

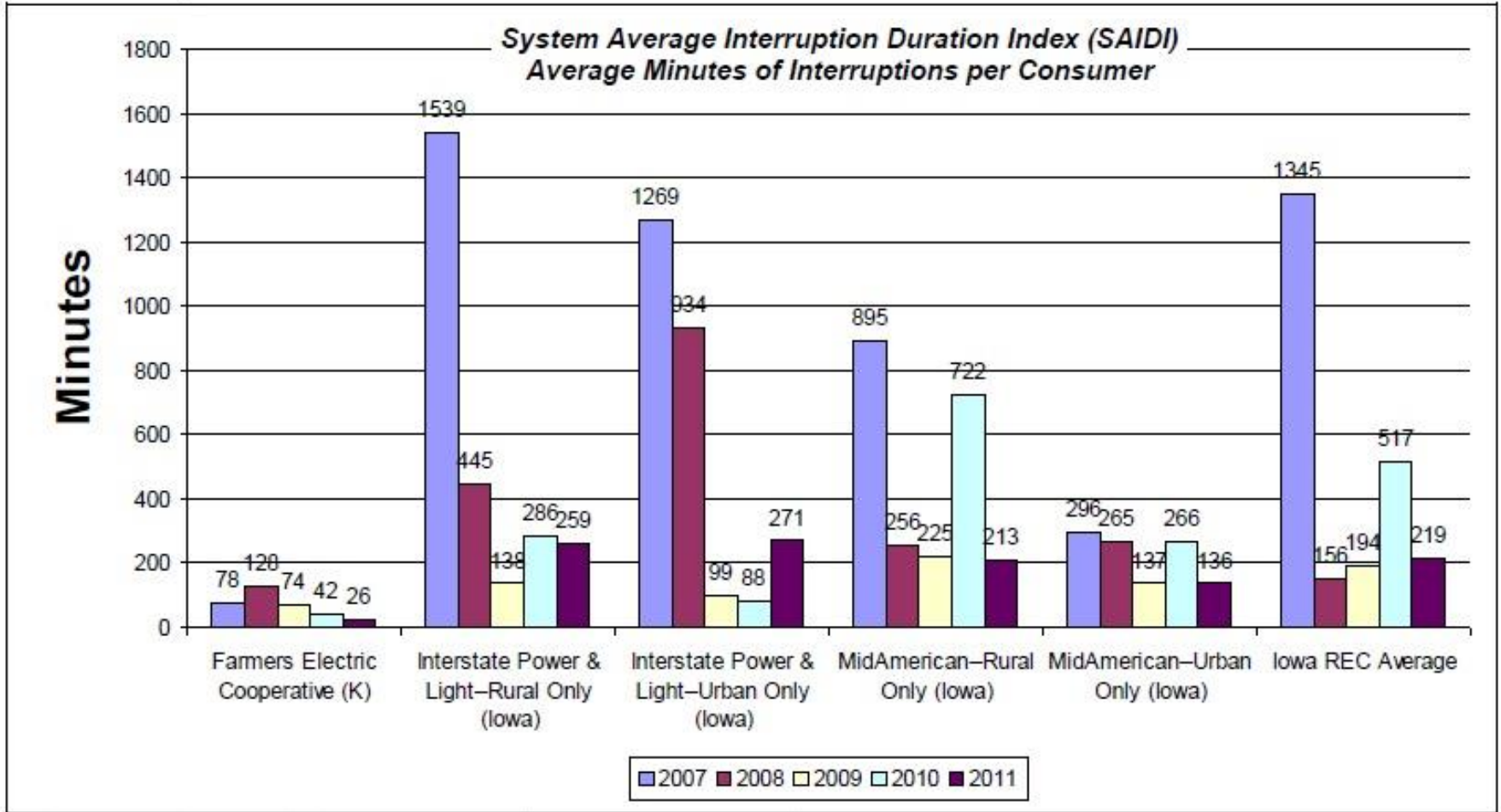
What Works, What Doesn't



2013 Legislative Agriculture Chairs Summit

Warren B. McKenna
Farmers Electric Cooperative
Kalona, IA 52247

Includes Major Storm/Event*



A solar panel in Co-op is the first Kalor

tariff a first for Iowa

By Dave DeWitte
The Gazette
FRYTOWN — Solar power earns a premium at the rural electric cooperative here.

The Farmers Electric Cooperative pays customers 30¢ per kWh to install a solar power array at their home or business to take advantage of the offer can also get a \$1 per watt rebate from the co-op.

The arrangement differs from the predominant system used by utilities to reimburse customers who want to



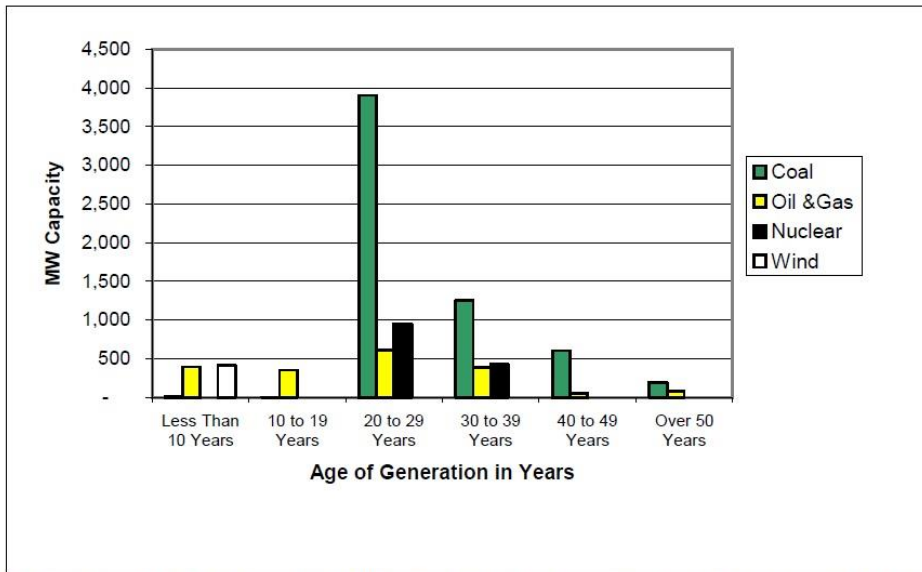
The Energy Plan

Vision, Goals

-- WHY

-- HOW

Figure 2-6 Generating Capacity by Age and Type (MW)



Sources: Form EIA-860A, Form EIA-860B and other sources as compiled by Platts, a division of the McGraw-Hill Companies. Data provided by MidAmerican.

GOALS (3%)
1. Billing Analysis

POWER USE (kWhrs) in FEC households this month:

306 kWhrs <i>Least energy used</i>	Average: 1453 kWhrs	5503 kWhrs <i>Most energy used</i>
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How does your household compare?
(Your monthly kilowatt hours are shown in the kWhrs / Qty column above.)

GOALS (7%)

1. Energy Audits
2. Load shifting
3. Heat pumps & Lighting
4. Standby Loads
5. Process evaluation
6. State/Fed Credits
7. Rebates & Grants

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6. Rebates & Grants

Solar & wind

Energy Efficiency & Conservation

CONSERVATION GRANTS

up to \$100 per grant

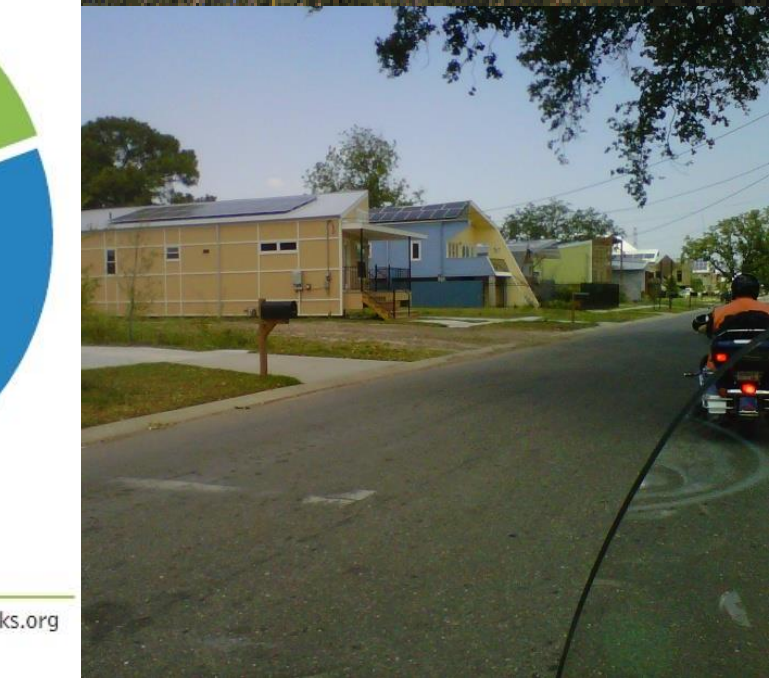
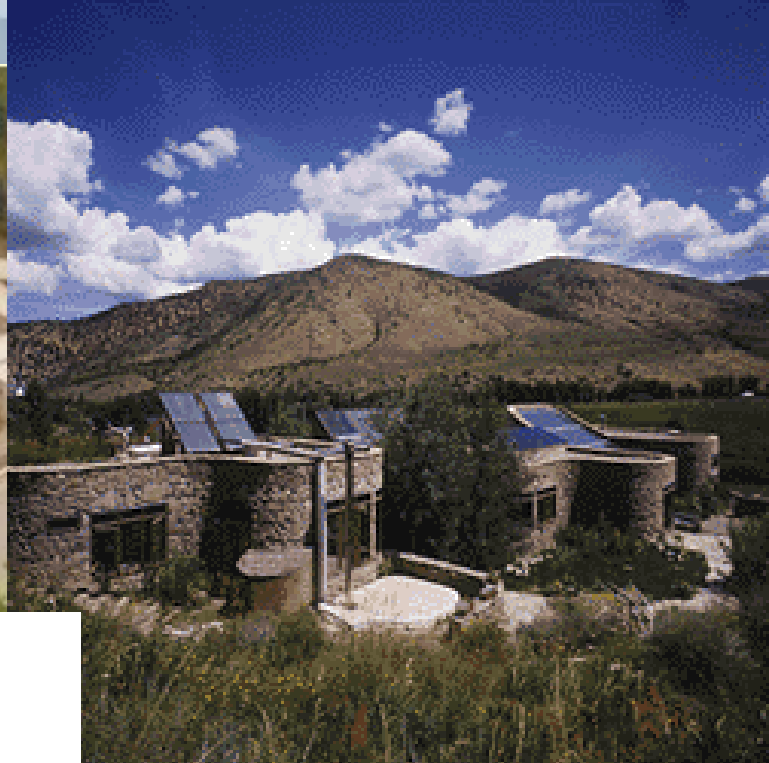
Note: A maximum of \$2000 per year will be awarded in this category

Members may apply for a one-time per year grant for the implementation of permanently installed energy conservation measures. This will be on a 50% cost-share basis, up to \$100 per grant. Grants might include – but are not limited to – installation/implementation of the following:

- Clothes line
- Corn, pellet or wood stove
- Trees for shading (site plan required)
- Insulation
- Ceiling fan
- On-demand water heater
- Programmable thermostat
- Occupancy sensor
- Tractor heater timer
- Insulated earth tube livestock waterer

Gathering Knowledge - Grid-tied

- AEE Dealer Conference in AZ -- 1st annual – my start
- Greensburg Greentown in KS, -- Rebuild after Tornado
- RMI and SEI in CO, “Small is Profitable” distributed model
- Make It Right in LA, -- New Orleans housing
- Sierra Club Iowa and Heinrich Boll Stiftung, Iowa Speaking Tour
 - German Cooperatives, Dr. Andreas Wieg, Michael Diestel
- Maharishi Sustainable Living Center in Fairfield IA
 - SOLAR2013 – Lonnie Gamble
- Bakken Fields in ND – The End of Easy Oil
- Germany, -- 25x25 week long tour from Frankfurt to Berlin
 - RE Site visits to the Reichstag for politics and policy



US Wind Ownership

German Wind Ownership

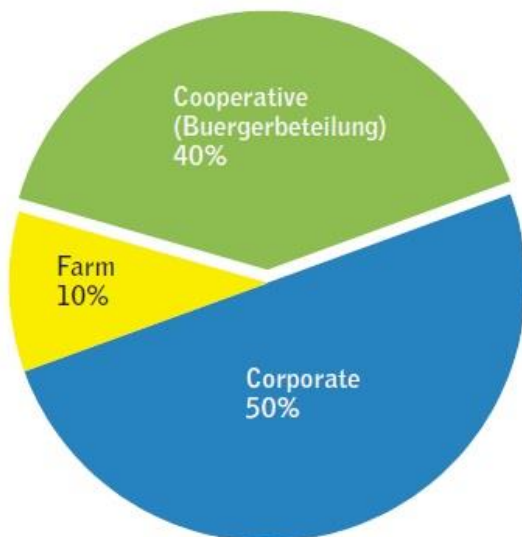
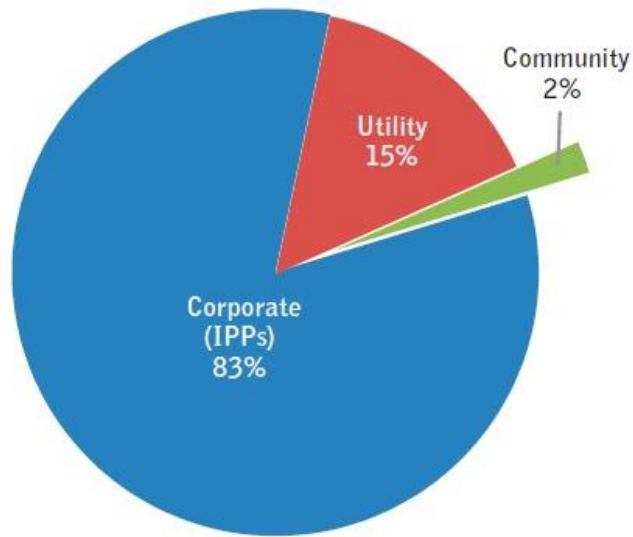


Figure 1: US and Germany Wind Ownership Structures^{ii,iii}

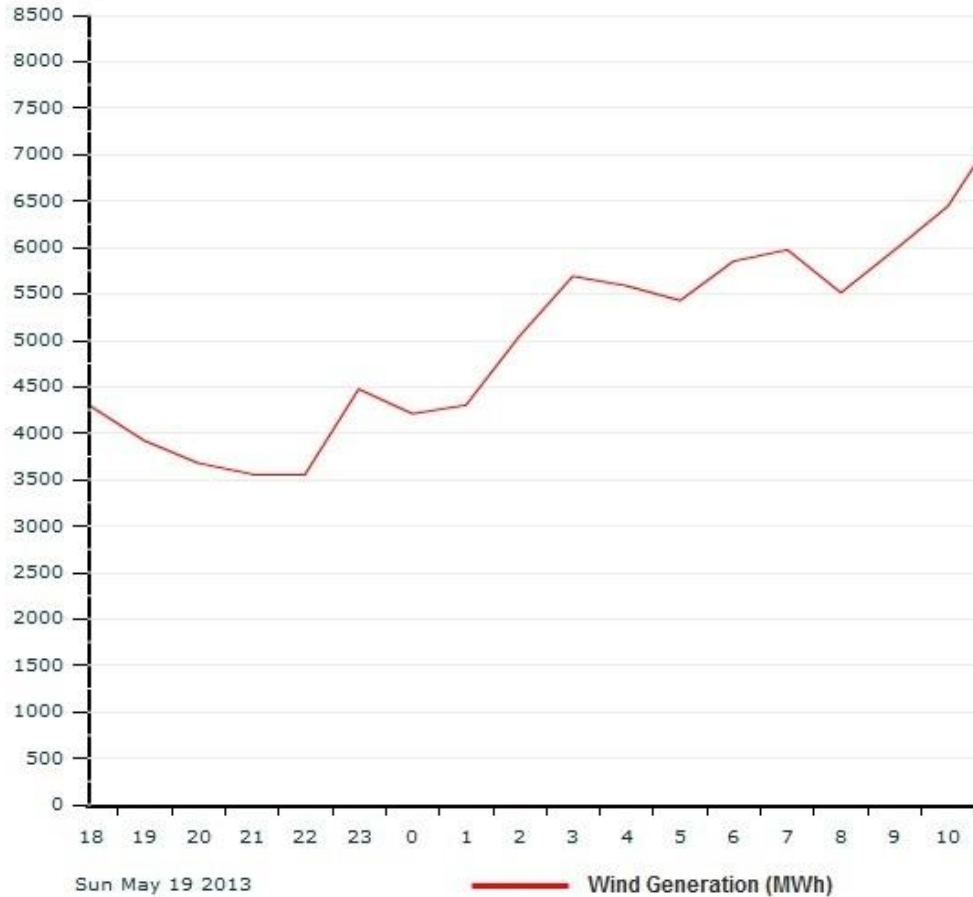
ii Gipe, P. (2008). Comments on New Brunswick's Community Wind Initiative. Retrieved from www.windworks.org

iii Wisner, R. and Bolinger, M. (2010). 2009 Wind Technologies Market Report. US Department of Energy.

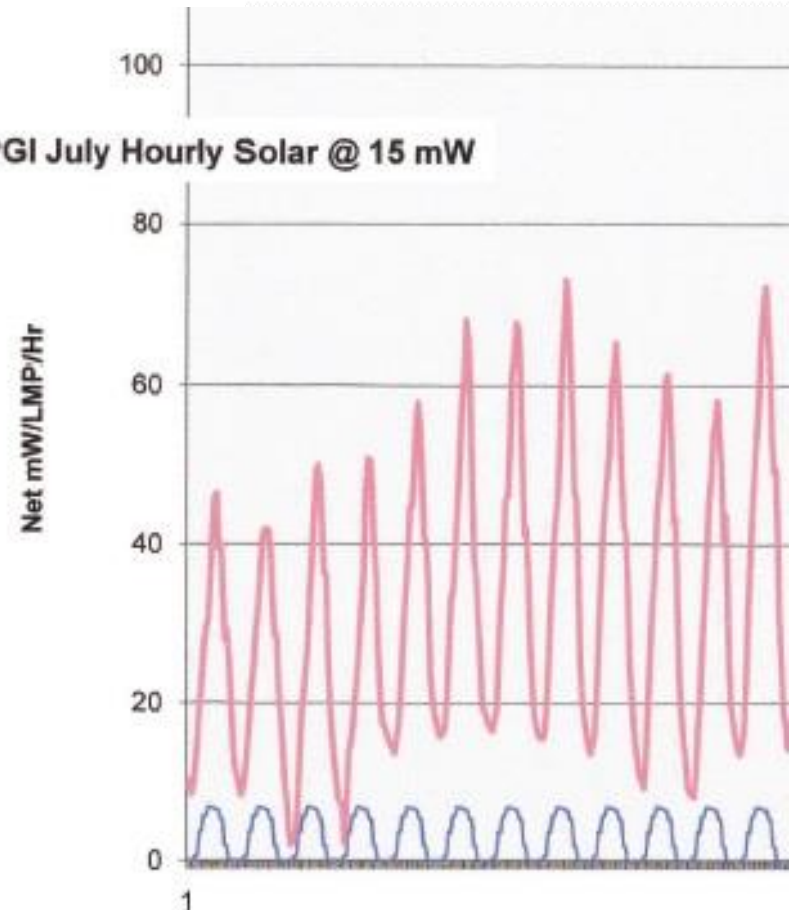
Iowa Big Wind – vs - Solar

The Real Time Wind Generation graph plots average wind generation in megawatt hours (MWh) for each of the past 24 hours. Data points appear for the top of each hour and reflect an average hour ending value.*

May. 20, 2013 - Interval 14:59 EST



RPGI July Hourly Solar @ 15 mW



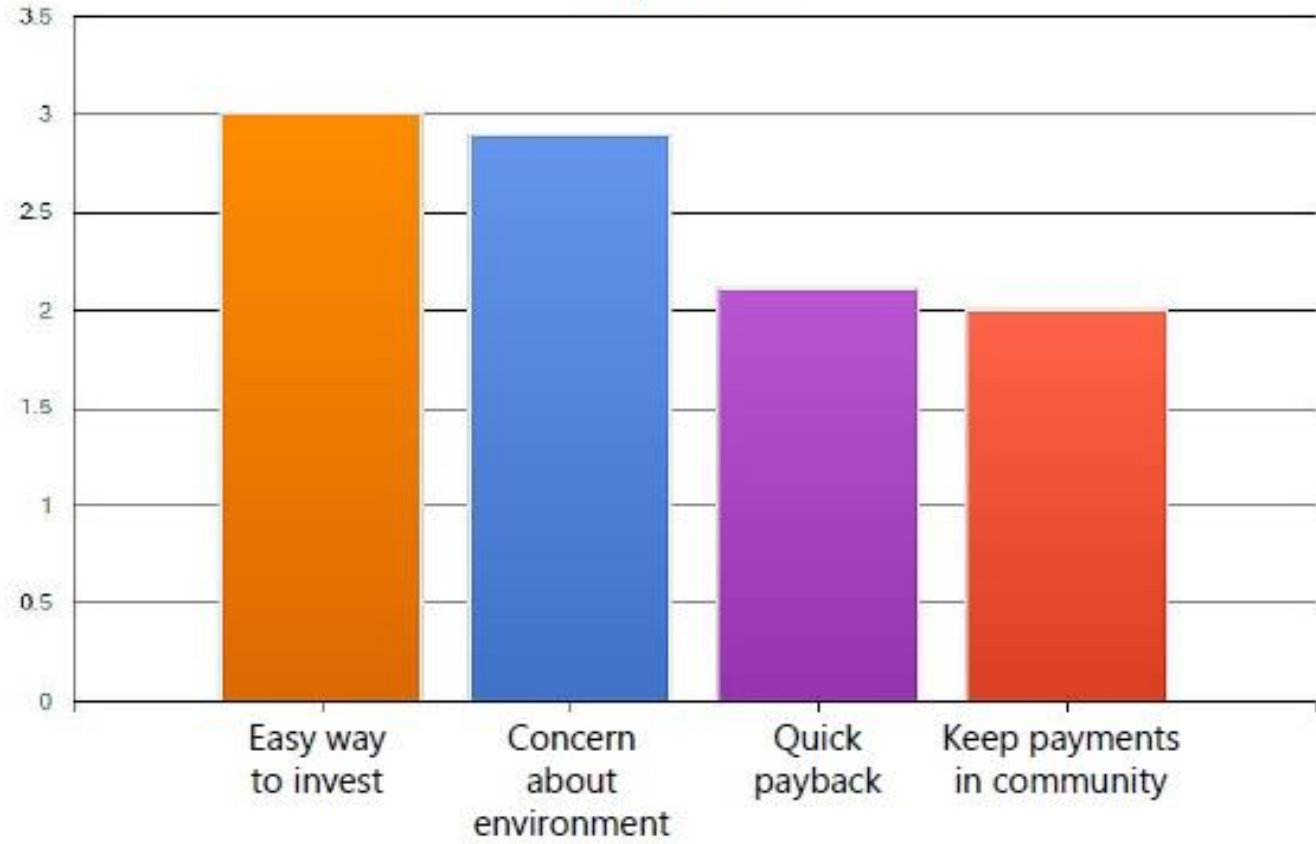


Ref. No.	Code	Descriptions	Dates	X/%	kWhrs / Qty	Avg.Cost	Total
	PB	Previous Balance					-356.08
1403	MM	Main Meter	3/25/13		1,019.00	0.1230	125.19
13695565	EC	Energy Cost Adjustment	2/27/13	3/26/13	1,395.00	-0.0050	-6.97

Community Solar

Q: Please rank the following factors in your decision to purchase a module (or modules) in the FEC Solar Garden. (4 = most important; 1 = least important)

Graph view:



West Union	John Mast	Trent & Tami Yoder	Mike & Chris	Ed Gingerich (2)	Melvin Schulz (3)
Mennonite Church	Larry Schrock	David & Wanda Beachy	Brenneman (4)	Jon Gingerich (2)	Ken Bender (5)
(12 modules)	Laurel Schlaubaugh	Wilmer & Trish Yoder	The Water Shop (4)	Linton Weaver (2)	low-income acc't.
	Donovan Bender	Galen Yoder (2)	James Graham (2)	John Schrock (4)	low-income acc't.
	Kenneth J. Egli				

Array #9	Array #10
Reg & Cheryne Yoder	Keith Troyer/ Troyer Farms
Patrick Melroy	Steve Groenewold
Dick Yoder-Short	Doug Schlaubaugh
J. Scott & Nancy Ritter	Warren McKenna
David Beachy	Marvin & Betsy Slabaugh
Milford Yoder	Roger Stutzman

Coming Soon ...
 Web interface to track energy production in real time. We'll let you know when it's online.

houses
 SMA
 inverters
 DC to AC
 in the
 re inver-
 solar
 nds.

k
 lock
 aw
 thum
 labaugh
 Bender

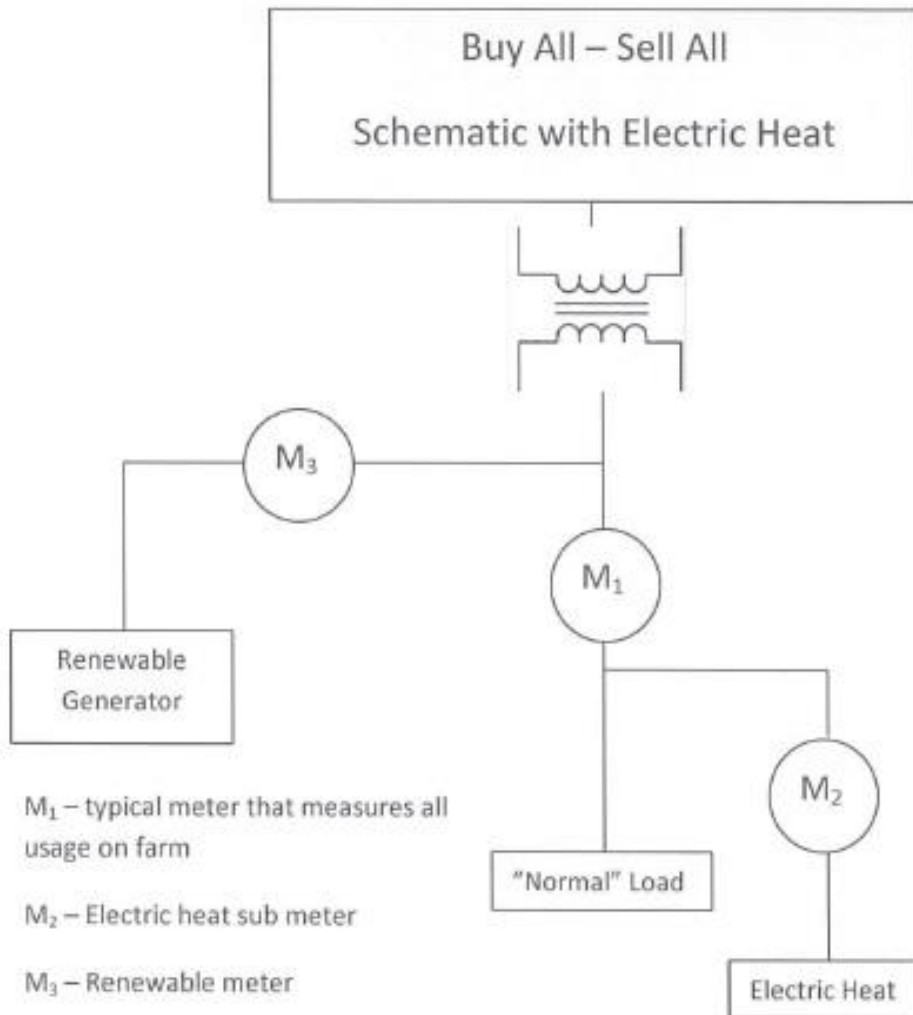
- CEEE and MREA
 - Center for Environmental and Energy Education,
- ISETA,
- 25x25.org,
- NREL,
- Iowa Department of Economic Development,
- Iowa Policy Project,
- Iowa Sierra Club
- Eagle Point Solar – PPA
- Resale Power Group of Iowa
 - MISO Wind
 - Power Supply Study Solar Graph



IOWA SOLAR/SMALL WIND ENERGY TRADE ASSOCIATION

FEED-IN-TARIFF

A **Feed-In Tariff (FIT)** provides three key provisions to renewable electricity generators: a **guaranteed grid connection**, a **long term contract**, and a **fixed price** sufficient for a reasonable return on investment.



\$ 350 CONNECTION FEE
\$ 3 charge for Green Power Project
10 year incentive rate

FEC -- FEED-IN-RATE

- .20 cents for the first 25% of generated consumption
- .125 cents for balance of generated consumption
- .06 cents for over production

The .20 cent incentive equals \$ 1.00 per watt in incentive and allows the Coop. to pay this out over 10 years.

When coupled with the Federal and State incentives these systems will pay for themselves with energy savings in less than 10 years.

What Doesn't Work!

A Call to Action

NO NET-METERING!!!

- **No way to accurately track environmental attributes**
- **Consumption cannot be taxed because it is first offset with RE production (carbon tax loss)**
 - **System reliability cannot be tracked**
 - **Utilities lose rate control and revenue**

What Works!

FEED-IN-TARIFF – The FEC model

- The buy-back or incentive rate ends at max monthly consumption
- RE generation over production is credited at current wholesale rate – settled monthly (no kWhr bucket)
- Buy-back rates are subject to BOD approval and independent of the retail rate
 - After 10 years the buy-back rate will compete with the wholesale rate + incentives are distributed over 10 years
- FEC resells environmental attributes through its Green Power Project and used to support a local FIT program
- All RE generation units are monitor and tracked for reliability and performance

Renewable Energy Paradigm Shift

- **“I think there is a world market for maybe five computers.” Thomas Watson Chairman, IBM 1943**
- **“This telephone has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us.”
Western Union internal memo (1876)**

- “Encouraging Energy Efficiency Through Competition IPP Report: *By Hadley Rapp, Will Hoyer and Teresa Galluzzo*”
- <http://www.press-citizen.com/article/20121205/OPINION01/312050023/A-first-rate-rural-choice-Person-Year>
- <http://smallisprofitable.org/>
- Customer participation rates
<http://www.nrel.gov/news/press/2011/1367.html>
- <http://www.leopold.iastate.edu/news/leopold-letter/2012/spring/renewable-energy-iowa-farms>
- <https://www.midwestiso.org/MarketsOperations/RealTimeMarketData/Pages/RealTimeWindGeneration.aspx>