

# Living well on renewable power

## A visit to Neal Livingston's Mabou homestead

by Susan Paddon

If I had to identify three fundamental principles for living well using renewable power, based on my visit with Nova Scotia filmmaker, artist, and environmental activist Neal Livingston, they would be simplicity, multiplicity, and balance.

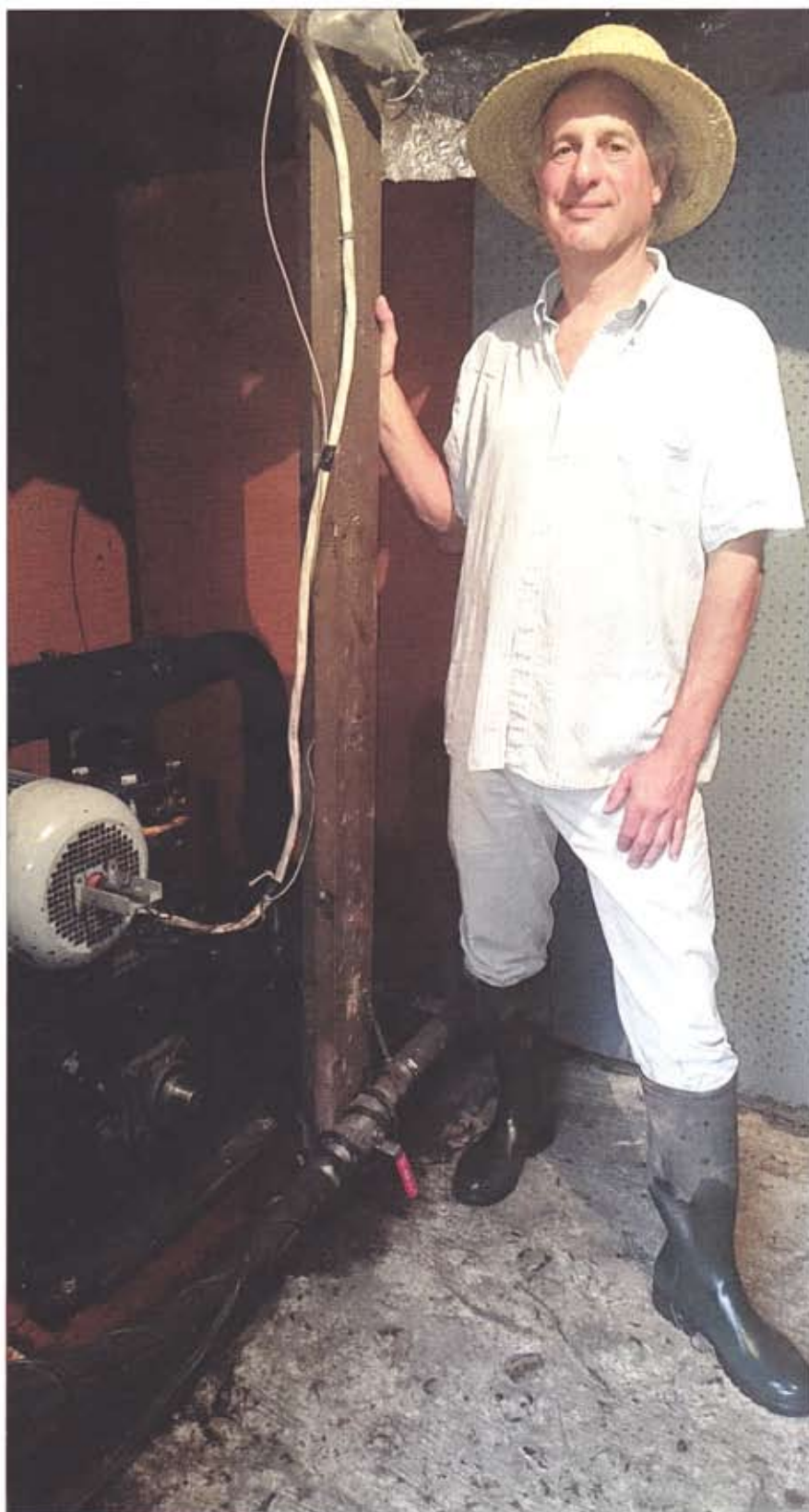
"Keep it simple," Livingston says. "You don't want anything in your house that you can't understand. If you can't understand it, chances are, you can't fix it. Simple systems can be maintained over long periods of time."

We are sitting in his Mabou home, on Cape Breton Island, overlooking a scattering of intriguing cedar-clad outbuildings, a bountiful vegetable garden, and stunning flowerbeds. Livingston is also a producer of maple syrup, documentaries, and renewable energy. He was the first landowner on Cape Breton Island to have his woodlot eco-certified, and in 2008 he was named Woodlot Owner of the Year for Nova Scotia's eastern region.

The home he shares with partner Peggy Cameron sits up on a hillside in a valley of five small mountains, with a brook cascading down one side. To walk around the homestead is to activate the senses. The home is not only a brilliant design and a renewable energy show-piece, it is a living work of art. More to the point, it operates on a series of "simple systems."

"I bought my micro-hydro turbine in 1980 and it is still the same turbine I'm using today," says Livingston. It generates 360 to 3,400 watts, depending on the amount of water in the small creek with 100 feet of head. At full capacity the system uses 3/4 of a cubic foot of water per second; to operate at its minimum, it needs a tenth of that.

"I got into micro-hydro out of necessity," Livingston says. As a filmmaker he has never been averse to taking risks; moving into the Cape Breton woods with no power was hardly a stretch for the then 20-something's imagination. Today in Nova Scotia, setting up a micro-hydro system means obtaining water rights from the provincial government – which can



Neal Livingston of Mabou, N.S., in his micro-hydro power house.



The turbine operated by this brook gives Neal Livingston between 360 and 3,400 watts of power, depending on water flow.

take approximately a year, if the site is deemed environmentally acceptable.

Over the years Livingston has learned on his own, and through the friendship of others who have similar systems, how to live off-grid with micro-hydro technology, including how to service and improve his equipment and set-up. "We didn't have Google when we were all getting into it, so you had to read books and try to talk to people who were doing the same thing," he says. "We're actually really lucky on Cape Breton Island, as there were a few of us setting up systems at the same time."

In 1994, just before the privatization of Nova Scotia Power, the utility offered to run power lines to Livingston's home as well as others on unserved public roads. "Of course I said yes, I would have been crazy not to," he recalls. But being connected didn't mean Livingston stopped using renewable energy. Instead, he became the first person in the province to have a net-metered micro-hydro system, using power from the grid and feeding power back in, according to variations in his production and consumption.

### CHOICES

Everything in Livingston's home suggests self-reliance, right down to the delectable homegrown food on our plates. Even the wood flooring is from his own forest land. Having simple systems that you can maintain, he says, is also about having multiple choices for energy. "If the sun is not shining, there may be enough water power to heat my home, and if not, wood heat works beautifully too."

The house incorporates passive solar design. Large south-facing windows sit strategically under a slight overhang, to provide just enough shade in the height of summer. Just inside the windows, providing both a centrepiece and a functional heat sink, is a stone Trombe wall (named for French engineer Félix Trombe) sourced from local rock.

On the outside of the three-story house (the bottom floor is a walkout basement), a CanSolAir solar air furnace made from recycled aluminum cans has been installed. There is also a solar hot water system, which has provided 30-35 percent of the home's hot water needs since 1986.

For cooking, Livingston uses a gas stove and oven – another simple system, it doesn't require electricity to light, as most newer models do. "It's got to be 40 years old," he says of the appliance, "but there's nothing on it to break."

There are two wood stoves in the house, the larger one in the basement for the coldest days and a small one on the main floor for the shoulder season. "Good wood storage is very important," notes Livingston. "You have to burn dry wood." He has firewood stacked in several places, and stores for several years in advance.

### CONSUMING LESS

Livingston believes there is no magic bullet for solving our energy problems, but we can make improvements in a myriad of ways. "Canadians can live more moderately in terms of energy use without sacrificing our standard of living," he says. "Not everyone can have micro-hydro, but passive solar – solar hot air and solar hot water – is an easy thing to do no matter where you live, and PV (photovoltaic solar electricity) has become more of an option as well. It's really about looking at your total energy use picture, to know where you can consume less. What vehicle are you driving, for instance? All of these things contribute to the whole. It's not about being fixated on a specific technology."

He suggests Canada should look to other nations that have made progress on this front. "I believe in advanced mimicry. If something is working for the good somewhere else, why aren't we all doing it? We should be thinking about peak times for consumption, and how we can put less stress on the grid."

Livingston thinks Halifax's Solar City program, which helps homeowners with financing for solar energy installations, should be expanded right across the province. "Implementing renewables will never work if left to consumer choice," he says. "It's really about social policy, like how we all got the telephone, or road, or TV, or the Internet."

### RENEWABLES


In 1984, four years after setting up his home power system, Livingston went on to launch the first small commercial hydro business in modern times, selling power to Nova Scotia from a 200 kW turbine in Guysborough County. This experience eventually led to him and Cameron partnering with a small Ontario developer to build a 5.6 mW wind energy project in 2012, using Enercon turbines installed at several locations in eastern Nova Scotia and Cape Breton.

From conception to being on-line, the project took nearly 10 years. Livingston would like to see a bigger push for the shift to renewables.

"In Nova Scotia we need to get as far off coal for electrical power as fast as we can," he says. "Solar and load management should be quickly implemented on our homes as public policy, making jobs and getting us away from trying over and over again to be making jobs in the pollution industries. There's no reason why passive solar designs shouldn't be part of the building code. All new houses should use this simple technology to reduce energy consumption."

And while he advises that we keep things simple, that doesn't mean he isn't for new technologies such as the Bluetooth connectivity he has installed for his maple sap collection. "You have to keep up with the times and see what's out there. Change can be really good."

(Susan Paddon lives in Margaree, N.S.)



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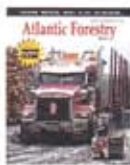

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