

HOME-GROWN Solutions

RENEWABLE ENERGY SYSTEMS ARE BEARING FRUIT
FOR FARMERS – STARTING WITH SOLAR

By Matt Alderton

CERTIFIED ORGANIC FARMER HARRIET Behar is a small producer who wants to make a big difference. Owner and operator of Sweet Springs Farm near Gays Mills, Wis., she's been practicing regenerative agriculture since 1989, when she established her 216-acre operation growing organic herbs and vegetables. That means enriching the soil with cover crops, cultivating habitats for pollinators and using natural instead of synthetic fertilizers.

It also means powering her farm with renewable energy.

"It's been about 13 years that we've had our solar panels, and now we produce enough electricity that we don't pay an electric bill," says Behar, whose 19-kilowatt solar array powers the greenhouse where she grows herbs, the drying room where she dehydrates them and a wood shop where she makes beekeeping equipment.

For a small business, saving even a few dollars a month adds up. "The price of electricity has increased twice in the 13 years we've had our panels, and we've not felt the impact of that because we're not paying for electricity," says Behar, who adds that solar has created new opportunities for business expansion. This spring, she plans to install a high tunnel greenhouse in which to grow apricot and peach trees. "I'm going to need a lot of electricity to heat that and cool it with fans in the summer," she says. "That would not be a viable enterprise if the electricity weren't free."

A relatively early adopter of using renewable energy



Farmers Powering Communities project in Camillus, N.Y.

for farming, Behar remains something of an outlier more than a decade later. As of 2017 — the most recent year for which data is available — approximately 6.5 percent of more than 2 million U.S. farms possessed a renewable energy producing system, according to the U.S. Department of Agriculture (USDA). Constituting two-thirds of all such systems, solar leads the way.

While the figures appear modest, they represent a more than doubling of on-site renewable energy production in five years. "The rate of change is quite significant," says Dan Weeks,

vice president of business development at ReVision Energy, a solar installer operating in New England. "It's only the last several years that the United States has really started to ramp up renewable energy generation ... so a lot of folks who had never really thought about it are suddenly paying attention."

POWERING PRODUCTION

There are myriad reasons that renewables have been slow to catch on in agriculture. Because industrial-scale

production requires a lot of solar arrays, one of the most significant is land. "If you go back a decade or two, there was real tension among farmers and citizens in general, who worried that prime agricultural lands were going to be taken up for renewable energy generation and forfeit their production capacity in terms of growing crops or raising livestock," Weeks says. "But that tension is rapidly subsiding."

That's because advances and efficien-

CONTINUED »



Agrivoltaic application



Laura and Ches Stewart
of Haw River Mushrooms



Blue oyster
mushrooms

Thanks to a USDA Rural Energy for America Program grant, Sweet Springs Farm paid only half the cost of its \$80,000 solar system installation 13 years ago.

cies mean that food or energy production is no longer a binary land usage choice. Case in point: Farmers Powering Communities (FPC), a partnership between American Farmland Trust (AFT), solar development firm Edelen Renewables, climate technology company Arcadia and Aggreko Energy Transition Solutions, a developer, owner and operator of clean energy infrastructure.

Launched in 2022, FPC's goal is advancing green energy by way of community solar projects, wherein electricity customers team up to fund solar installations in their communities in exchange for a credit on

their electric bills. When FPC develops community solar projects — many of which are located on leased farmland — it prioritizes sites on marginal instead of prime farmland. Where solar development occurs on good farmland, it promotes agrivoltaics that allow farming or ranching to continue alongside energy production.

"We're really focused on dual-use, which integrates agriculture with solar designs," says Jerry Polacek, president of energy transition solutions for Aggreko. For example, solar panels can be installed in ways that allow sheep or goats to graze beneath them,

or tractors to pass under. Shade-loving crops like leafy greens and berries grow especially well under solar panels.

"We've typically got about 25 feet of inter-row spacing, so you get pretty good sunlight in between the rows, with shade-tolerant crops planted right underneath," says Weeks, whose company also is engaged in community solar projects. "And all our panels these days are bifacial, which means they're translucent. They let a fair bit of sunlight pass through to plants underneath and generate additional power from sunlight that's reflected off the ground."

COSTS COMING DOWN

and isn't the only challenge; equally important is equipment cost, which has decreased markedly in the past decade. Take the cost of a 200-kilowatt commercial rooftop system. In 2010, it cost \$5.57 per watt, according to the National Renewable Energy Laboratory. In 2020, it cost just \$1.72 per watt.

"The cost of solar has come down significantly over the last decade," Polacek says. "I'm optimistic about ongoing manufacturing efficiency, more scale, better technology and higher output. All of that is going to continue to help with costs."

Also helping are government incentives. Thanks to a Rural Energy for America Program (REAP) grant from the USDA, for example, Behar paid only half the cost of her \$80,000 system.

Laura Stewart, owner of Haw River Mushrooms in Saxapahaw, N.C., has applied for a REAP grant of her own. If she gets it, she'll convert to solar and purchase an energy-efficient steam generator with which to pasteurize her mushroom substrate.

"These investments would reduce our energy costs by an estimated \$20,000 per year while helping us live our values as regenerative agriculture farmers," Stewart says.

Even more farmers are eligible for financial support to transition to renewable energy through the Inflation Reduction Act of 2022, which includes

CONTINUED »

Preserving our Apsáalooke Culture and Heritage



Little Big Horn College

8654 South Weaver Drive | P.O. Box 370 | Crow Agency, MT 59022 | 406.638.3104

www.lbhc.edu



College of
Menominee
Nation
KESHENA • GREEN BAY

American Indian Culture is at the Heart of The College of Menominee Nation.

The College of Menominee Nation is a 1994 Tribal Land Grant college, chartered by the Menominee People. The College's main campus is in Keshena, Wisconsin, with a second located in metropolitan Green Bay, not far from the tribal lands of the Oneida Nation of Wisconsin.

We walk with students every step of the way

The College of Menominee Nation's Associate of Arts and Sciences Degree in Natural Resources prepares students for employment in the conservation and natural resources fields. Unique to this program is the study of the Menominee People's long history with resource management and sustainability.

Students wanting to build on their Natural Resources degree have the option of earning a Bachelor of Science in Sustainable Agriculture where traditional ecological knowledge, land and sovereignty, policy, and sustainability of Indigenous peoples are the primary focus of the degree.

Indigenous Values and Ways of Knowing...

- Situated on the border of the 235,000-acre Menominee Forest, the College of Menominee Nation strives to learn, grow, and commune as one college, one voice, and one people
- The College offers paid internships for students where hands-on learning, research, skills building, and cultural values are integrated into learning opportunities
- The Menominee Theoretical Model of Sustainability, which is an Indigenous and holistic approach to sustainability that integrates tribal values, is woven into Natural Resources and Sustainable Agriculture coursework

To learn more: www.menominee.edu ☎ +1 715-799-5600 📷 @cmnedu 📺 @collegeofmenomineenation



Huntsinger Farms
in Eau Claire, Wis.



Solar array at
Huntsinger Farms

Huntsinger Farms' system produces approximately 135,000 kilowatt hours of electricity per year, which constitutes about 20 percent of the operation's annual usage.

additional funding for REAP grants and strengthens the clean energy Investment Tax Credit to provide up to a 30 percent tax credit for qualifying investments in renewable energy projects.

"The Inflation Reduction Act was a game-changer," notes Weeks, who says state incentives can make investments even more feasible for farmers who live in places that offer them.

The Inflation Reduction Act didn't just increase the Investment Tax Credit for renewable energy; it locked it in until 2032.

"In the past, solar tax credits were extended on a year-by-year basis, and in some congressional sessions (they) lapsed for a

year," Polacek says. "When you have millions of dollars committed and expect to start construction, and a tax credit's not there anymore, that's tough."

The tax credits in the Inflation Reduction Act provide "an unprecedented level of policy certainty for us as developers to be comfortable making investments today that may not come into operation for two, three or four years," he says.

Therein lies another advantage of community solar: speed. "If you were to try to develop a utility-scale solar project, in many states it could be five or six years before your interconnection

application is reviewed by the grid connector," Polacek explains. "Because they're not as complicated, community solar projects can be online in two years."

Plus, farmers who host community solar projects on their land typically receive an annual lease payment with which to supplement their farming income.

"Farming has always been a low-margin business," Weeks says. "Community solar projects usually occupy only a small percentage of the total available land a farmer has, and it gives them a supplemental income stream while they continue to run their regular operation."

BIG FARMS BENEFIT, TOO

Whether they host a community solar project or install a private system of their own, farms of all sizes can benefit — not just small producers like Behar and Stewart.

One example is Huntsinger Farms, which grows horseradish, soybeans, corn and forage crops on approximately 5,000 acres in Eau Claire, Wis. The world's largest grower and processor of horseradish, which it sells under the brand Silver Spring, it installed a 288-panel solar array in 2020. The system produces approximately 135,000 kilowatt hours per year, which constitutes about 20 percent of the farm's annual electricity usage.

The system cost nearly \$250,000 to install, says Eric Rygg, president of Silver Spring Foods and a fourth-generation farmer. "But after grants and tax incentives, we were able to get our out-of-pocket costs down to \$60,000 or \$70,000. It generates about \$10,000 to \$12,000 worth of energy for us a year that we would otherwise have to (purchase through) the utility, so that's about a five- to six-year return."

Rygg says reducing the impact on the environment — however small — is another benefit.

"I don't expect our investment in solar to change the world as far as the fires in California or the flooding in Florida, or whatever the case may be," he says. "However, small steps in this direction — and a lot of them over a long period of time — are helpful."