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BEHIND THE METER

Businesses move forward to the future with reusable energy sources



PHOTO / AMBER WATERMAN

Scott Cowger at Maple Hill Farm Inn in Hallowell. He says solar power generates about half of the inn's electricity.



BY LAURIE SCHREIBER

A century-old farmhouse, winsome llamas, a flock of chickens, rolling fields encircled by dense woods and distant mountains.

Quaint? Yes. But look again at Maple Hill Farm, an inn and conference center in Hallowell, outside the town's center and not far from bustling Augusta. A wind turbine rises above the woods. Solar panels line the rustic conference center's roof. Rooms are illuminated with LED bulbs. Every aspect of the care of the facility and its guests is informed by technologies and practices related to renewable energy and other sustainable initiatives.

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"It's been a deep-rooted part of my personal philosophy," says Maple Hill Farm co-owner Scott Cowger. "I believe we should all be doing our part, as individuals and as businesses, to counter the effects of climate change."

Maple Hill Farm is one of a growing number of businesses taking energy costs into their own hands, employing a range of reusable energy sources — solar panels, wind turbines, pellet stoves — to save money and reduce their energy footprint. Still, the efforts face challenges. Installation is expensive and government credits can fluctuate. Right now, the state Public Utilities Commission is considering whether to allow Central Maine Power to charge "stand-by" fees, which could be levied to customers who rely on the grid as a backup power source.

At Maple Hill, Cowger and his partner, Vince Hannan, took advantage of federal and state grants, as well as a low-interest loan, to install a combined solar hot water/solar electric system in 2007. The system today generates about half of the establishment's electricity and most of the heat for hot water, as well as some radiant heating in the winter.

Seven years in, Cowger has watched the cost of solar panels drop and the technology's efficiency skyrocket — "good news for other people," he said.

As it turns out, those other people, including increasing numbers of business owners, are enthusiastically embracing "behind-the-meter" solar installations, in part to remediate high energy costs.

Today, solar leads the uptick in behind-the-meter renewables, largely due to a 75% drop in the initial capital investment, said Phil Coupe, owner of ReVision Energy, a leading installer of solar systems. The payback period has fallen from 20 years to nine years.

"The steep drop in costs for solar electric systems has really caused a huge shift in the return on investment that homeowners and business owners can get," Coupe says. "Today, a business owner can get a 9% annual return on investment from a solar array. That return is greatly helped by the 30% federal tax credit. The business owner can also use an accelerated depreciation schedule, similar to a tax credit, on solar equipment. That results in an additional 18% off what the project costs."

In Augusta, Hannaford is using its 50,000-square-foot Cony Street supermarket as a "living laboratory," testing sustainable systems that could be used elsewhere within the 185-store chain.

While refrigeration accounts for more than half the electricity consumed by grocery stores, Hannaford has cut energy usage by 40% at the Cony Street store. Reclaimed heat from a high-efficiency refrigeration system meets almost all of the store's heating needs. Two geothermal wells 750 feet below ground help regulate the store's interior temperature. A 41-kilowatt solar array provides on-site power.

"Sustainability is a major focus of the work we do at Hannaford," says spokesperson Eric Blom. "We know it's the right thing to do, and we know it saves money, which we then invest in lower prices and services for customers."

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In Blue Hill, the Arborvine, which includes a restaurant and brewery, has an 8,000-kilowatt solar array that covers the entire electric load at the brewery. Any extra goes to the restaurant.

"All of my brewing equipment is electric, so it makes sense to have the solar array — basically converting sun energy into heat energy into beer," owner Tim Hikade says. "At the time, the state was providing a pretty good incentive to do solar panels, and the federal government was as well. So we got into it at the right time. The panels would have been prohibitively expensive, otherwise."

In Topsham, Bob and Carmen Garver repurposed a 25,000-square-foot Navy commissary for the Wicked Joe Coffee roasting site. Photovoltaic panels on the roof power operations inside and as well as a charging station for the company's electric cars — an "energy efficiency showplace," the company likes to say. A solar wall on the south side transfers free heat from the sun to an HVAC system, lowering heating costs in the winter. The owners hope to expand the existing photo-voltaic array to generate enough electricity for an on-the-grid/credit swap that will power Bard Coffee, a coffee shop in Portland the Garvers also own.

"It's a huge part of our ethos as a company. We look at sustainability throughout our supply chain," Bob Garver says. "A lot of people are looking to large companies that have a lot of resources to put toward these things. I think it will be an inspiration for smaller companies to look at us and say, 'Hey, we can do this, too.'"

In Freeport, Haraseeket Inn owner Nancy Gray had a vision of sustainability from the inn's inception in 1985.

"She's very innovative and forward-looking," says her son, Chip Gray. "There was lots of engineering and head-scratching."

The inn is equipped with a sophisticated HVAC system that reclaims waste heat from refrigerators, walk-in coolers, ice machines and freezers and uses it to warm up guest rooms and public areas. It can also move heat from the sunny side of the building to cooler rooms on the shady side. To power its vehicles, the inn processes used cooking oil into biodiesel.

"That's just plain cash on the barrelhead. There's a monetary benefit to not being wasteful," says Chip Gray.

In Portland, Oakhurst Dairy, which was founded in 1921, installed one of the largest solar thermal-energy systems in New England in 2008. The system — about 2,700 square feet of panels atop the building's roof — cut its fuel oil use by 10%. In 2009, Oakhurst installed 216 photo-voltaic solar panels at its Waterville distribution center, providing 15% of the building's electricity.

Bill Bennett, senior adviser, past president and grandson of Oakhurst's founder, says government can play an important role in the development of sustainable projects, such as methane digesters that turn manure into electricity.

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"But they're expensive projects," Bennett said. "Generally, a farm has to have 500 cows or more for this to make sense. Other farms around the country that have installed digesters often have thousands of cows. So as the technology gets better, hopefully there will be a way for smaller farms to utilize it. That would be an area where government could be of help."

In Bar Harbor, Jackson Laboratory, a nonprofit biomedical research institution, burns Maine-sourced wood pellets to generate steam for heat and conversion to electricity. Facilities engineer Norm Burdzel says the biomass boiler, installed three years ago, burns 10,259 tons of pellets a year, cutting its fuel oil use by 75% and saving \$1.17 million annually. Electrical output from an accompanying steam turbine will eventually cover up to 8% of the lab's use, once fully commissioned.

Jackson Lab's high-performance, low-emission boiler system, manufactured by the Swedish company Petrokraft, is believed to be the first boiler of its kind in the United States. In addition to wood pellets, it can burn natural gas or fuel oil, or a combination of two at a time.

"It has worked out very well," said Burdzel. "Our return on investment, just with oil and operating costs, is about 3.5 years. So this year we will pay for that expenditure."

Colleges have proven to be major incubators for renewables.

In Waterville, Thomas College gets up to 15% of its electricity from photo voltaic solar system, which has been installed in two waves over the past four years. An open-loop geothermal system enhances heating and cooling.

In Brunswick, Bowdoin College this summer will install 4,900 photovoltaic panels across three acres at the former naval air station. The panels will power athletic facilities, supplying 8% of the college's overall electric power. Bowdoin already employs a cogeneration steam turbine in the central heating plant, solar hot-water panels atop its dining hall and a geothermal heating system — each contributing to the overall power supply.