



## Quarterly Progress Report

For

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

to

Tom Lipetzky, Markets Division Director  
Colorado Department of Agriculture  
700 Kipling Street, Suite 4000  
Lakewood, CO 80215-8000

September 25, 2009

**CONTACT:**

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Project Manager

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## CDA-ACRE Farm Wind Implementation Project

This report is organized by the deliverables as stated in the contract from the Colorado Dept. of Agriculture for this project:

### Work Completed to Date

1. Turbines Installed:
  - a. Eastern Plains Natural Food Coop's Skystream wind turbine:



iCAST Sustainability Project Manager Raphael Shay with Eastern Plains Natural Food Coop Owner Dallas Gilbert by the newly installed Skystream.

- b. McKinley's Skystream wind turbine



c. H<sub>2</sub>O Farm's 50kW Entegrity Project

1. Turbine delivered March 20<sup>th</sup>.
2. Erection completed July 16, 2009.
3. July 17, 2009, Commissioner of Agriculture John Stulp spoke at the dedication.
4. July 29, 2009 Electrical interconnect inspection.
5. The turbine passed Southeast Colorado Powers required electrical inspection in August.
6. In the 29 days since the turbine's commissioning it has generated 5223.4 kWh. The highest wind speed the anemometer recorded was 38.5 m/s (that's 86 mph!). During this high wind speed the turbine hit a peak power generation of 96.2kW; even though it is only a 50kW generator it has the ability to produce more than 50kW.



d. Curtis Sayles 10kW Bergey Project

1. Foundation is poured & set
2. Turbine & Tower have been deliver
3. Installation scheduled for mid-April
4. Turbine was erected July 10, 2009
5. As of 9/18/09 Curtis' Bergey has produced 1,793 kWh since it went on-line July 10th. In those 70 days it has produced an average of 768 kWh per month. To date this turbine is producing approximately half of their energy consumption during several weeks that have not been particularly windy. Curtis is very pleased.



6. Fat Spaniel data logger was installed.
  - a. As with any new technology and start up venture, unforeseen issues arose. We experienced a myriad of difficulties: the company sent the wrong power transducer, the company moved, during the move they lost the order for the correct power transducer, once they sent the correct part we had difficulties getting the gateway to communicate. Getting the installer back to the site to work on the data logger multiple times also became an issue.
  - b. Current data from this turbine can now be seen on our web-site: [www.secrd.org](http://www.secrd.org)

e. Paul Mailander 20kW Jacobs Project

1. Site preparation in progress
2. Turbine delivery scheduled for end of April
3. Turbine was erected July 7/16/09. The generator is not producing yet due to a part needing certification from Underwriter Laboratories. It's not uncommon for these types of issues to occur with rapidly changing new technology. RC&D is staying actively engaged until this issue is resolved.
4. Constant and good communication is key to progress and keeping these projects on their timeline. RC&D kept in communication with the Jacobs turbine company and the testing lab during this process. Just looking at the end product of a working turbine makes it look easy; when in actuality the process is complex and very time consuming. After two months of challenges the inverter passed Underwriter Laboratories testing on 9/16/09. Jacobs has inverters ready to ship next week (9/28/09). They plan to have it installed and the turbine running by the end of next week. This project is 1 of 3 turbines as a top priority for the company to have running by next.

2. On the companion grant to this project with the Governor's Energy Office (NEED grant): Southeast Colorado RC&D purchased the Fat Spaniel technology to provide real time data on current wind production on 10kW and 20kW turbines. The technology is in the process of installation on both turbines.
  - a. The Seibert location is posted for viewing on the RC&D web-site: [www.secrd.org](http://www.secrd.org)
  - b. The Holyoke location should be operational within two weeks.
  
3. Media Relations:
  - a. Press Conference at Eastern Plains Natural Food Coop. Article covering the event can be found in Appendix A.
  - b. Fox 21 story "Colorado farmer goes green with wind power". Text and video can be found at: [http://www.coloradoconnection.com/news/news\\_story.aspx?id=223560](http://www.coloradoconnection.com/news/news_story.aspx?id=223560)
  - c. Press coverage of Commissioner Stulp's dedication of the 50kW turbine in Walsh can be seen in the July issue of "Inside Ag" on the CDA web-site: <http://www.colorado.gov/ag/insideag>
  
4. Charles Zuller from NRCS West National Technology Support Center toured the 10kW and 50kW projects on July 17, 2009.

### *Problems being encountered and/or mitigating circumstances*

1. Affordable insurance coverage on the turbines greater than 10kW is still one of the challenges yet to be resolved. We continue to seek other avenues.
  
2. Funding for the 50kW turbine has been difficult. The combination of the economy and the banking crisis has further complicated the matter. Large dollar farming operations require a considerable amount of cash flow to operate, and a turbine of this size is a significant capital outlay. Fortunately Colorado State Bank in Walsh has been willing to extend themselves when larger corporate banks were not positioned in the current economic climate to do so.
  
3. One of the Skystreams had defective blades. The blades have been sent to the manufacturer Southwest Windpower and are being replaced at no charge.
  
4. On the Entegrity 50kW turbine in Walsh: Current economic times and changes in the Federal programs available resulted in the turbine company Entegrity downsizing 50%. This caused delays in the erection of the turbine.
  
5. On the Jacobs 20kW turbine in Holyoke: Underwriters Laboratories still needs to certify one of the generator parts. Although this is not an uncommon issue with new and evolving technology, RC&D will stay actively engaged until this issue is resolved.

6. Insurance issue have been slowly resolved as insurance companies become more familiar and educated about wind generation.
7. The Fat Spaniel data loggers are taking more time to install than expected because the company sent the wrong amperage power transducers. The correct parts are being delivered to the installers.
8. Many difficulties arose with the Fat Spaniel installation at the Seibert location (Bergey 10kW): the company sent the wrong power transducer, the company moved, during the move they lost the order for the correct power transducer, once they sent the correct part we had difficulties getting the gateway to communicate. Getting the installer back to the site to work on the data logger multiple times also became an issue. It was finally operational on 9/17/09.
9. After two months of challenges the inverter for the Jacobs 20kW turbine passed Underwriter Laboratories testing on 9/16/09. Jacobs has inverters ready to ship next week (9/28/09). This should be one of the first three inverters on Jacob's priority list to be installed next week.

### Work Plan

1. Complete installation of Fat Spaniel data logger on the Jacobs 20kW and get that data downloading to the RC&D web-site.
2. Encourage landowners to send in their final receipts for reimbursement.
3. Build case studies that will analyze the actual production of the turbines using meters.

### Updated Project Timeline

There are no updates to the proposed timeline.

Project Activity	Months					
	1-3	4	5-12	12-24		
Develop, disseminate RFP, evaluate proposals						
Solicit equipment bids, select vendors						
Equipment installation at selected sites						
Output Evaluation of Turbines and Develop Case Studies						
Dissemination of Case Studies and Final Reporting						

Project Budget as of September 14, 2009

**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	55,859	Match Previously Reported	129,845
<b>Amount Requested This Claim</b>	<b>12,075</b>	Match Reported This Claim	36,581
Total Amount Claimed to Date (including this claim)	67,934	Total Match Reported to Date (including this claim)	166,426
Contract Funds Remaining	32,066	Match Requirement Remaining	53,324

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  Date: 9/14/09

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  
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

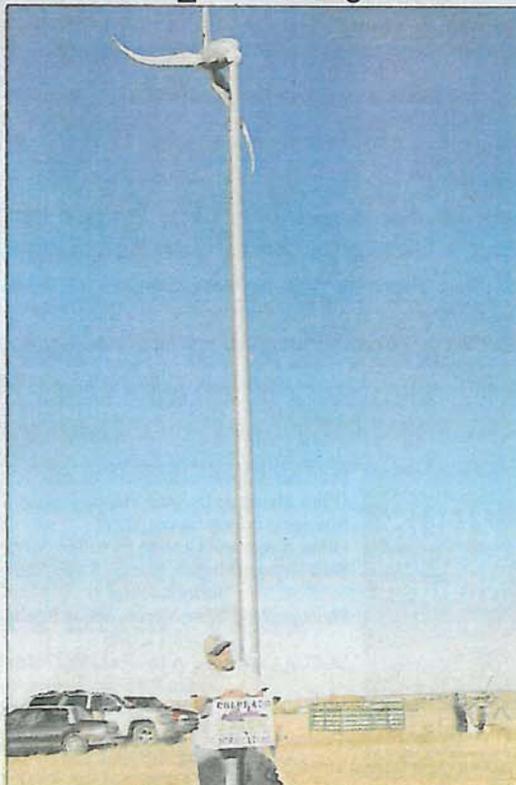
**BENNETT** — An I-70 Corridor poultry producer is the first ag entity in the state to install an alternative energy system under the auspices of a fledgling Colorado grant program.

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

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STEVEN VETTER/The I-70 Scout

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



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**

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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."

When I-70...

WANTED...

LINK CARS

## 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 Entegriety 50kW wind turbine erected on a farm in Walsh, Colorado Friday, July 17, 2009. Commissioner Stulp congratulated H2O Farms and the Fred Hefley family for being pioneers in front of a crowd 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, Entegriety 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."

H2O 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.