

VERMONT ELECTRIC



A Message from VEC's Board President

By Dan Carswell, VEC President
& Chair of the Board of Directors

Eighty years ago – when farmers in Eden set the first poles and founded Vermont Electric Co-op, they enabled the electrification of our homes and workplaces and brightened the long, dark nights of winter. The improved quality of life delivered by rural electrification was, of course, the result of technological breakthrough. Now serving 75 communities across northern Vermont, the co-op continues to innovate for the future.

For example, we are embracing the electrification of our transportation system. As the electric vehicle market evolves, we will be prepared to meet our members' need for low-cost and reliable electric service to power those vehicles and strive to do so in a way that does not shift costs to other members.

We are also preparing for cost-effective ener-

gy storage, both large-scale and small-scale. This fast-developing technology will help us maximize convenience for our members and grid efficiency, while incorporating more renewable generation. We plan to do this in a way that does not compromise the reliable and cost-effective service our members rely on.

Overall, VEC is strategically embracing smarter technology that's always improving. It's an exciting time.

No matter what the future brings, one thing is constant: you, our members, are our greatest asset. Remember, the co-op was built by and belongs to the communities we serve, and your engagement and feedback are critical to our success. The board of directors, which is comprised of members like you, is here to serve you, and we want to hear from you. Please help us get it right as we strive to fulfill our mission.

CEO Update

As many of you are aware, VEC is in the midst of a CEO transition. The plan is to have a new CEO in place this fall. I want to assure you that the board, senior leadership team and the full team at VEC are working hard to ensure we maintain the same quality of service as we carry out a search process for our next CEO. I would like to thank our General Counsel Victoria Brown for ably stepping in to serve as interim CEO.

VEC's 80th – Yes, 80th! – Annual Meeting of the Members

Highlights from 2017 Included: Steady Financials, VPP Safety Award, Energy Transformation



VEC's senior leadership team celebrates 80 years. From left to right: Peter Rossi, Andrea Cohen, Michael Bursell, Victoria Brown and John Varney.

For a moment, on the morning of Saturday, May 12, at Smugglers' Notch Resort in Jeffersonville, it looked like there would be no VEC Annual Meeting of the Members after all.

As he opened the proceedings, VEC President Dan Carswell pointed out that the co-op had reached a significant milestone: VEC was celebrating 80 years, having been chartered in 1938 to provide electric power – a life-altering benefit already enjoyed in most of Vermont's cities and villages – to a relative handful of farmers and residents in the rural town of Eden. They cast their lot (and some money, too) with a fledgling, member-owned cooperative.

"Eighty years!" Carswell exclaimed. "That's really something to appreciate. In fact, I believe there'll be a cake to celebrate it."

Carswell then made a few announcements — "Polls," for the election of directors, "will be open until 10:30" – and briefly turned the meeting over to officers who declared a quorum and dispensed with other formalities. He then retook the podium and broke the news.

"I've been told there will be no cake," he deadpanned. "Motion to adjourn?"

Ballots counted, leaders honored

Fact is, there's always a collegial and somewhat festive air at VEC's annual meetings. They attract members from all across the cooperative's service territory, which has expanded well beyond Eden over the past 80 years. Now serving over 32,000 homes and businesses, VEC covers the entire northern tier of Vermont, from Maidstone and Bloomfield on the Connecticut River all the way to Alburgh and Isle La Motte in the Champlain Islands. This year some 200 members, plus guests and VEC employees, gathered at the alpine resort to discuss business and finances, ask questions and register opinions concerning VEC policies, and, more broadly, to consider its role in the continually changing electric utility landscape. They also completed the important ritual of electing members to serve on VEC's board of directors, an opportunity not enjoyed by the customers of investor-owned utilities.

Most of the voting had occurred by mail and online in the weeks leading up to the May 12 meeting. Races this year for the 12-seat board were confined to districts three, four and five, all for four-year terms expiring in 2022. Just before the meeting adjourned (for real), the results were announced:

- In District Three, incumbent Carol Maroni of Craftsbury had run unopposed and was re-elected with 355 votes;
- In District Four, incumbent and board secretary Mark Woodward of Johnson held off a challenge from Jody Dunklee of Fairfax by a vote of 321-222;
- In District Five, the election of Charlie Van Winkle of Underhill filled a temporary vacancy on the board as he won over Schuyler Jackson of Hinesburg, 344-189.

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VEC's 80th

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Two other issues related to leadership were brought up early in the meeting. Carswell, in his President's Remarks, took a moment to thank Christine Hallquist, who had resigned from her position as CEO in March to run for governor after 12 years at the co-op. "I would also like to thank our general counsel, Victoria Brown," he added, "for ably stepping in to serve as interim CEO" while the board and senior staff conduct a comprehensive search for a new chief executive. The audience applauded them both.

Another tribute was expressed by VEC Treasurer John Ward, who concluded his 2017 financial report by singling out Chief Financial Officer Michael Bursell for particular praise. The two work closely, with Bursell managing the challenging, day-to-day financial affairs for a company that had operating expenses of \$73 million last year and \$76.6 million in gross revenues.

"We have great management and staff at the co-op. But we have an exceedingly great employee with Mike," said Ward. "Mike Bursell is irreplaceable."

Behind the scenes of steady financials

Ward's Treasurer's Report was generally very positive. Electric rates, of course, are particularly important to the members whose monthly power bills are based on those rates. Carswell, Ward and interim CEO Brown all celebrated the fact that VEC has managed to avoid a rate increase for four years. VEC's rate increases over the past nine years have averaged less than 0.8 percent annually.

Key to this achievement – and to continuing it as long as possible – is VEC's endeavor to control its wholesale power costs. That means not just contracting for affordable power but using innovation to scale back the co-op's peak power demands.

Later Brown provided an example of this effort by mentioning a pilot program VEC is undertaking with Burlington-based Packetized Energy (see page 6 for more details on the program). That company installs devices on the electric water heaters of members — who participate voluntarily — that will enable the co-op to use software to optimize when the heater draws electricity from the grid, thereby shaving peak usage. Technology that enables the co-op to limit its exposure to high peak-power costs, while retaining members' confidence in their own autonomy, is the kind of innovation that will help keep rates stable.

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VEC's financial stability enabled it to return one million dollars of patronage capital to members in 2017. Patronage capital is each member's share of the margins (comparable to profits for a profit-based company) and is determined by the amount of electricity the member purchased during a specified period. The board votes annually on whether VEC is in a strong enough financial position to return a portion of patronage capital to members. Since 2013, VEC has returned \$3,350,000 of patronage capital to members. Ward also noted that the cooperative had retained its A+ bond rating "with a stable outlook" from Standard & Poor's, a benefit for the co-op in its financial transactions.

But the treasurer did offer some words of caution. There are significant costs the co-op can neither control nor avoid, including its share of maintaining and improving the statewide transmission system through the Vermont Electric Power Company (VELCO) and mandates related to the state's ambitious program for renewable energy (see "The SHEI Conundrum," page 3.)

Still, Ward concluded, "We had another very good year. Your board of directors, management and staff will do everything possible to have another great year in 2018."

VPP honors safety as a way of life

A feature of every VEC annual meeting, brief but important, is the "Safety Moment." It's a nod to the risks inherent in living in a world where electricity and electric infrastructure touch almost every element of our lives. But VEC's staff has expanded on the concept and uses this annual "moment" to remind audiences of the myriad precautions people can take, but often ignore, to be safe in their homes and workplaces.

This year's theme, as discussed by Safety Technician David Young, was taking responsibility for the safety of others. He gave the example of the low-ranking military service member who packs the parachute that saves the life of an imperiled fighter pilot. Using images projected on the room's large screen, Young then provided far more ordinary precautions we can take to protect each other: placing knives point-down in the dishwasher; shoveling outdoor steps and sprinkling salt after a winter storm; keeping stairways clear;



Utility Arborist Jeremy Tinker and Manager of Forestry Sara Packer helped members with the trees they had reserved through the Energy-Saving Trees Program.

and being mindful of the lighting in your home, because, he said, "lighting degrades," so gradually a well-lit area dims and hazards might be obscured.

Using himself as an example, Young mentioned his wife and their four-year-old child. "This," he said, "is how I pack their parachute."

Safety, actually, was the topic of one of VEC's most significant events of 2017. Several years ago, rocked by a pair of tragic accidents suffered by workers, VEC undertook an in-depth review of its safety-related practices and focused on making the culture of safety the core of its operations. To codify that focus, the co-op participated in the Green Mountain Voluntary Protection Program (VPP) through the Vermont Occupation Safety & Health Administration (VOSHA). Last fall, upon successfully completing an intensive, five-year review of its practices and culture, VEC became one of just five companies statewide to receive VPP certification.

"It was a proud day for us in December when we hoisted the VPP flag at our headquarters," Brown told the audience.

Storms, renewables and energy transformation — the way of the future

Brown also enumerated other key events of 2017. One of them was working through, and recovering from, Windstorm Philippe, which blasted Vermont in October with sustained 45-mph winds (a velocity that usually occurs only in gusts), knocking down large trees and snapping 72 power poles. Philippe caused nearly 400 outages on VEC's system, affecting some 17,000 VEC members. Because so many of Vermont's utilities were impacted, few could spare crews to help VEC in its recovery – at least at the outset – so VEC found assistance from four electric cooperatives in Illinois.

"Co-ops have the best employees," Brown said gratefully. "They really know how to work."

Total costs to the co-op were nearly two million dollars. Fortunately, electric cooperatives can qualify for financial assistance from the Federal Emergency Management Agency (FEMA), and VEC hopes to recover 75 percent of those costs. Brown mentioned that another \$900,000 might be available under a separate FEMA grant program that helps cooperatives "harden" their systems to better withstand severe weather events like Philippe.

Brown also brought her listeners up to date on VEC's response to the state's Comprehensive Energy Plan, which calls on utilities to help achieve periodic goals resulting in Vermont receiving 90 percent of its energy, in all energy sectors, from renewable sources by 2050, and more specific mandates for so-called "energy transformation," also known as "beneficial electrification" (electricity, obtained from increasingly clean sources, replacing energy generated from fossil fuels).

With about 80 percent of VEC's power now coming from sources like hydro, wind, solar, wood and farm methane, Brown said, "We are set to meet our state energy goals through 2023." She particularly noted VEC's Co-op Community Solar projects in Grand Isle, Alburgh and Hinesburg, which provide an opportunity for members to sponsor panels and receive a guaranteed monthly bill credit for ten or twenty years. Under the co-op's Energy Transformation Program, VEC provides discounted line extensions to remote locations so that homes and businesses can power their equipment with electricity rather than fuel-burning generators. VEC also offers bill credits for the purchase of heat pumps, heat pump water heaters, pellet stoves and electric vehicles (see page 4 for more information).

The state mandates, though graduated, are rigorous, and utilities can face penalties if they fail to achieve them. But Brown ended her report by stressing the positive. These mandates, which promote electrification in part because it's getting cleaner all the time, are designed to help the environment. Because the co-op is an electricity supplier, VEC is well-positioned to effectively participate in the energy economy of the future.

"It's a win-win," she said. "It helps all of our membership."

The SHEI Conundrum – One of Many Facing Vermont Utilities

Chris Root, the guest speaker at VEC's 80th Annual Meeting of the Members, at Smugglers' Notch Resort on May 12, gestured to a graph projected on the screen behind him and pointed out a fact so bizarre he seemed to have trouble believing it himself.

Root is the chief operating officer at VELCO (Vermont Electric Power Company), which is jointly owned by the state's electric utilities and owns and operates Vermont's high-voltage transmission system. The graph portrayed VELCO's load curve – meaning, how much electricity the utilities were drawing from the transmission system – in half-hour segments for a 24-hour period on April 23, 2018. Just after midnight, as April 23 got started, the line representing demand for VELCO power dropped gradually from about 500 megawatts (MW), continued declining through the wee hours, and then climbed as people woke up and started their day. It peaked at around 7:00 a.m., at approximately 650 MW. The line dropped again in the afternoon, rose as people came home from work and turned on the lights, cooked dinner and watched TV, and then sank as people called it a day. Basically, the standard pattern of peaks and troughs.

But what grabbed Root's attention, and which he pointed out to his VEC audience, was that the load at 2:30 in the afternoon – the lowest point on the graph, representing the lowest usage of the day (around 412 MW) – was less than it had been at 2:30 a.m.! (Close to 480 MW)

"Think about that!" he said. "Who's using electricity at 2:30 in the morning?"

His point, though, wasn't that there are ghosts and goblins consuming electricity while we're sleeping. It's that on a sunny day like last April 23, even in the middle of the afternoon when there's lots going on, there is now significantly less demand for utility power as solar panels crank out the kilowatts.

April 23 was not an anomaly. It was an example of the new reality confronting the electric utility industry and its consumers. Root described the electric grid, as it was originally designed, as a highway that carried power in one direction: from its source to the user's home, farm or business.

"Now there are times when it goes the other way," he said. People enrolled in their utilities' net metering program often generate more power than they can use on sunny days like April 23, and the distribution lines that deliver power to their homes and businesses must take the excess power and load it onto the grid for others to use.

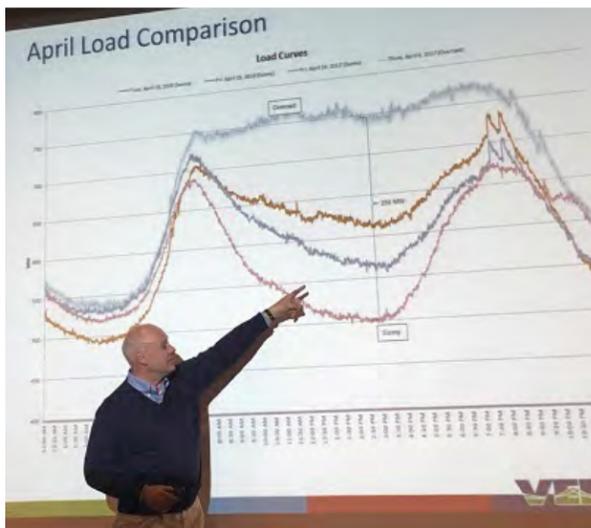
"That's not the way it was designed, but it works," Root said.

A similar change, but on a larger scale, exists in the concept of a "service territory." It used to be that the grid system – VELCO transmission lines and utility distribution lines (a somewhat simplified description) – delivered electricity that had been generated at a fossil fuel or nuclear power plant far away. Now there's large-scale distributed generation, produced by solar, wind, small hydro, farm methane and other renewable technologies that are scattered here and there within a utility's territory. Many of them produce far more power than the excess kilowatts coming off a rooftop solar array, and utilities need to accommodate it.

"It's an amazing thing that's happening," said Root, summarizing these new developments, "and it calls for a whole new way of running a power system."

SHEI

There's a great big hole in VEC's territory – a sort of tilted loop from Lyndonville up beyond Newport in the east, and over past Highgate and St. Albans into the northern part of the Champlain Islands in the west – where power can get in to serve the communities, but where there's a limit on how much power can get out. That's a problem, because this loop, which is known as the Sheffield-Highgate Export Interface (SHEI), encompasses three of the largest electric-generating facilities in Vermont.



Chris Root, chief operating officer at VELCO, discusses electricity load curves at the VEC annual meeting.

What's more, they're all renewable. They are the Highgate AC/DC terminal (225-MW capacity) that imports hydroelectricity from Quebec and converts it from direct current (DC) to the alternating current (AC) that Vermont and most of the North American grid require; Kingdom Community Wind (KCW) in Lowell (63 MW); and First Wind in Sheffield (40 MW).

Yet the electricity production from these facilities sometimes is restrained by the limitations of the area's transmission infrastructure.

"Northern Vermont's history is that it's a very rural, agricultural-based region, with a few ski areas but relatively sparsely populated, without a big electrical load," Root explained. "It was never designed to be a mega-export area (for locally generated electricity). There are only two main transmission lines out of there. If something were to go wrong (a transmission line failure), you could black out the whole northern area. So they limit how much power can be exported."

"They" is ISO-New England, the independent systems operator that controls and coordinates the entire New England grid. When it's concerned about overloading those transmission lines it orders large generation facilities like KCW and First Wind to reduce their production. (This is less of a problem for the Highgate Project; it's apt to stay on because there's a statewide contract for that power from Hydro-Québec.) This, of course, is most likely to happen on the days when those systems are able to be their most productive, which tend to be in winter, spring and fall. "As the summer wears on," Root explained, "there's less water for generation and wind strength tends to reduce."

To the degree that smaller-scale renewable systems have been built within the SHEI, it compounds

the problem, because ISO-NE cannot regulate those installations. Thus, the power they add to the grid further limits what KCW and First Wind are allowed to contribute. That's why the cooperative has opposed projects like the Dairy Air Wind project proposed in Holland, Vermont. Because the project is relatively small (2.2 MW), it would not be subject to ISO-NE control, which could exacerbate the problem for the Lowell and Sheffield facilities.

"With KCW, in particular," said VEC Interim CEO Victoria Brown, "we're paying a fixed price of what it costs to own and operate that facility. So, the more it produces the greater the benefit we derive from our investment."

The converse is just as true: when KCW is dialed back, the co-op gets less power for the money it spends.

"It's frustrating to see a wind turbine not running because it's been told to shut down," Root said, sympathizing with VEC's situation.

And he pointed out another problem: Vermont's Comprehensive Energy Plan calls for the state to receive 90 percent of its energy from renewables by 2050. "We've got to fix this," said Root. "Because otherwise Vermont can't possibly meet its renewable energy objectives."

Interdependent, then and now

So what to do?

"Robust, long-term solutions will be complex, and may be costly to implement," Root explained.

Options could include building new transmission lines, upgrading those already in place (this option has limited potential), and introducing battery storage so that systems could continue generating power without taxing the export infrastructure. The technology for the latter, however, is not yet at hand, and Root said, "Our first choice would not be to have to build some major power line."

And this brings up another question, which was voiced by both Root and Brown: Who pays?

A co-op member from Fairfax may not have been addressing this question directly when he stood to speak, because the discussion by then had wandered through several issues pertaining to power generation and the complexities of sharing electricity fairly and affordably in the new world Root had described. Yet he put the dilemma in historical terms that rang true, especially for an electric cooperative.

"Most of us," the Fairfax resident pointed out, "wouldn't have power if someone else didn't subsidize it for us eighty years ago."

He was referring to the early days of VEC's founding, after passage of the landmark 1936 Rural Electrification Act, when the nation as a whole took up the cause of extending electricity to America's countryside through federal subsidies for emerging electric cooperatives.

It seemed the perfect note – a hopeful sentiment of cooperation and collective effort – for concluding the business portion of the annual meeting, with the fun of the door-prize drawings to follow. VEC's Victoria Brown took the cue.

"Our meeting is adjourned," she announced. "Thanks, everyone, for your engagement."



VEC's Energy Transformation Program is Heating, Cooling, and a Whole Lot More

Would a new heating and cooling system be right for you? What about an electric vehicle? That all depends on your needs, but technology is moving fast, and if you haven't considered changes in your energy systems recently, it might be time.

The state of Vermont has set targets for reducing consumption of fossil fuels and production of greenhouse gases and electric utilities have been tasked with implementing programs to help their customers (members, in VEC's case) transition from fossil fuels to electric or other renewable sources. VEC offers bill credits to help make it easier for members to invest in these new systems.

Moving from what have traditionally been fossil-fueled devices (home heating and cooling systems, for instance) to electric-fueled systems, can be helpful to VEC members for a few reasons:

- Protection against up-and-down fuel costs associated with gasoline, fuel oil and propane because electricity prices, while they do increase, are more predictable.
- The chance to save money over the long term, starting with VEC's bill credit and continuing with operating costs that can be lower than what they're replacing.
- Decreased environmental footprint. As the electric grid gets cleaner, electric-fueled technology will have a lower and lower environmental impact.

VEC offers bill credits to help. Here is what we offer:

Cold-climate Heat Pumps

Heat pumps provide an opportunity for Vermonters to reduce the amount of oil or propane they use to heat their homes. VEC is offering members an incentive to install cold-climate heat pumps in their homes and businesses. **In 2018 VEC members who install an eligible cold-climate heat pump can receive a \$150 bill credit per outdoor unit.**

Heat Pump Water Heaters

Heat pump water heaters are an efficient way to heat water with electricity, using heat pump technology. Rather than using electricity to generate heat directly, they pull heat from the air to heat your water. They can cost considerably less to operate than electric resistance water heaters. **For eligible heat pump water heaters installed in 2018, VEC is offering a \$150 bill credit.**

Pellet Stoves

Heating with pellets can be an effective way to reduce the amount of oil or propane you use during a heating season. Pellet stoves operate similarly to wood stoves but pellets burn more efficiently and pellet stoves allow for more flexible placement in your home as a chimney is not always required. To help members reduce their fossil fuel usage, **VEC is offering a \$150 bill credit to members for the purchase of a pellet stove in 2018.**

Electric and Plug-in Hybrid Electric Vehicles

Electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) offer opportunities to reduce carbon emissions, and the technology has continued to improve with better range and cold weather performance. To promote these options, **VEC is offering the following bill credits for the purchase or lease of new or used EV or PHEV in 2018:**

	Purchase	Lease
Plug-in hybrid	\$250	\$50/year
Fully electric	\$500	\$100/year

Public Charging Stations

VEC is offering bill credit incentives for the installation of Level 2 and Level 3 public charging stations. Eligible applicants are businesses and public entities (schools, towns, etc.) with stations that were operational after July 1, 2017 and before December 31, 2018, provided the charging station is available to

Cold Climate Heat Pumps: Comfort for All



Photo VEC/Kevin Goddard

"We love our heat pumps," said Andrea Nelson (above, far right), co-owner of the Nelson Veterinary Associates in Newport. "Patient comfort is paramount in our clinic, and not only do our pumps keep our office cool in the summer and warm in the winter but they also have a dry function that pulls humidity out of the air. Our heat pumps have been a great investment," she said.

Heat pumps are just one technology for which VEC is offering bill credits to help members transition from fossil fuels, and Nelson's clinic was just one of hundreds of VEC members that took advantage of the bill credit over the last couple of years.

the public. **VEC is offering a \$500 bill credit per connection (\$500 for a 1-head charger, \$1,000 for a 2-head charger) with a \$2,000 maximum per member, while funds last.**

Clean Air Program

VEC's Clean Air Program (CAP) offers customized opportunities to members with off-grid or underserved homes or businesses to replace fossil fuel with electricity. These opportunities may include service upgrades or line extensions, the costs of which will be shared between the utility and the member through customized agreements.

For example, someone in VEC's service territory who has a maple sugaring operation currently powered by a diesel or propane generator may be eligible to participate in the Clean Air Program and receive an incentive from VEC for the cost of a line extension to retire the generator. Contact VEC at 1-800-832-2667 or support@vermontelectric.coop if you have a project that you think might be eligible for the Clear Air Program.

For more information about any of the VEC Tier III programs please contact us at 1-800-832-2667.

Congratulations to our new and re-elected board members!



Carol Maroni

Re-elected to represent District 3



Mark Woodward

Re-elected to represent District 4



Charlie Van Winkle

Elected to represent District 5

For the Frasier Family of Newport, Energy Transformation Starts at Home

The Frasier family of Newport has taken some pretty deliberate steps in the last couple of years to transform their household energy systems. Their overriding goal? Save money.

Back in 2016, the Frasier family began wondering how they could save some money by generating their own electricity. The challenge was that the house and property they own on Maple Street simply didn't have enough space for solar panels. They then learned about VEC Co-op Community Solar.

"One day we got an email about VEC's program, and we jumped on it," said Sarah Frasier. "The great thing is that even if you can't put solar up at your house, you can still get the benefit of saving money through bill credits over time," she said. Co-op Community Solar allows VEC members to sponsor solar panels in three community solar arrays across VEC territory.

The Frasier family sponsored enough panels to just about zero out their electricity use, but they weren't done yet. In February of 2017, they bought a Nissan Leaf (taking advantage of several incentives, including VEC's bill credit) and then added a few more panels to their community sponsorship in order to offset the new electric load. Then in May last year, they bought a Chevy Volt hybrid (again, benefitting from a VEC bill credit). They say the whole package is saving them money overall, in large part because fueling the cars with electricity is cheaper than doing so with gasoline.

The Frasier family uses the Leaf, which has about a 100-mile range between charges, for grocery shopping, taking their 10-year-old daughter Riley to her many sporting activities, and other errands in and around town. The 2013 Volt is their long-distance traveling car, because the gasoline engine kicks in after the 40-mile electric range has been exhausted. "It's a safety net – we have no concerns about range with the Volt," Sarah Frasier said.

The Frasier family says they may consider getting some efficient cold climate heat pumps to cool and heat their home, a purchase that will be all the more affordable with VEC bill credits for those devices.

While using more clean energy is certainly a plus, the Frasier family says household economics is their main motivation for all they have done.

"We like saving money on energy," said Allan Frasier. "We have plenty of other things we'd rather spend our money on."



Sarah, Allan and Riley Frasier of Newport have sponsored Co-op Community Solar panels and purchased two electric vehicles, including this Chevy Volt hybrid, to transition away from fossil fuels. Photo VEC/ Kevin Goddard.

Why I Chose Co-op Community Solar

By Al Voegele, VEC Member

Several years ago, I was appointed by the town of Saint Albans Select Board to be one of two representatives to the Northwest Regional Planning Commission. As a member of that commission, I also served on the commission's Energy Committee. That committee took a year to study and investigate the resources and land use planning options that Franklin and Grand Isle counties had to achieve the state goal of 90 percent renewable energy by 2050. VEC invited the committee to visit its Co-op Community Solar Project in Alburgh.

During that visit, I saw an opportunity to personally participate as a sponsor of multiple solar panels in VEC solar arrays that produced an amount of electricity equal my home's monthly average electricity use. This was an answer to my desire to personally address my "carbon footprint" - given the scientific evidence of climate change - even though my home's roof is not properly oriented for solar panels. Given my age, I elected to sponsor the panels for ten years. I liken the setup to an annuity in the form of bill credits - for the period

of the sponsorship. I look at this as a form of savings plan that has the added benefit of supporting clean energy. I'd be happy to talk to anyone about my experience with Co-op Community Solar. I can be reached at advoegele@gmail.com

Al Voegele has worked in the non-profit sector in Vermont and served as town manager in Colchester. He continues to serve on the board of the Northwest Regional Planning Commission.

VEC Returns \$1.5 Million in Patronage Capital to Members

This fall VEC will be returning \$1.5 million in patronage capital funds to its members. This will be the sixth consecutive year that VEC members have received a patronage capital distribution, with almost \$5 million refunded over that time period.

"Once again, we are proud to be able to put money back into the pockets of our members," said Mike Bursell, VEC's chief financial officer. "Our members are our community - and the community, after all, built the co-op."

As all electric co-ops do, VEC allocates any money that's left after paying its operating expenses to its

members. This "patronage capital" is kept in reserve and used to help the co-op secure good borrowing rates and invest in infrastructure, which allows the co-op to provide safe, reliable power to its members and maintain stability over time.

Annually, the VEC Board of Directors determines whether the co-op is in a strong enough financial position to return portions of patronage capital to members.

This year's distribution will take the form of a September bill credit for eligible members. People who were members during the years from which patronage

capital is being returned but who are no longer members will be sent a refund check, as long as their credit amounts to \$10 or more.

Both active and former members can choose to donate their patronage capital refund to VEC's Community Fund, which supports local organizations.

For more information about patronage capital, visit VEC's website at www.vermontelectric.coop/patronage-capital or call, 1-800-832-2667.

Earn Bill Credit and Help Modernize the Electric Grid



VEC is looking for volunteers for a pilot program to help test a new energy management technology developed by Packetized Energy, a start-up company in Burlington. Eligible members who sign up get two \$25 bill credits and are entered into a raffle to win \$500 cash. Currently, the program is available in the following towns: Bolton, Cambridge, Essex, Fairfax, Fletcher, Georgia, Grand Isle, Hinesburg, Huntington, Jeffersonville, Jericho, Milton, Richmond, St Albans, St George, South Hero, Starksboro, Underhill, Westford or Williston. You can learn more at www.vermontelectric.coop/packetized. *Note: If you live in another town and are interested in possibly participating in the program in the future, please complete the enrollment survey (see link at bottom right of this page) and we'll contact you if the program becomes available in your town.*

What is the Packetized Energy Program?

The Packetized Energy Program involves the installation of a small device on VEC members' electric water heaters that optimizes when the water heater draws electricity from the grid. The objective of the technology is to better balance supply and demand of electricity on the grid, which is increasingly important as more intermittent energy sources, like wind and solar, provide power to the system.

Why should I participate?

The technology has significant potential to help the co-op and other utilities balance power supply and demand. A more balanced system can bring down system costs (which can help control electric rates), ease the integration of renewable energy into the system, and help avoid the use of more polluting forms of electric generation.

By participating in this pilot project, you will be helping the co-op to move towards a greener, affordable energy future.

How does the Packetized technology work?

Unlike a television or a lamp – which are appliances people generally want on and off at very specific times – most people don't care precisely when their water heater turns on or off as long as they have hot water when they want it. Water heaters, therefore, offer a measure of flexibility as to precisely when they draw electricity from the system.

Water heaters typically heat water for 20 to 30 minutes at a time. Packetized Energy's technology breaks that "ON time" into several five-minute chunks or energy "packets." These "packets" are then turned on at optimal times to match electric supply on the grid (see graphic below, right). Operating this way, a water heater can effectively become an electric energy storage device, much like a battery, that is recharged at optimal times and discharged any time there is demand for hot water. Consumers should notice nothing different in their hot water supply.

How do I qualify?

Currently, the program is open to members in the following towns: Bolton, Cambridge, Essex, Fairfax, Fletcher, Georgia, Grand Isle (town), Hinesburg, Huntington, Jeffersonville, Jericho, Milton, Richmond, St Albans, St George, South Hero, Starksboro, Underhill, Westford or Williston. This is so VEC can test the effectiveness of the technology in a concentrated area that can benefit the most



The Mello, a small device that fits on top of an electric resistance water heater, optimizes when the heater runs.

from load control. However, if you live in another town, please complete the enrollment survey, and we'll contact you if the program becomes available in your town.

You must have an electric resistance water heater. (All residential and small commercial electric resistance water heaters qualify as long as the heating element is 4.5 kilowatts or smaller.)

You must also have password-protected wireless internet access (WiFi).

Unfortunately, natural gas, propane, oil, and tankless heaters are not eligible for this program. Newer heat-pump water heaters may qualify for future programs, but the current program is focused on conventional electric resistance water heaters.

Not sure your electric water heater qualifies? Please send an email to info@packetizedenergy.com or call (802) 448-4845, and we can help you figure out if you qualify.

Are there financial incentives for participants in the program?

Participants will receive \$50 in electric bill credits: \$25 upon installation of the device and \$25 after one year of participation. Enrolled participants will also be entered into a raffle to win a \$500 cash prize. The drawing will be held at the end of December 2018.

How large is this pilot program?

VEC would like to enroll between 150 and 300 members in the program in order to have the scale needed to properly test how this technology would work for peak management.

Will participating in this program reduce my energy usage or cost?

It could, but significant bill savings are unlikely. The energy your water heater uses depends primarily on how much hot water is used in your home. Assuming that your water usage doesn't change, your total monthly electric usage should not change either.

However, participants will be eligible to sign up for VEC's time of use pilot rate, which can save members money, especially if they shift usage to off-peak times. In addition, participants will be able to adjust their water heater's temperature set points or set their water heater into vacation mode when

they travel, both of which could save energy.

The technology does enable your water heater to use more efficient, less expensive energy when it is available, which, if it's widely deployed, could make the system as a whole more efficient and help the co-op contain rates.

Will I notice a change in the temperature of my hot water?

No. Packetized Energy has designed this product so that when the water temperature drops below its set point, the water heater will automatically turn on, just as your water heater does now. If you occasionally experience periods of cooler water when people in your home are using a lot of water, then you will probably continue to experience that.

Will participating in this program affect the warranty on my water heater?

No. Major water heater manufacturers have assured Packetized Energy that, because the device does not affect the internal functioning of the water heater's elements, the warranty will not be affected.

What data will be collected? If so, who will have access to it?

In this pilot, Packetized Energy will be collecting anonymous temperature and electric usage data from individual water heaters in order to compare the performance of heaters under conventional operation to heaters operating with Packetized Energy management. This anonymized data will refer to, for example, "Heater No. 14" but will not identify the owner of that device. The anonymous data will be made available only to VEC, Packetized Energy's staff, and their research partners at the University of Vermont.

What is involved in the installation process?

After you are determined to be eligible, Packetized Energy will contact you to schedule a short visit to install the device and connect it to your WiFi network. The installation will be done free of charge by a licensed electrician who has been trained by Packetized Energy.

What happens if I participate in the program but later decide to opt out?

We will be sad to see you go. But if you decide to opt out of the program, you can contact VEC or Packetized Energy, and we'll schedule a time to remove the device free of charge.

Interested?

Start by filling out a short enrollment survey here:
www.surveymonkey.com/r/YDT8TFC

Or, contact VEC at 802-635-2331 or at support@vermontelectric.coop.

VEC Offers Discount Program for Members



Joyce Crawford, owner of Millbrook Campground off Route 100 in the village of Westfield, is offering a 10 percent discount on stays at the campground, excluding monthly and seasonal stays.

VEC is excited to be launching a new member benefit: a collection of special discounts at select businesses across the region.

Through the new Member Discount Program, businesses offer bargains exclusively for VEC members on outdoor fun and entertainment, clothing and shoes, hardware, motorsports gear, and more.

"VEC's proud to create and facilitate this new program – really a platform where local businesses can offer discounts to VEC members – because it connects our members with area businesses," said Jake Brown, VEC Energy Services Planner. "It's good for our members and area businesses – and it helps keep money in the local economy."

For most discounts, VEC members can simply show a copy of their VEC electric bill and a photo ID. (Some businesses also ask for downloadable coupons for tracking purposes.) Check out the details at www.vermontelectric.coop/member-discounts.



The following businesses offer discounts through the program:

- Avis/Budget car rental (Plattsburgh)
- Energy Co-op of Vermont
- Hilltop Energy Buyers Group
- Husqvarna (local dealers)
- Jay Peak Resort
- Laquerre's Marine and Sports Center
- Lamoille Valley Bike Tours
- Lenny's Shoe and Apparel
- Mary Kay (local representative)
- Millbrook Campground
- Mountainview Mapleworks
- Nissan North America (local dealers)
- No School Snowboard Shop
- Smugglers' Notch Resort
- Speedway 51
- The Farmyard Store
- The UPS Store (6677, Newport)
- VT Web Marketing
- Village Frame Shoppe
- 802 Mobile

Do you know a business that could benefit from promotion in VEC's Member Discount Program?

We have an info sheet and FAQs at www.vermontelectric.coop/member-discount-program or you can email VEC Energy Services Planner Jake Brown at jbrown@vermontelectric.coop.

Co-op Vehicle Sale

VEC has for sale the following vehicles and equipment that we are accepting sealed bids for until 4:00 pm, September 4, 2018. Please indicate the item number of the vehicle or equipment on the outside of your sealed bid. All bids should be submitted to the attention of Laura Kinney, Purchasing Agent at Vermont Electric Coop, 42 Wescom Road, Johnson Vermont 05656.

All vehicles or equipment for sale have high mileage and may be in need of mechanical /body work.

Vehicles for sale located at the Johnson Warehouse:

Item #1	Coop #40	2006 Ford F-250, 4X4, (VIN #A78165). Mileage is 163,077
Item #2	Coop #52	2008 Ford Escape, (VIN #D75984). Mileage is 140,882
Item #3	Coop #53	2008 Ford Escape, (VIN #D64360). Mileage is 165,278

Vehicles for sale located at the Derby Warehouse:

Item #4	Coop #65	2011 Ford F-250, 4X4, (VIN #A88285) with Reading Body. Mileage is 166,022
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This vehicle has extensive front end damage.

Questions pertaining to the above vehicles and equipment located at the Johnson Warehouse may be directed to Mark Bennett at 802-730-5134. For vehicles and equipment located at the Derby Warehouse please contact Larry Hall at 802-380-3404.

The Company reserves the right to reject any or all bids which, in its sole judgment, finds unacceptable. All vehicles/equipment are sold on an "AS IS" basis, with no warranty expressed or implied. Risk of using any of the above vehicles is completely assumed by the purchaser.

HEAT Squad A new energy audit program launching in the Northeast Kingdom

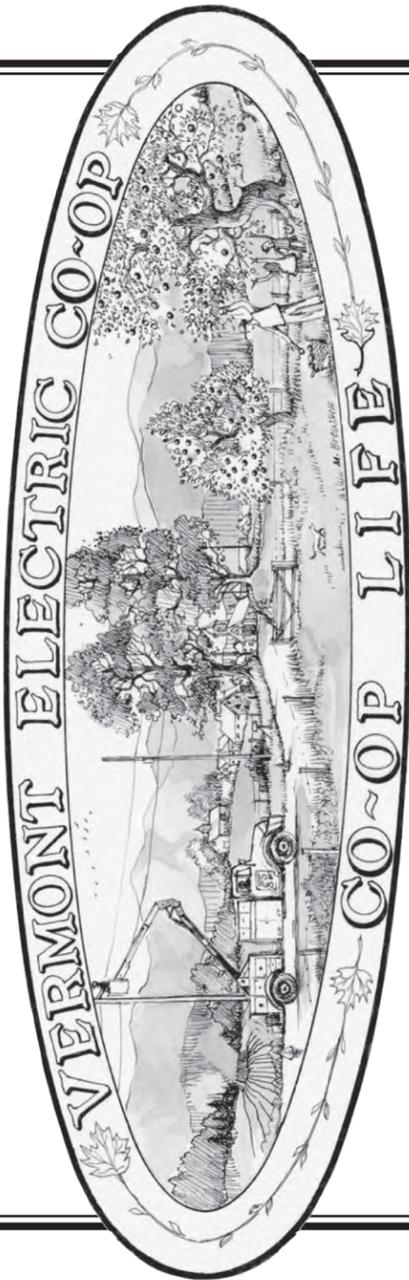
HEAT Squad has been working in central Vermont for several years to provide low-cost energy audits that can help homeowners save money. Now they're offering this same service in Essex, Caledonia and Orleans counties.

The process is easy. Simply sign up and their certified auditor will schedule a time to visit your home. You'll receive a report the same day the audit is performed that will identify any areas of your home where the energy efficiency could be improved. Then you decide which investments you might want to make to improve your home's comfort and efficiency and save money on your energy costs.

HEAT Squad offers objective advice throughout the process and referrals to trusted contractors. They can help you access financing, including the NeighborWorks of Western VT in-house energy loan, and will submit all the information needed for you to receive Efficiency Vermont rebates (up to \$2,000 for air sealing and insulation).

To celebrate their expansion into the Northeast Kingdom, all energy audits are only \$100 through December 31, 2018! To schedule your energy audit, visit www.heatsquad.org or call (802) 438-2303 and mention that you live in the Northeast Kingdom.

HEAT Squad is here to help you have a warm, safe, dry, and efficient home.



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Jason McNeal of the Pick & Shovel stands next to one of several cold climate heat pumps the Newport store recently installed. Pick & Shovel took advantage of a bill credit offered through VEC's Energy Transformation Program. See pages 4 and 5 for more information about the program.

Photo VEC/Kevin Goddard.



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