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# Increasing visibility of energy conservation and renewable energy on Iowa's small to mid-sized farms

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## **Abstract**

The Farm Energy Working Group (FEWG) provides a one-stop shop for information and expertise on meeting on-farm energy needs. FEWG has increased communication among individuals and organizations interested in on-farm energy, including farmers, utility representatives, policy organizations, Extension Service, higher education institutions, U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), farm organizations and renewable energy businesses.

## **Keywords**

Bioeconomy and energy

## **Disciplines**

Entrepreneurial and Small Business Operations | Oil, Gas, and Energy



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### Budget:

\$17,000 for year one

**Q** Can farmers on small to mid-sized operations continue to reduce on-farm energy use focusing on practical farm-scale initiatives without a full-fledged state-wide farm energy service organization funded through the state or through utilities?

**A** Yes. The Farm Energy Working Group's demonstration grants, field days and webinars show what Iowa farmers and others are doing to increase energy efficiency and use of renewable energy. Partnering with farm organizations helped inform a broader audience. The networking that occurs through FEWG does not happen anywhere else in the state.

### Background

Since its beginning in 2009, the Farm Energy Working Group (FEWG) has engaged a growing number of Iowa farmers and others interested in helping farmers increase energy efficiency and/or renewable energy use on their farms by using on-farm resources. Since January 2013, the outreach list has grown from 148 to more than 230 contacts including farmers, service providers, banking industry workers and others.

As energy costs rise, farmers want ideas on how to reduce their energy use to save money and to rely more on other energy sources. Use of on-farm resources has been a guiding principle of sustainable farming practices. Tapping energy available on the farm has the potential to significantly reduce risks of price uncertainties and supply disruptions, while promoting self-reliance.

Objectives for this one-year project:

- Hold three to four FEWG meetings during the year, including one in western Iowa, to broaden the participant base across the state.
- Offer two to three webinars on farm energy topics.
- Offer two mini-grant opportunities to farmers interested in demonstrating innovative ways to reduce farm energy use and replacing it with efficiency, conservation and renewable energy practices.

### Approach and methods

**Objective 1:** The January 2013 FEWG meeting was held in Ames in conjunction with the PFI annual meeting with 20 attendees. Speakers included:

- Mark Garrison, Iowa Natural Resources Conservation Service (NRCS) energy liaison, discussing that agency's farm energy conservation programs including Environmental Quality Incentive Program (EQIP) and how a technical service provider can help farmers.
- Ethan Hohenadel, Iowa Association for Electric Cooperatives (IAEC) regulatory data analyst, discussing the ways RECs in Iowa offer cost-effective energy efficiency programs.



*Grant Schultz of Versaland Farms and electric tractor.*

- Rich Schuler, PFI consultant, and Harn Soper, FEWG mini-grant recipient, discussing the Soper Farms mini-grant cooler project to find low-energy cost-effective ways to cool vegetable produce on a larger organic farm.

The November 2013 meeting was held in Calmar at the Northeast Iowa Dairy Foundation with 15 attendees. Speakers included:

- Michelle Schaefers, Winneshiek County NRCS, discussing that organization's energy efficiency initiative for farmstead and landscape.
- Liz Kolbe, PFI, discussing PFI farm energy cooperators' program and the on-farm projects they have supported. Megan Kregel, Northeast Iowa Dairy Foundation, provided a tour of the robotic dairy that received a FEWG mini-grant to install energy tracking equipment that compares the 250-cow milking system to the former system.

The Farm Energy Working Group also sponsored three Practical Farmers of Iowa field days and had one to two FEWG staff available to talk about the working group and meet with field day attendees.

The FEWG sponsored these PFI farm energy-related field days during the summer/fall of 2013:

- Working Toward a Sun-Powered Farm, Tim Landgraf and Jan Libbey, Kanawha
- Harvesting Energy: Wind and Solar Power, Francis and Susan Thicke, Fairfield
- On-farm Energy and Season Extension, Eric and Ann Franzenburg, Van Horne

Two case studies were added about the 2013 mini-grant projects of the Does and Divas Dairy LED lighting for the dairy processing building and VersaLand Farm's development of an electric-powered sickle bar mower for the electric tractor.

**Objective 2:** These webinars were offered:

1. FSA's New Microloan Program, Brian Gossling; 39 registered participants.
2. Aquaponic gardening reduces energy use, Dave Roeser, Minnesota gardener; 29 registered participants.
3. Financing options for renewable energy, Bill Haman, Iowa Energy Center; 31 registered participants.
4. Solar in Iowa, Bill Haman, Iowa Energy Center; 38 registered participants.

**Objective 3:** FEWG was able to offer three mini-grants, thanks to additional Leopold Center funding. The first two projects were completed by January 31, 2014.

*LED Lighting in a Dairy Processing Building, Honey Creek*

Does and Divas Dairy, Inc., Tom and Janna Feldman

The Feldmans installed 31 LED flood reflector bulbs to reduce energy use in their dairy processing building. They also installed a TED (The Energy Doctor) monitoring device to collect, analyze and store electricity data to determine the highest costs and how to further decrease energy use. See the case study on FEWG web site at [www.uni.edu/cee/sites/default/files/Energy/case\\_study\\_does\\_and\\_divas.pdf](http://www.uni.edu/cee/sites/default/files/Energy/case_study_does_and_divas.pdf)



*LED lighting in the Does and Divas Dairy processing building. The bags hanging from the rack are used to drain cheese in the processing room.*

### *Develop an Electric-Powered Sickle for an Electric Tractor, Iowa City*

VersaLand Farms, Grant Schultz

Schultz originally modified a 10HP gas tractor to a 12HP tractor powered with golf cart batteries. Using his mini-grant, he added an E-PTO system to the back of the tractor to plug in auxiliary PTOs, like the sickle he built to mow and cut hay. He uses a lot of diesel and wanted to reduce that fuel use. He said he's spending \$10 for diesel instead of \$100 a season. See [http://www.uni.edu/ceee/sites/default/files/Energy/case\\_study\\_grant2.jpg](http://www.uni.edu/ceee/sites/default/files/Energy/case_study_grant2.jpg)

### *Iowa's Robotic Dairy Center, Calmar*

Northeast Iowa Dairy Foundation

The Northeast Iowa Dairy Foundation installed a robotic milking system and is using mini-grant money to measure energy use. That project was approved for a no-cost extension to June 20, 2014, because the robotics installation was delayed by about three months. This extension will allow time to collect data on energy use.

## Results and discussion

- FEWG brought together 20 or more participants for meetings twice during 2013 and increased the numbers of farmers reached by 35.
- FEWG wrote and distributed four electronic newsletters to the list of participants. Multiple invitations and announcements regarding meetings, webinars, etc. were transmitted.
- FEWG produced two new case studies of 2013 mini-grant recipients. A third is in the works on the Northeast Iowa Dairy Foundation's robotic milking system and its energy use when that project is completed.
- FEWG offered four webinars with 29 to 39 registrants each. Recorded webinars are available on the FEWG website.

## Education and outreach

- *Iowa Farmer Today*, January 26, 2013, Leopold projects provide public data; and *Iowa Farmer Today*, January 25, 2014, Grant program funds farm energy projects.
- Natural Resources Conservation Service representatives presented at two FEWG meetings about their new farm energy initiative.
- Provided brochures to the Northeast Iowa Food & Farm Expo, March 16, 2013, Calmar, Iowa.
- Cosponsored three PFI field days.

## Leveraged funds

No additional funds were leveraged by this grant.

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