



Solar Success for Nonprofit Utilities

FARMERS ELECTRIC COOPERATIVE: A SMALL RURAL COOPERATIVE BECOMES A SOLAR LEADER

YEAR ESTABLISHED: 1916
NUMBER OF MEMBERS: 650
MILES OF LINE: OVER 110

Produced as a [publication resource](#) under the Solar Outreach Partnership (SolarOPs), this case study is the first in a four-part series aimed at documenting how nonprofit utilities—both municipal and cooperative power providers—have overcome the financial challenges to solar deployment. These case studies will spotlight success stories of small utilities effectively and creatively leveraging local opportunities for solar financing and stakeholder engagement.

Located in the southeast corner of Iowa and in the heart of one of the largest Amish and Mennonite communities west of the Mississippi River, the Farmers Electric Cooperative has a hands-on, keep-it-simple approach to financing and building solar energy projects. The 650-member cooperative in the town of Kalona has established a varied and mostly self-financed portfolio of solar and clean energy programs since 2008.

It is also a national leader in installed solar watts per customer, with a cumulative solar capacity of more than 1,800 watts per co-op member.

Farmers' solar success can be attributed to the wide array of options for going solar offered to its members. Co-op members installing solar on their homes or farms can receive a feed-in-tariff for self-generation or opt for an up-front rebate based on the size of their systems. Those not wanting or unable to install a system can instead buy power from solar panels they own as part of a community solar "garden" that has grown from an original 13.8 kilowatts (kW) to 40 kW and is continuously oversubscribed.

Members can also help expand Farmers' use of renewable energy through the co-op's Green Power Program, paying an extra \$3 fee on their monthly bills. The co-op has set a target of reducing its use of fossil fuels 25 percent by 2025, and the money from the Green Power Program is used to buy biodiesel fuel for Farmers' back-up generators and offset some of the costs of its solar programs.

Most recently, Farmers powered up its first project privately financed through a power purchase agreement (PPA) with a local solar installer. As part of this deal, the cooperative will own the 800-kW solar farm—currently the largest in the state—after ten years.

The co-op has even won over some of the area's Amish and Mennonite farmers, who do not have electricity or telephones in their homes but often install solar-powered phone booths or individual modules on their farms so they can conduct business. About 25 local phone booths are now powered with individual solar panels, each with battery storage, which the co-op has installed as part of an off-grid program.



FARMER'S SOLAR GARDEN

Keeping panel purchases and installation in-house has allowed Farmers to set relatively low buy-in costs for the solar garden project. Members pay \$375 for their first panel and \$475 for any additional panels up to a maximum of 10.



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SOLAR INSTALLATION AT WASHINGTON TOWNSHIP ELEMENTARY SCHOOL

To get community buy-in, Farmers tested out its first small installations, 1.8 kilowatts each, at two area schools, a public elementary school and Kalona's private Mennonite high school, which has since installed its own 50-kW system.

“The phone company pays us,” said Warren McKenna, the cooperative’s general manager, noting that off-grid solar is a fast-growing segment—and could be yet another business opportunity—for small utilities in rural markets..

How this rural co-operative has become a national model, McKenna said, is by keeping things small, gradual and local—and by framing its solar programs as a matter of smart, sensible economics, with a payoff in both bottom-line cost savings and customer retention.

Through its membership in a larger, regional buying group, the Resale Power Group of Iowa, Farmers is tied into buying 50 percent of its power from fossil fuel sources, most of which is coal. This reliance on coal and other outside energy sources represents “over \$1 million a year, getting sucked out of the community for power,” McKenna said.

After his first visit to a small, nearby solar installation in 2008, McKenna quickly saw solar as an energy source that would transform the landscape for power companies as the cell phone had for telecommunications. He also understood that for small co-ops such as Farmers, developing a range of solar options for their members would be a matter of survival.

“The technology is coming,” he said. “You’re either going to embrace it, or a third party is going to come in and serve that load and you’re going to lose that load.”

McKenna’s first step was to develop in-house and local expertise. He and an area school teacher, who is also an electrician, completed a Midwest Renewable Energy Association training course to learn the basics of site assessment and other solar essentials.

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To keep costs low, the co-op purchased the panels itself and used its own staff, most of whom are state-licensed electricians, for the installation. According to McKenna, these cost-saving measures have become standard practice for Farmers’ community solar garden.

“Don’t gold-plate it,” McKenna said, when asked his advice for other co-ops. “You’re going out for the most expensive option. When you can, do it yourself with your own labor force.”

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Keith Troyer, a turkey and hog farmer who has been a member of the co-op’s volunteer board since 1997, recalled some members’ initial skepticism about solar. Farmers also looked into developing a wind project, he said, but found it came with even higher costs and greater risks for significant technical pitfalls.

“I like wind, but I know something with moving parts will take repairs,” he said. “I always felt good about solar, but it was expensive. [McKenna] told us there would be a long-term return and we needed to get started in green energy. I think everyone felt pretty positive to try a small unit like we did.”



DISTRIBUTED SOLAR AT BUSINESSES

“Members installing solar on their properties can choose to receive a feed-in-tariff for self-generation or upfront rebate on the system.”

“A feed-in tariff doesn’t have to be higher than the current retail credit,” he said. “It’s designed to pay back the installation. We want to pull in the tax credit for our members that own the cooperative and hopefully pay them back within five to seven years.”

Farmers established its feed-in tariff, one of the first in the nation, in 2009, along with a solar rebate program. Members installing residential or farm solar can choose one of the two incentives.

The up-front rebates—valued at 50 cents per watt—are available up to a maximum incentive of \$2,500.

Co-op members choosing the feed-in tariff get two electric meters, one to measure monthly energy consumption and the other to track monthly solar output. They are then billed a flat rate of 12.5 cents per kilowatt hour (kWh) for all the power they use, which is offset by a credit for their solar production, based on a sliding scale of compensation.

For solar production up to 100 percent of a member’s monthly consumption, the credit is figured at the cooperative’s retail rate, 12.5 cents per kWh. Above 100 percent, the member is paid a rate of 6 cents per kWh.

Consumption and generation are netted on a monthly basis. At the end of each year, members who have generated more power than they use receive a dollar credit which rarely runs more than \$10-\$20.

Contracts for the feed-in tariff are for 10 years after which the incentive rate will likely float between 8 cents and 10 cents per kWh. That figure takes into account the installed costs of solar in the area—which continue to fall—plus state and federal tax credits, McKenna said.

“A feed-in tariff doesn’t have to be higher than the current retail credit,” he said. “It’s designed to pay back the installation. We want to pull in the tax credit for our members that own the cooperative and hopefully pay them back within five to seven years.”

Troyer installed a 20-kW ground-mounted system on his 400-acre farm in 2013 and has seen his electric bills drop by more than a third, he said. With the feed-in tariff and tax credits, he expects to recoup his investment in five to six years.

As part of the feed-in tariff agreement, Farmers gets the renewable energy credits (RECs) from the members’ solar installations, which the co-op is banking, as Iowa currently has no market demand for solar RECs.

FROM SOLAR GARDEN TO EAGLE POINT SOLAR FARM

Farmers launched its first solar garden in 2012 with an initial offering of 20 panels that sold out in two days, McKenna said. With strong community support, the first phase of the garden topped out at 13.8 kW. The project continues to grow with periodic expansions—and it always has a waiting list.

Keeping panel purchases and installation in-house has allowed Farmers to set relatively low buy-in costs for the project. Members pay \$375 for their first panel and \$475 for any additional panels up to a maximum of 10. They then receive an offset on their bill for the power produced by their share of the project. Two panels are reserved for low-income members who receive a credit on their bills for the power, with no up-front buy-in.

Now 40 kW in size, the garden covers about one-half acre at the co-op, McKenna said. Farmers plans to add about 10 kW a year, until the plot is completely covered.



EAGLE POINT SOLAR FARM

At 800 kW, Farmers' new Eagle Point 2 solar farm is now the largest in the state. The co-op flipped the switch on the project July 30 with a public ceremony that generated local, state and national media coverage.

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The combined result of the solar garden and Farmers' rooftop solar incentives gives the co-op "over 10 percent of our kilowatt hours from solar, with 20 percent of our membership owning that solar," McKenna said.

"The genius of it all is in the fact that there has been no up-front investment by the cooperative itself, so no debt incurred and no capital investment on our part," he said.

Farmers' new 800-kW solar farm, Eagle Point, is currently the largest in the state. The co-op flipped the switch on the project July 30th with a public ceremony that generated local, state and national media coverage.

The PPA for this project is another first for Farmers, with developer Eagle Point Solar owning the system and receiving the associated tax credits and other solar incentives for 10 years, after which the co-op will be able to buy the project.

Eagle Point owner Barry Shear declined to share exact details on the deal, but said it is not technically structured as a "flip," under which the assignment of a project's tax benefits to investors and reversion of ownership to the utility is handled through a separate, for-profit entity. The per-kilowatt hour rate is between wholesale and retail, he said.

The project also comes in the wake of an Iowa Supreme Court decision that will allow for more projects with privately funded PPAs across the state. A separate PPA Eagle Point had with the city of Dubuque had been challenged by local utility Alliant Energy, who argued that PPAs violate its regulated monopoly rights to generate power.

The Iowa Utility Board, in a March 2012 ruling, sided with Alliant, but both a state district court and the Iowa Supreme Court ruled for Eagle Point.

Shear sees PPAs as the way to go for co-ops and municipal utilities that want to add solar projects to their portfolios with a minimum of financial risk or initial outlay.

Having completed his first PPAs with Farmers and Dubuque, he expects to see increasing demand.

"The capital sources are crawling out of the woodwork right now. The underwriting risk of these deals, of doing the PPA, it's really minimal. Solar data is well known, and the arrays produce the energy we represent they will."

And with thousands of municipal buildings in Iowa, he said, "I don't see there being a saturation point."

The Solar OPS program can offer technical assistance to small cooperatives and municipal utilities interested in exploring options for developing their own solar programs. For information, contact Daisy Chung, research analyst at the Solar Electric Power Association, at dchung@solarelectricpower.org.

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