

WEC CO-OP CURRENTS

Do-It-Yourself Power

Plainfield Couple Find Joy In Solar, Wind Generation

Not everyone would see it the way Ed Hutchinson and Alexandra Thayer do. Ed is retired, since 2004, having spent a career in state government moving among the Finance Department, the Tax Department, and others besides – but he may never have worked harder in his life than he has over the past three years installing not one, but *four* renewable energy systems at the couple's hilltop home on East Hill Road in Plainfield. Erected along the south-facing wall of their old yellow clapboard house, and in the open field that sweeps up behind, where the grass is tended, inadequately, by Ed's sister's horse, are solar hot water, solar net-metered, and solar non-net-metered electricity systems (the last being home-produced power that is not tied into the grid), plus a 30-foot-high wind turbine that spins pleasingly in the breeze and which is Alexandra's favorite.

Ed has mounted and installed all of these systems – labor that includes not just complex wiring to various inverters, heat exchangers, gauges, and switches, but also the grunt work of excavating five-foot holes (through ledge) for the piers for the solar arrays, pouring concrete footings, and trenching the conduit to the inverters in the house and barn. To some, this might sound exhausting. But Ed, affable and

bearded, says his blood pressure has dropped, without medication, since he replaced office work with this manual and mental labor, and he's never felt better.

For Alexandra – an attorney, formerly with the AG's office, with Woodbury College, and in private practice – the rewards of the couple's renewable-energy systems are quite spiritual. Alexandra is retired, too, and is one of the alternating hosts of The Quilting Hour on WGDR Radio at Goddard College. She credits Carl Etnier, a fellow radio host whose program, Relocalizing Vermont, awakened in her a sense of the community aspect of producing electricity and intermingling it with her neighbors' power through net metering and Washington Electric Co-op's electricity system.

"Listening to Carl," Thayer says, "you begin to think what you can do to make a contribution, to see the opportunities we have before us, and to know that it's not always, and only, about the money. It brightens my day, every day, to know that these things out in my field are making electricity, and that I can wash my clothes in water heated by the sun. If we generate more power than we can use or even get credit for [through net metering, which credits the couple's account at

continued on page 4



WEC member Ed Hutchinson stands proudly on a construction scaffold behind his 1.3- kW solar array. The power generated by this 12-panel array and the 1-kW wind turbine on the right goes to a battery bank in Ed and Alexandra Thayer's basement.

Work Gets Underway On New East Montpelier Substation

Long-Term Benefits, But Short-Term Exposure

Work commenced on schedule this summer on the reconstruction of Washington Electric Cooperative's East Montpelier substation. The \$904,400 project, which received 50 percent of its funding from a federal grant under the 2009 American Recovery & Reinvestment Act, will improve service for 1,624 Co-op members whose power is channeled through that substation. It will provide better service more generally for the Co-op, too, as the modernized facility will further enhance the Co-op's "redundancy" – the interconnec-

tion among several substations that enables WEC to provide alternative routes for power to travel when a part of the system is affected by an outage. Such redundancy can narrow the scope and impact of power outages.

The first step in the project was to dismantle and remove the old East Montpelier substation, because the new one will occupy the same footprint. That was done in early July. Plans call for the construction project to be completed by mid September or early October.

Washington Electric Co-op owns

continued on page 8

Washington Electric Cooperative

East Montpelier, VT 05651

Inside

Vermonters' best interests must come first. Why state officials should think deeply and creatively about the CVPS/Gaz Metro deal. See President's Message, page 2.

Membership survey indicates general approval of WEC's service, and reveals demographics about the rural residents of Co-op territory. Page 3.

Fuel buyers groups swinging into action. Don't wait until winter to line up fuel supplies at lower costs. Page 8.

Don't ignore... The Co-op Store. Every issue of *Co-op Currents* brings you deals on surge protection, home-performance assessments, and more. Page 7.



Act 47 – the Vermont Energy Act of 2011 – seeks to stimulate individual and community renewable energy projects. Page 6.

President's Message

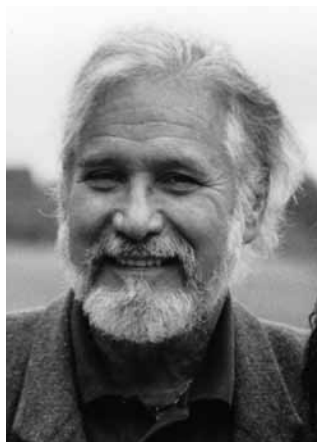
WEC Lines Up Its Team For The Building Renovations

GMP, CVPS, and Gaz Metro: Proposed Union is Everyone's Business

By Barry Bernstein

Well summer has finally arrived, and with it some very warm weather. As we all try to find time to enjoy this season that is so special in Vermont, your Co-op is in the midst of much activity.

One of the main things we're doing, of course, is renovating our East Montpelier office building after the devastation of the May 25 flood. As we recounted in the June issue, the damage to the first floor was extensive, caused by several inches of water and mud, and worsened by septic waste. Most of our central-office employees are now working in a doublewide trailer temporarily in the parking lot, and although the conditions are comfortable I know that the disruption to their work routine has



at times made things difficult for them. On behalf of our Board of Directors, and our Co-op members, I want to take time to acknowledge and thank the WEC staff. The flood displaced them at the start of an extremely busy summer season when they must get projects done before winter sets in. The period

just after the flood was quite hectic, as our Member Services staff went to hastily arranged quarters at Goddard College so they could try to answer our members' needs before the trailer arrived. Some of the workers have moved upstairs in the office building, and some to our warehouse and garage off of Route 14, a mile away.

In the middle of all this we have had a few summer outages, and folks have risen to the occasion to handle calls

Part of the reason Canadian companies are so interested in ownership of Vermont utilities is that they see Vermont as a pathway for transporting Canadian power to large power markets along the U.S. eastern seaboard.

and dispatch our line crews in situations that are far from "normal." So, to our staff: Thanks very much to each one of you; WEC is proud of your endurance, dedication and patience.

Update on Building Renovation

Your Co-op has engaged Black River Design, of Montpelier, as our architect to help with the major renovation of the WEC main offices. John Rayhill, a principal of BRD, will lead the team, along with staff members Heidi Davis and James Beasley. John and Heidi are WEC members, and James will soon become one.

In addition to the architects we are working with Andy Shapiro, of Energy Balance, Inc. Andy is a Co-op member and a respected energy-efficiency consultant. He will help us make the best energy-efficiency choices for the renovated office.

Due to the flooding and sewage backup in the building, the entire downstairs will need to be gutted, and at a minimum the building will get a very tight envelop, from top to bottom, with new energy-efficient windows, lighting, new siding, environmentally friendly materials throughout, and an accessible entrance that is free of steps. The Co-op's building committee, composed of three people from the Board of Directors and three WEC staff members, will help narrow down the options and opportunities for the WEC Board to consider.

Vermont's Energy Future: CVPS Sale to Gaz Metro/GMP

The Central Vermont Public Service Corp. (CVPS), Vermont's largest utility, has accepted Gaz Metro's purchasing offer. Gaz Metro, a Canadian company, already owns Green Mountain Power Corp. – Vermont's second-largest electric utility – and Vermont Gas, the natural gas utility that serves northwestern Vermont. Assuming that the deal


obtains regulatory approval, CVPS and GMP will be merged to form a single utility serving 70 percent of Vermont electric ratepayers.

While the march is on to market this as good for Vermont and Vermont ratepayers, "who will save by being customers of a larger, more efficient electric utility" (we are being told), it is critically important to fully evaluate the many implications and layers of this proposal. One of the most important and outstanding issues is the ownership of VELCO, the company that controls our electric transmission highways.

State Sen. Vince Illuzzi, chair of the Senate Economic Development, Housing, and General Affairs Committee, and State Rep. Tony Klein, chair of House Energy & Natural Resources Committee, have both voiced concern about control of VELCO and are calling for public ownership as part of approval of the merger.

Part of the reason Canadian companies are so interested in ownership of Vermont utilities is that they see Vermont as a pathway for transporting Canadian power to large electric power markets in metropolitan areas along the U.S. eastern seaboard. GMP/Gaz Metro's offer to transfer 30 percent of their 70-percent ownership in VELCO, to be placed in public trust, is in response to growing public concern about VELCO ownership.

However, Sen. Illuzzi and Rep. Klein's call for public ownership more fully addresses the real concern of who controls and ensures that future transmission decisions are in the best interest of Vermont and its citizens. Sen. Illuzzi, on the Mark Johnson show on WDEV, supported the idea of a cooperative model of one vote per utility. He pointed out that the best interests of the stockholders of the new investor-owned electric utility and the best interests of Vermont ratepayers would not always be the same.

The proposed sale of CVPS places a lot of political clout in one company which is in turn owned by a foreign company. It is a big change in Vermont's energy map, and one that needs to be very closely reviewed before everyone jumps aboard. The WEC Board is also reviewing the recent events concerning the sale and may wish to offer its voice as more details come forth during the Vermont Public Service Board deliberation over the next year. 

Co-op Currents

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WEC is part of the alliance working to advance and support the principles of cooperatives in Vermont.

Board of Directors

President	BARRY BERNSTEIN (May 2013)	1237 Bliss Road, Marshfield, Vt. 05658 Bbearvt@aol.com	456-8843
Vice President	ROGER FOX (May 2012)	2067 Bayley-Hazen Rd., East Hardwick, Vt. 05836-9873 rfox@pivot.net	563-2321
Treasurer	DONALD DOUGLAS (May 2014)	21 Douglas Rd., East Orange, Vt. 05086 dondougla@gmail.com	439-5364
Secretary	MARION MILNE (May 2014)	1705 E. Orange Rd., W. Topsham, Vt. 05086 marion.milne@milnetravel.com	439-5404
	ROY FOLSOM (May 2013)	2603 US Rt. 2, Cabot, Vt. 05647 RoyGrnsy@aol.com	426-3579
	DAVID MAGIDA (May 2014)	632 Center Road, Middlesex 05602 vtmagida@aol.com	223-8672
	ANNE REED (May 2013)	3941 Hollister Hill Rd., Marshfield, Vt. 05658 annereed48@gmail.com	454-1324
	RICHARD RUBIN (May 2012)	3496 East Hill Rd., Plainfield, Vt. 05667 rrubin@sover.net	454-8542
	SCOTT SKINNER (May 2012)	28 Leland Farm Rd., Middlesex, Vt. 05602 scottskinner@gmail.com	223-7123

AVRAM PATT
General Manager
avram.patt@washingtonelectric.coop

WILL LINDNER
Editor
Willind@aol.com

TIM NEWCOMB
Layout

Editorial Committee

Avram Patt Donald Douglas David Magida Will Lindner

The Board of Directors' regularly scheduled meetings are on the last Wednesday of each month, in the evening. Members are welcome to attend. Members who wish to discuss a matter with the Board should contact the president through WEC's office. Meeting dates and times are subject to change. For information about times and/or agenda, or to receive a copy of the minutes of past meetings, contact Administrative Assistant Deborah Brown, 802-223-5245.

Taking The Pulse Of The Membership

Survey of WEC Members Reveals Their Impressions of the Co-op

In 2005 Washington Electric Cooperative contracted with a North Carolina-based research organization to conduct a professional, scientific survey of WEC members, and report on their level of satisfaction with the Co-op and their impressions of its strengths and shortcomings.

At the end of last year – November 2010 – WEC hired the same company, TSE Services, to perform a similar survey. TSE is a subsidiary of a North Carolina “statewide” – the term that applies to umbrella organizations that represent and assist rural electric cooperatives in the many states where there are lots of them. More than most research and polling firms, therefore, TSE understands what electric co-ops are, and their relationships to their member/owners.

The 2005 and 2010 surveys were not identical, although the recent survey probed many of the same subject areas (sample: “Using a 10-point scale on which ‘1’ means ‘very dissatisfied’ and ‘10’ means ‘very satisfied,’ how satisfied are you with Washington Electric Cooperative?”). It also asked members what was most important to them as utility customers (“reliable service” came in first with an average score of 9.69 out of 10) and how they thought their Co-op performed in those categories (WEC scored 8.52 in “reliable service”).

Where the 2010 survey differed from its predecessor was in some of the questions WEC specifically asked TSE to explore, such as what percentage of members used the Internet (the answer: slightly more than two thirds – 67.33 percent), and how they access the Internet (of that 67.33 percent, three out of 10 – specifically, 29.59 percent – use DSL, 18.34 percent use cable, 10.06 percent use satellite, and 6.51 percent have wireless access; nearly a quarter – 22.49 percent – use dial-up telephone connections, and 32.27 percent report that they are not connected to the Internet at all).

“Questions like that were intended to help us learn the best ways to communicate with our members,” said WEC General Manager Avram Patt. “Primarily, the membership survey is about finding out what members consider to be our strongest and weakest assets, which helps us decide where to concentrate our efforts for improvement. But we also included questions that, more generally, indicate who our members are, in terms of their age, their needs, their resources. As a co-op, we are owned by our members, and our board of directors and many of the staff are Co-op members; still, the more we know about the communities we serve the better we can do our job.”

There was also another important reason behind the November 2010

survey: Periodic surveys are now required of many utilities in Vermont by the state’s Public Service Board (PSB) as part of the mandatory “Service Quality and Reliability Monitoring and Reporting Plan,” known as the SQRP. WEC files SQRP reports with the PSB regularly, and publishes an annual, comprehensive report in the April “Annual Membership Meeting” issue of *Co-op Currents*, as the PSB requires.

The surveys, though, are not annual, at least for WEC.

“The requirements are different among the utilities,” Patt explained. “The larger companies have to do a customer survey every year. Some of the really smaller companies don’t need to do it at all. We’re in the middle, so they’re requiring that we perform a survey every five years.”

Strengths and weaknesses

The results of the November 2010 survey are quite similar to those of 2005. Both surveys were conducted by telephone, using a random sampling of 250 members in 2005, 251 in 2010. The scoring techniques in some areas were different, making comparisons a little difficult. In 2005 TSE reported that 76 percent of WEC members were “very satisfied” with their Co-op’s performance, while in 2010 the ultimate score was provided as a “mean” rating on the one-to-ten scale (defined above) of all the respondents. Regarding members’ overall satisfaction, the 2010 survey yielded a score of 8.54.

In other areas, TSE used the point system in both 2005 and 2010, so an “apples-to-apples” comparison is possible. Both times the Co-op

scored well (around 9.00) in responses to whether WEC’s employees are “friendly and courteous” in interactions with members, and whether they are “knowledgeable and competent” (8.79 this year).

Perhaps the most telling results were in a “Gap Analysis” exercise. This was designed to determine what people think are the most important facets of WEC’s operations, and how

Washington Electric is doing in those categories. As mentioned above, “reliable service” is what members most want (scoring 9.69), and WEC’s mean score in providing reliable service was 8.52. Tied for second and third in importance, at 9.42, were “good value” and whether the Co-op helps its members “manage [their] energy.” Here, WEC had its lowest scores, at 7.90 for “good value” and 7.45 for helping “manage energy.” “Handling complaints and problems” was fourth-most important in members’ eyes, at 9.40, and WEC scored 8.34 in that area. Of the eight areas identified by the questioners, “looking out for your best interests” ranked lowest, though still with a respectable 8.40 that indicates members do think it’s important. WEC was close, scoring 8.28

The same categories – “good value” and “helping members manage their energy” – where WEC scored lowest in 2010 were also where the Co-op scored lowest in 2005 (both around 7.5, virtually the same as the 2010 scores.)

“This is where we’re weakest,” Patt acknowledged, “although our scores are respectable in those categories. In my view, this is explained by our rates. Washington Electric Co-op’s rates are high, there’s no question. We serve the

most rural utility territory in the state, and on average have only around eight connections per mile of line to bear the cost of that service. That makes it impossible for us to have rates comparable to companies with a much higher density of customers to share the costs. So when members think about ‘value’ they’re thinking about the cost, which makes sense.”

The manager also acknowledged that WEC’s scores in “good value” might have been further affected if the survey had been conducted a couple months later. In November 2010, WEC had not yet enacted the rate increase that went into effect (provisionally, while the PSB evaluates the case) in January.

Regarding the survey results for “helps you learn to manage your energy use...” This is an area where Vermont is different from nearly all other states, in that it has an “energy efficiency utility” (Efficiency Vermont, or EVT), financed largely by a surcharge on people’s electric bills. Chartered in 2000, EVT has largely taken over those responsibilities from the state’s electric companies; for the previous decade Washington Electric Co-op was recognized as a leader in promoting demand-side management programs, providing incentives for energy-efficient construction, and generally helping members reduce their energy usage.

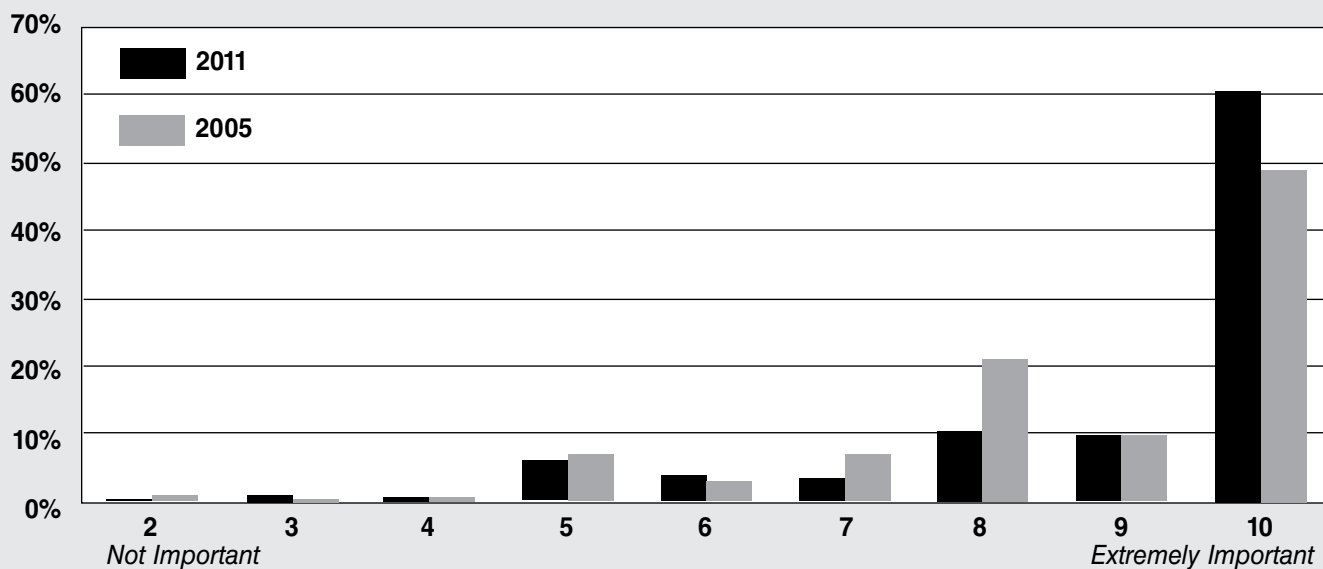
“Those kinds of incentives aren’t ours to offer anymore,” said Patt. “EVT has taken over that role on a statewide basis, and that’s a very progressive and unique statement about Vermont.”

Who we are

Here are some other things the recent survey revealed:

- More than half (54.48 percent) of WEC’s members think of themselves as “customers” of the utility, rather than “member/owners,” which in fact they

Importance of Renewable Energy Sources



continued on page 7

Do-It-Yourself Power

continued from page 1

WEC for the kilowatt-hours they send into the Co-op's system], it goes to our neighbors. That's joyful for me. And I think that has value."

Domino effect

Ed and Alexandra didn't have solar energy in mind when they purchased their home in 1989. Both had lived in places where they had felt closed in – even Ed, who is a Plainfield native – and they craved the views and open spaces of the East Hill Road property, which consisted of a house and barn, a ramshackle outbuilding or two, and some 25 acres. But various things – their interests and acquaintances, available time after retirement, and the state of the world's economy – nudged them toward the changes they've made in their home and lifestyle.

As ham radio enthusiasts they had gotten acquainted with fellow ham operator Virgil Hall of West Topsham, who is also known as Charlie, and as "The Barrel Man," and as one of the area's earliest and foremost proponents of home-produced renewable electricity.

(Charlie Hall and his home-generation and conservation systems were featured in *Co-op Currents*, July 2010.) Ed had begun thinking about a solar hot-water system as he contemplated the silly notion of burning expensive fuel oil in the summertime just to heat water. "The price of oil was going crazy," he remembers (pretty much a constant state of affairs).

A "drain-back" system, in which water is pumped through the solar panels, has some advantages, but Ed settled on an antifreeze-based solar hot-water system that would be more compatible with winter.

Still, there was this concern: If a power outage should occur in the



Proud to do their part. Ed Hutchinson and Alexandra Thayer feel good about providing much of their own electric power and contributing surplus power to the grid. The couple also has a solar hot-water system (not pictured).

summer and the pumps weren't able to circulate the antifreeze, the coolant could boil and corrode the panels. "Washington Electric has become increasingly reliable," Alex interjects, "but power outages can happen."

So that led to a broader vision

– contemplation of a system for backup energy to power the pumps in case an outage occurred.

That's where Charlie Hall came in. Always with his nose in the air for renewable-energy components, he had picked up several 106-watt solar

photovoltaic panels somewhere and offered them to Ed and Alex for a song. Now the couple began thinking about other conveniences and necessities they'd rather not do without in the case of an outage. The list grew: the pump for their deep-water well, the refrigerator, the boiler, the computers, some lights and wall sockets...

"It was out of control," Ed laughs.

The writing was on the wall: They

were headed toward some form of more comprehensive home-made energy system. And Alex interjects again, with girlish enthusiasm, "And I really wanted a little wind turbine!"

They reconciled themselves to the costs – "The dollar is tanking against the euro," says Ed, "so it's better to spend it on hardware" – and began researching options. Meanwhile they got started with a hot-water system and erected the 12-panel photovoltaic (PV) array in the back field that they'd gotten from Charlie Hall; combined with the 30-foot wind turbine (Alex got her wish), the PV array was connected to a battery backup system in their cellar.

But a larger, grid-tied and net-metered system was still missing, and they wanted it.

They contemplated going with a program offered by Williston-based All Earth Renewables wherein, for a \$1,000 up-front investment by Thayer and Hutchinson, the company would install and maintain a net-metered solar electric system at their property which they could purchase after five years for its market value (estimated at a third of

the original cost). Attorney Thayer parsed the financial particulars and wondered if it was the best way for them to go.

"But by now we had gotten excited about this," she recalls, "and Ed said, 'What do you think? Should we do it ourselves?' We called Washington Electric, and Bill Powell [director of products and services] said, 'Oh sure, as long as it has an inverter that's compliant with our system.'

"I knew that meant that I was going to be the cheerleader while Ed did all the work!"

And indeed, they have both excelled at their roles. Ed has tackled all the technicalities, and Alex can wax poetic at the drop of a hat on the cultural and aesthetic values of extracting electric power from nature – and of purchasing much of their intricate system from local businesses and entrepreneurs. Between their ham radio apparatus and their wind and solar arrays, their house and property sport an impressive aerial matrix of wires, antennas, and contraptions. But it is elegant in its way, and speaks to who they are and what they believe in.



Washington Electric Co-op has 78 members who have obtained Certificates of Public Good (CPGs) from the Vermont Public Service Board and have bought or constructed renewable-energy systems to participate in net metering.



Ed Hutchinson installing and wiring one of the family's two 2,500-W, pole-mounted PV arrays (above and below). It's the two pole-mounted systems that are tied into the grid and, converted from DC to AC power, contribute to the Co-op's electricity network. Photos courtesy of Ed Hutchinson.



Heading toward net zero

So what, exactly, have they come up with there on East Hill Road?

First, of course, are the three solar hot water panels on the south-facing side of their house. They actually purchased five of these, from Radiantec Inc. of Lyndonville. Ed is still contemplating where and how he will mount the remaining two, but he has big plans for them: They will supply radiant floor heating for the home. The solar hot water system sends antifreeze through pipes interlaced behind the dark screen that captures and intensifies the sun's heat. The heated fluid circulates into the basement, where two heat exchangers, roughly the size of paperback novels, transfer the heat to well water that is stored in a pair of white tanks. The system involves three small pumps – one to pump the heated antifreeze through the heat exchangers and the others to pump the water through the exchangers.

Out in the field behind the outbuildings are three large solar arrays.

The 12-panel array that came from Charlie is mounted on a wooden frame that Ed constructed, and is positioned differently from the other two – “steep and a little east of south,” as Ed puts it – to maximize production according to the sun's angle across the field in winter and early in the day.

This array, rated at 1.3 kilowatts (kW), and the 1-kW wind turbine nearby, are not net metered; the power goes to the battery bank in the basement. It powers the “protected loads” during the daytime and switches on automatically if the grid goes down. The wind turbine generates much less power than the solar array – 400-500 watts in a good breeze – but because it can generate at night Ed estimates that it provides 10 percent of the power for the battery system.

Some 120 feet away, higher in the field, are the other two solar arrays, each with 11 larger panels (rather than 12; panels are missing in an upper corner of both). They are Schott 230-W panels purchased from a company in Arizona, mounted on commercial

“It brightens my day to know that these things out in my field are making electricity, and that I can wash my clothes in water heated by the sun. If we generate more power than we can use, it goes to our neighbors. That's joyful for me.”

— Alexandra Thayer


All This And Pellets, Too

WGDR radio's Carl Etnier (“Relocalizing Vermont”) aired a program a few years ago with some enthusiastic Montpelier High School students, that made a compelling case for pellet stoves. Alexandria Thayer and Ed Hutchinson happened to be listening.

So, while the boxes of parts for the windmill, the solar hot water system, and the 1.3-kW PV battery-backup system were piling up in the living room in the summer of 2008, they took it upon themselves to install a pellet stove. The rewards were pretty immediate: The stove has cut their fuel oil consumption from 1,200 gallons per year (including their hot water, which is now heated primarily by their solar panels) to 300 gallons this past winter. True, they've also gone through two tons of pellets per year, which they've purchased in 40-pound bags; but that was at a total annual cost of only around \$550, still a great savings. They are considering going to bulk storage to eliminate their use of plastic bags and get a better price on the pellets.

As retired folks, Thayer and Hutchinson have had the time to invest in these energy-conservation and renewable-energy projects, and Ed has had the skills to do the installation and maintenance. Not everyone has those advantages (though Alexandra is quick to offer her husband as a resource for others; Ed smiles and agrees to the idea, minus the digging, trenching, and pouring concrete). But they have also taken advantage of opportunities that exist for everyone: local alternative-energy entrepreneurs that provide leading-edge technologies; state and federal tax incentives, and net-metering regulations designed to encourage renewable generation. They take pride in the fact that most of the components of their systems were manufactured in the USA. They are also delighted to have provided business to local companies for many components of their systems.

Vermont doesn't have the nearly ceaseless solar opportunities of, say, Arizona or Texas. But it is generally considered to have more solar advantage than Germany, where PV plays a comparatively large role in the country's energy mix, and when the sun shines on Ed Hutchinson and Alexandra Thayer's open, grassy field, their solar panels can be quite productive. Plus, the wind usually stirs, and sometimes blusters, across the field, spinning the three blades of their small wind turbine.

The energy is there for the taking, and that's what Ed Hutchinson and Alexandra Thayer have done, bringing joy to them both. 




racks and supported by vertical poles sunk into the ground. These are the net-metered installations. Their DC current travels through the trench Ed dug to the barn, where they attach to an inverter that changes it to AC power matching the Co-op's electricity.

Ed and Alex' house, therefore, is not off-grid. They purchase power from Washington Electric Co-op, but sometimes their systems are so productive (and/or their usage is so low) that they're producing more power than they need and the excess feeds into the Co-op's system. On a sunny morning in early July Ed peers at a meter that keeps track of how much electricity they've provided to

Washington Electric and the grid.

“3,476 kilowatt-hours generated since we started on December 4,” he reports. “The system returns about 20 kWh to the grid on a sunny day and has been more than net zero since March. We have used 997 kWh from WEC since December.”

Given the summer weather, that will be net zero in a few weeks, with the excess power brewed there on East Hill Road being absorbed by the Co-op and, indirectly, the couple's friends and neighbors.

As Alex would say, that's keeping it local. 

Net Metering – Yesterday, Today, and Tomorrow

Vermont Energy Act Makes Changes

There's no feeling quite as good as walking around with the jingle of kilowatt-hours in your pocket.

Except, of course, that's impossible. Kilowatt-hours are a theoretical construct used to quantify electricity production and usage – and if they did exist tangibly they'd be more apt to tingle than jingle.

Still, changes made by the 2011 Legislature to Vermont's net-metering law could add some jingle to the pockets of people who make their own electricity and provide their surplus power to the grid. They won't be paid for their kilowatt-hours (kWh), but they'll be able to pay less on their electric bills.

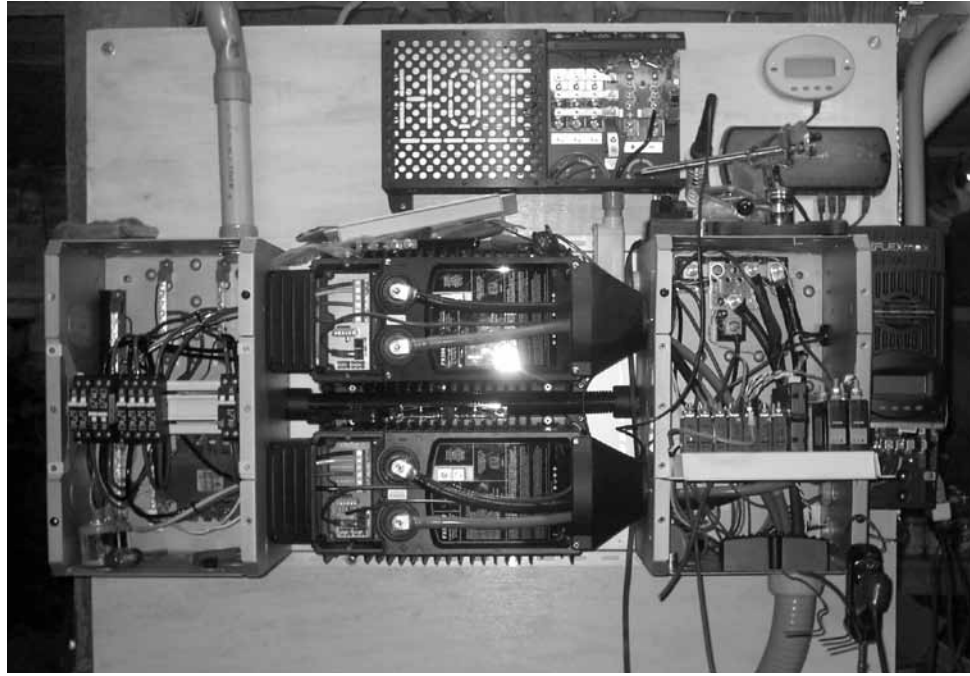
Until May 24, when Act 47 became law, the practice in Vermont had been for electric utilities to credit their net-metering members (or customers) kWh for kWh, for surplus energy they produced and contributed to the electric system through their service lines – basically, running their meters backward. The utility kept track of how many kilowatt-hours they were contributing and credited them accordingly on their next bill.

This spring the Vermont Legislature passed H.56, the Vermont Energy Act of 2011, now known as Act 47. Act 47 made three primary changes to Vermont's net-metering system. The first of those changes is important for WEC members who are net-metering or considering doing it; the second does not presently apply to the Co-op; and the third could become important as communities in Washington Electric's territory and throughout Vermont begin to take collective action to reduce their energy consumption.

I. Cash, not credit

Under Act 47 people with net-metering systems are now credited in dollars, not kilowatt-hours, for the home-produced power they provide to the electric-distribution system. This, of course, applies only to people with "net-excess generation" (NEG) – those who, at times, generate more power than they consume and therefore supply their utility with the extra power they have produced.

Those kilowatt-hours are now valued monetarily, at the utility's highest residential rate. Washington Electric Co-op has two residential rates: approximately 9 cents/kWh for the first 200-kWh "block" of power that residential members consume; and a second rate, something above 20 cents/kWh, for the "tailblock" of power – meaning everything above 200 kWh. The latter obviously is the higher rate, so under the new net-metering rules WEC members will now be credited



Generating electric power through sun, wind, and other natural systems is just the first step. It must then be altered to compatible AC current through an inverter, like the one pictured above, to operate most equipment and to enter the grid through net metering. Photo courtesy of Ed Hutchinson

at 20-plus cents for each kWh they contribute.

What hasn't changed is that, still, they are not paid for their home-generated power. But the monetary credit can be applied to any cash portion of the member's electric bill: the electricity usage; the monthly (\$9.62 for WEC) service charge, or miscellaneous charges the member might have, such as rent on an outdoor security light. Receiving monetary credit rather than kilowatt-hour credit makes a good deal even better.

II. The PV premium

This provision, for people with photovoltaic (PV) generating systems, happens not to apply to WEC net-metering members, as it is currently written, not because they were excluded but because the Co-op's provisional rate increase in January makes them ineligible.

Around four years ago Green Mountain Power Corp. (GMP) instituted what it called a "PV premium" for those net-metering customers who were generating solar power. There are other ways to produce energy and meter it to the grid; wind, small hydro installations, biomass, and fuel cells also can be used. However, many consider photovoltaic electricity to be the most promising for home installations, and for that reason GMP limited its premium payment to PV. The premium added 6 cents in value to each kWh produced by a GMP net-metering customer.

That 6 cents, added to GMP's 14-cents/kWh residential rate, brings the monetary credit for the company's net-meterers to 20 cents/kWh. And now the Legislature, through Act 47, has made the 20-cent "premium" statewide policy, applicable to all electric utilities. More accurately, the premium is the difference between the utility's top residential rate and the ceiling of 20 cents. It could be 6 cents, in GMP's case, or perhaps 4 cents or as little as 1 cent in the case of some other

electric company. The rationale for not applying the premium above 20 cents/kWh is that net-metering ratepayers with those utilities already are getting a comparable benefit – and that's why this provision does not apply to WEC net-meterers. The Co-op's present top residential rate is more than 20 cents, and, as stated above, net-meterers on WEC's system are credited with cash at that rate, not 20 cents.

III. Group net metering (GNM)

Act 47 changed a category called "Farm Net Metering" to "Group Net Metering." This follows a broader conception of net-metering, not with a provision geared toward farms (where, conceivably, dairy farmers might use methane from their herds to generate electric power), but to one potentially including groups of people who throw their lot in together to create a net-metering system.


By definition, Group Net Metering

can apply to 1) an association of people net-metering together, or 2) a single person who has two meters. The classic example of the latter is a farm, where the house and barn are separately metered. As it is right now, the former definition is mostly conceptual. WEC has 78 members with approved net-metering systems, and only two of them are Group (GNM) applications – and both of those are single-owner systems where an individual has two meters and provides home-generated power for a portion of their electricity.

But there is at least one true "group" net metering project in Vermont, and it is setting an example for others. In Underhill, a couple with a PV system on their roof found they were generating so much surplus power that they offered to share it with another household and a small business. Soon the project developed even further, with five solar trackers from All Earth Renewables, and now includes six households and a business. (For more information on this project see "Communities Tackling Vermont's Energy Challenges," published in April by the Vermont Natural Resources Council and the Vermont League of Cities & Towns.)

So group net-metering on a broader scale could be just around the corner, and Act 47 could hasten its arrival. What's required is for the group to create the net-metering system and share in both its benefits and responsibilities – although they are free to establish among themselves any arrangement, involving investments and rewards, that they wish. To make it doable for Vermont electric utilities, the new law requires that all the group members be in the service territory of the same utility, and that they appoint one person to be the contact person with the electric company.

More and more, people are taking renewable energy seriously, and sharing the investment could make more net-metering systems possible. To enable larger GNM systems, Act 47 expanded the maximum allowable GNM production from 250 kWh to 500 kWh. The Act also envisions further possibilities: "Various buildings owned by municipalities, including water and wastewater districts, fire districts, villages, school districts, villages, and towns may constitute a group net-metering system."

We may be evolving to a time when communities step up to the plate to generate a significant share of their power, and do it with renewable resources. They'll find partners in their Vermont utilities, under the state's broader net-metering law. 

Member Survey

continued from page 3

- are. This shows some slippage; in 2005 48 percent viewed themselves as “customers.”
- 60.56 percent of members consider it “extremely important” for WEC to get its electricity from renewable sources (in fact, WEC generates nearly two-thirds of its members’ power from land-fill gas and hydroelectricity, and much of the balance – contracted purchases of hydropower, and soon wind – is also from renewable sources). In 2005, 58 percent of respondents considered “green” energy to be important.
- 78.84 percent of WEC members read *Co-op Currents* “regularly” or “fairly often” (compared to 75 percent in 2005), making *Currents* one of the most-read electric cooperative

publications in the country.

- 29.88 percent of WEC members are 65 years of age or older – the largest category. The younger the cohort, the smaller the percentage: 11.95 percent are 35 to 44 years old, and 5.98 percent are 18 to 34 years old. This surely tells us something about demographics in rural central Vermont.
- 85.66 percent live in single-family homes (7.17 percent live in structures they identify as “mobile homes” or “trailers”), and 94.02 percent report

“Washington Electric Co-op’s rates are high. We serve the most rural utility territory in the state, and on average have only around eight connections per mile of line to bear the cost of that service. So when members think about ‘value’ they’re thinking about the cost, which makes sense.”
 — Avram Patt

that they own their homes. Four out of 10 respondents (45.42, the largest category) have been WEC members for more than 20 years.


The survey also asked which electric appliances are most prevalent in WEC members’ homes, and discovered that 67.7 percent own electric clothes dryers and 37.8 percent own electric water heaters.

Also, 28.7 percent own room air conditioners (only 2.8 percent have central AC). “That’s not a huge number,” said Patt, “but it does confirm what we have believed, which is that the percentage of people with

AC is growing in our territory. That has implications for our summer energy planning.”

(Bulletin: 5 percent of respondents say they have hot tubs!)


Readers can draw their own conclusions, but the November 2010 survey seems to indicate that the Co-op’s membership is getting older, most have been with Washington Electric for a pretty long time, and in general they give WEC reasonably good marks for its service (there were no scores below the mid-7s out of 10).

Yet it does point to areas where Washington Electric should improve its operations to more fully satisfy the needs of its member/owners – and to make it clear to people that member/owners is what they are, with a say and a vote in how their electric cooperative is run. 

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Substation

continued from page 1

eight substations. Substations receive high-voltage (34.5 kilovolt) electricity from transmission lines, and reduce the voltage to 12.5 kv, which is appropriate for domestic use. The lower-voltage power is then sent, over the main “feeders” and offshoot distribution lines, to WEC members.

The Co-op has been gradually rebuilding its substations, starting with its Moretown facility in 2001, then proceeding to South Walden (2003) and Maple Corner (2006). Typically, the projects replace old wooden frameworks with steel; steel substations don’t rot, and are safer if an electric arc should occur, which could cause a fire at a wooden facility.

The new substations are state-of-the-art facilities that utilize energy-efficient transformers and protective equipment that provides a much-improved level of service to WEC members. As in the past, Co-op crews are constructing the substation and installing the equipment.

“We’ve come up with a generic design that meets modern-day safety code requirements regarding clearances, which improves our employees’ ability to move around and work within the substation, and improves overall safe operation,” said Dan Weston, WEC’s director of engineering and operations. “We’ve got this down pretty good now, so we don’t have to pay for redesigns.”

The East Montpelier substation will use vacuum bottle reclosers (reclosers are automated devices that respond immediately to power interruptions, attempting to restore the

power and avoid prolonged outages; vacuum bottle reclosers contain no oil, as older ones did), as well as transformers that use a soybean-based lubricant.

“It’s a very green design,” Weston said. “There will be very little petroleum-based oil in the new substation.”

Two modern features could help immensely in improving reliability for members served by the East Montpelier substation. One of these is fault-distance location devices, which will be installed on the main lines (the “feeders”) leading out of the substation. When WEC receives calls from members alerting the Co-op of a power outage, employees can first check the computerized outage-management system to identify which feeder line the callers are connected to; the line crews can then check the fault-distance location equipment at the substation to find out how far out on that feeder the electrical problem is. It’s a faster and more efficient way to find the source of outages. WEC has ordered the same devices for the Maple Corner substation.

At the new East Montpelier substation WEC will also be able to monitor power quality (whether feeder lines are getting the correct voltage) and other issues from the substation, using a laptop computer. In time, and with further technological improvements, such monitoring will take place from the office.




The barren site where Washington Electric Co-op’s East Montpelier substation once sat (below) is being prepared to host a new state-of-the-art substation, to improve service and power quality for WEC members in numerous ways. At right, WEC linemen prepared a trench for conduit into the new facility.



Finally, rebuilding the East Montpelier substation has allowed the Co-op to reconstruct the transmission lines that provide high-voltage power to it. Previously, the East Montpelier and Maple Corner substations were fed by the same lines, which meant that if problems occurred they could affect more WEC members than necessary.

When the work is done, Co-op members in the East Montpelier/Maple Corner/Worcester/Middlesex area can expect to enjoy improvements in power quality and outage response. However, as the work takes place this summer those members are slightly more exposed to the risk of outages.

“Right now,” Weston explained, “there is no East Montpelier substation. So those members are getting their power from a feeder out of our Jackson Corners substation in Williamstown. There are a lot of people on those lines this summer, including our Co-op office in East Montpelier, so if an outage happens it could affect a lot more people until we get our new substation on line.”

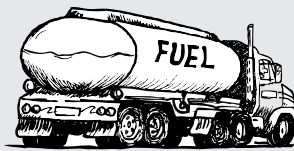
Members who experience a power interruption should notify Washington Electric Co-op immediately. The sooner the Operations Department knows about it, the sooner they can correct the problem. 

Local Fuel Buyers Groups Preparing Their Orders

Act Now to Save Money on Winter Fuels

It’s July, a month with some of Vermont’s hottest weather. So a Vermonter’s thoughts naturally turn to winter – and a frugal Vermonter’s thoughts turn to the cost and supply of next winter’s heating fuels, whatever those might be for an individual. If you use fuel oil, propane, and/or kerosene for heating and household appliances now is the time to consider joining one of the fuel buyers groups active in our area. Washington Electric Cooperative has members who have participated in both groups, and they report that they’ve been happy with the results.

VHeat, a fuel buyers group sponsored by the Montpelier-based credit union VSECU, reports that fuel prices since last winter’s heating season



already have risen more than \$1 a gallon, a good reason to look for leverage to reduce your costs. Fuel buyers groups aggregate heating- and appliance-fuel consumers – generally, homeowners, property managers, and tenants

– combining their projected individual fuel needs so that the groups can negotiate with dealers as a large, single account. The potential for volume sales encourages dealers to agree to a reduced per-gallon charge.

WEC recommends that if you are interested in joining a fuel buyers group you contact the group quickly, or consider the merits of each one and make a choice. Memberships usually close by the end of August or earlier.

• Ruth Clark Fuel Buyers Group (www.RuthClarkFuelGroup.com; 802-476-0066)

The Ruth Clark Fuel Buyers Group has been in operation for 12 years. The suppliers for this well-established buyers group, which serves residential and commercial members, include AmeriGas, Conti, Pyrofax/F.G.White, and Suburban. The pricing for fuel oil, kerosene, and propane varies by vendor and with volume. The Ruth Clark group also offers off-road diesel (sometimes called Low Sulfur Diesel), which is used for tractors and other farm equipment and for equipment in the construction industry. The group charges a \$35 membership fee. It organizes both pre-buy and budget-buy plans. The Ruth Clark group is also advising this year that AmeriGas, which sells propane, is offering a flat rate that is not a pre-buy. (Pre-buy plans are often more economical than buying through the winter at fluctuating prices, but there is a risk that prices could dip below the pre-buy price during the course of the season.)

Members also receive discount services from the fuel companies doing business with the Ruth Clark Fuel Buyers Group. The group’s website is: <http://ruthclarkfuelgroup.web.officelive.com>.

• VHeat (www.vsecu.com; 802/800-371-5162)

VHeat, sponsored by VSECU, has been in operation for five years. It contracts for #2 heating fuel and propane. Companies doing business with VHeat are Irving Oil, The Energy Co-op, AmeriGas, Trono Fuels, and Pyrofax Energy. Participants are charged a low membership fee.

You can learn more about VHeat by going to the VSECU website, <https://www.vsecu.com>, and clicking on the VHeat Fuel Program link.

WEC encourages its members to consider purchasing winter fuel through a fuel buyers group, as it will probably reduce costs. Another way to reduce fuel and energy costs is to increase the energy efficiency of your house or building. For advice in this realm, including costs savings available through state, federal, and local credit union programs, contact Washington Electric Cooperative and ask to speak with Products & Services Director Bill Powell. 