phil is hopeful that the wind turbines can at least compensate for the electricity used by submersible pumps he recently installed at three stock wells at their ranch. He said with a smile, "I'm excited to see how it will all work."

Teach Kids About Saving Energy

Getting children involved in finding energy waste in your home is a great way to teach them about energy and conservation. A couple of websites can help.

- Energy Hog at www.energyhog.org/childrens.htm has games to help kids root out energy hogs in every room of the house. Kids play matching games and complete scavenger hunts in order to become Energy Hog Busters.
- Colorado Rural Electric Association features Kids Korner at www.crea.coop /kids_korner.htm. The site explores electrical safety and energy conservation through games, quizzes, glossaries and pictures to print and color. There's even a diagram with descriptions of the equipment line workers use.

Getting children involved can be a fun way to explore conservation and efficiency. Just make sure they know how to use sleep mode on the computer when they're done.

WIN $25 OFF YOUR ELECTRIC BILL

Each month Morgan County REA gives two lucky members a discount off of their electric bills, just for reading Colorado Country Life. There are two MCREA account numbers hidden somewhere in this issue.

Congratulations, John Richardson (acct # 1780900). You saw your name and account number in the December edition of Colorado Country Life, and received a $25 credit on your bill!

Sorry, Francine Varela (account #2162900). Your name and account number were in the December edition of Colorado Country Life but you didn't call.

There are two more MCREA members and their account numbers hidden somewhere in this issue. If you find your name and account number, call member services at 970-867-5688 by February 27 to claim a $25 credit on your electric bill.

NOTICE OF NONDISCRIMINATION

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DID YOU KNOW?

Sleep features that power down home office equipment and other electronic devices that are turned on but not in use can save a household up to $70 annually.

— Alliance to Save Energy

APPENDIX A

The Pueblo Chieftain
Your print and online news source for Southern Colorado

Sunday, July 05, 2009

Baca County farmer to harvest wind

COURTESY PHOTO/MISTY GEORGE -- Baca County farmer Fred Hefley (right) stands by as his wife Kay Lynn Hefley and Bob Mailander peer into the darkness of a hole 30 feet deep that awaits filling with cement. The Hefleys are erecting a 50-kilowatt wind turbine on their property.

Workers will soon erect a 50-kilowatt wind turbine to help power a water well on Fred Hefley's farm.

By ANTHONY A. MESTAS
THE PUEBLO CHIEFTAIN
July 05, 2009 12:51 am

WALSH - Increasing energy costs and a tough economy have left some farmers and ranchers wishing for better days.

The answer to economic woes for Walsh Rancher Fred Hefley will literally be blowing in the wind.

Hefley's 5,000-acre grain farm sits just shy of the Kansas border in the far southeastern corner of the state. The land will soon be home to a towering wind turbine that will power one of his eight deep water wells.

The first Entegrity 50-kilowatt wind turbine to be erected in Colorado will be placed on his ranch this month. Workers have already laid the concrete foundation for the turbine.

The turbine was funded in part by Southeast Colorado Resource Conservation and Development through a Department of Agriculture Advancing Colorado's Renewable Energy grant. The program provides funding to promote energy-related projects beneficial to Colorado's agriculture industry.

Hefley was one of 15 applicants chosen by a committee to receive the grant one year ago.

Officials said that four other turbines funded from this project will be installed throughout Eastern Colorado in Arapahoe, Kit Carson, Phillips and Weld counties. Power will be generated at those locations using 1.8-kilowatt tower, 10-kilowatt or 20-kilowatt towers.

Colorado Commissioner of Agriculture John Stulp is scheduled to be in Walsh on July 17 to help celebrate the unveiling of the turbine.

"I'm very excited that we are the first in the state to install a turbine through this program. I am looking forward to getting this going," Hefley said. "I think there is a real opportunity for distributed generation across the country for smaller projects. It's a good deal for farmers to cap their electric costs."

Last year, Hefley was awarded 25 percent of the cost to install a 50-kilowatt wind turbine.

Hefley said the turbine will cost between $150,000 and $200,000. For the past 37 years Hefley, 60, and his family have farmed the land using deep water wells to irrigate crops.

Currently Hefley operates his water pumps using electricity from Southeast Colorado Power Association.

He estimates that it costs up to 7.5 cents per kilowatt-hour to run a water pump on his farm.

"This turbine will pretty well put a cap on what electricity will cost us over the next 25 years. We are expecting electricity prices to go up in the next few years so we are right on time to cap them," Hefley said.

Hefley said he hopes that if the turbine project works for him, that other farmers and ranchers also will use the wind as a power supply.

He said that when he is not pumping water from his well, the turbine will continue to produce electricity that will be sent back to his electrical power provider.

Hefley said that he plans on net-metering the generator with his local suppliers.

When a net-metering customer's generator is producing more power than is being consumed, the customer's electric meter runs backward, generating credit for the consumer. When the customer uses more power than is being produced, the meter runs forward normally.

He said he still has negotiations with his power supplier, but that he thinks the kilowatt-hours the generator will produce will offset the hours he uses when he is pumping.

"We only use those pumps six or seven months a year."

Hefley said that the project will mostly benefit future generations of his family, including his son Kevin, 35, who has decided to return and work on the farm. "He will see the benefits in cost for a long time. This is for their future," Hefley said.

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n Herald

ESTABLISHED IN 1887

THURSDAY, JULY 23, 2009 NUMBER 6

Commissioner Of Agriculture John Stulp Dedicated The First 50kw On-Farm Wind Turbine From The Department's Advancing Colorado's Renewable Energy Grant

Colorado Commissioner of Agriculture John Stulp dedicated the first Entegrity 50kW wind turbine erected on a farm in Walsh, Colorado Friday, July 17, 2009. Commissioner Stulp congratulated H20 Farms and the Fred Hefley family for being pioneers in front of a crowed of 100. The 50kW turbine will offset approximately 30% of the energy needs of pumping irrigation water for a center pivot sprinkler.

Farm owner Fred Hefley spoke of the many hurdles they circumnavigated to complete a project of this scope, and the many partners it took working together to make it happen. Because this is the first turbine of its size in the state, Hefley's were the first to attempt feasibility studies, finding insurance coverage, financing from banks, interconnection with the local utility company, etc. Mr. Hefley stated with the current economy "we couldn't have picked a worse time." But with much perspiration, perseverance, and a solid network of committed partners they pulled it off.

Mr. Hefley expressed gratitude to those collaborators: Southeast Colorado Resource Conservation and Development, Baca County Conservation District, Colorado State Bank, the Colorado Department of Agriculture's "Advancing Colorado's Renewable Energy" (ACRE) grant, the International Center for Appropriate and Sustainable Technology, Southeast Colorado Power Association, Entegrity Wind Systems, Rocky Mountain Farmer's Union, Baca County Farm Bureau, and McDonald Electric.

Commissioner Stulp said the ACRE program is "designed to help rural communities in Colorado by developing agricultural energy related projects which benefit both agriculture and the environment."

H20 Farms' project will become the template for other ag producers to use as more farmers and ranchers step into the brave new world of small-scale wind generation for agriculture applications.

APPENDIX A

The Holyoke Enterprise

First wind turbine set in Holyoke

Thursday, 04 June 2009 09:11

Written by Jes-c Brandt

Last week Roy Pfaltzgraff's crew erected a wind turbine at Paul Mailander's home, east of Holyoke. The turbine will generate power to supplement other energy sources for the residence. Mailander has been making plans for the turbine for years, and it is the first of what Pfaltzgraff believes will be many in the area. —Enterprise photo

Both Roy Pfaltzgraff III and Paul Mailander are emerging as forerunners in the up and coming industry of wind energy. Although individuals have been harnessing the power of wind for more than a century, a recent spike of interest in the concept has led Pfaltzgraff to become a wind turbine dealer and Mailander to have a turbine installed at his residence.

Currently, there are few options for individuals who wish to have their own wind turbine. In fact, running into this problem was what inspired Pfaltzgraff to look into becoming a dealer in the first place. A few years ago, when he was looking to have a turbine installed, he found only distant, impersonal service and high prices. Hoping to make wind energy more accessible for those around Haxtun, he became the first dealer in the area.

Mailander also developed his interest in renewable energy a couple years back. Working on a project that investigated wind energy as possible revenue for the school district, he became acquainted with the processes and advantages of wind energy.

Although the project did not produce any plans for the school, Mailander could not ignore what he had learned. He has been making plans to use wind energy for himself ever since.

One of the biggest parts of the process, said Mailander, was waiting. Before beginning work on a wind turbine, Mailander waited for the net metering bill to be passed. Now, just over a year since the bill was passed, Mailander is the proud owner of a turbine.

Even now that the turbine is standing, Mailander is still waiting. The work they have been doing, noted Pfaltzgraff, is very new. Before the turbine can function, they are waiting for an inverter to be finished.

Anyone who begins working on a turbine can expect to face some amount of waiting, as the technology is in high demand. Many, in fact, are waiting on a turbine that fits their needs to even be developed. It should happen soon though, said Pfaltzgraff. "It's just a matter of time before there are wind turbines all around this area," he said.

Wind has always been there, and always will be, and the future for wind energy looks very promising. Located in an area of the country that is exceptionally windy, nearby colleges have begun offering degrees in wind energy, and companies are continuing to grow.

Pfaltzgraff noted the Holyoke area seems very eager to pursue wind energy options. Many farmers, for example, are looking into it. Highline Electric, he said, has responded to renewable energy in a much more positive manner than most of the places he's seen.

Since wind technology is so new, both Pfaltzgraff and Mailander believe this turbine will allow others to see how it works and the economics of it, allowing people to move forward on their own projects with confidence.

Another advantage to Mailander's turbine is monitoring software. The software will allow them to analyze wind and power production. Having a turbine in the area will give actual production numbers, whereas in the past the numbers were extrapolated from wind maps.

The 120 ft. wind turbine at Mailander's has a 20 kw generator. It is expected to provide part, but not all of the power to his home. Once his turbine is fully functional, Mailander said he doesn't think he'll mind those windy Holyoke days so much.

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Screen Print of Southeast Colorado RC&D's website with Wind Data

www.secrcd.org