

WEC Debuts EV (Electric Vehicle) Charging Stations

VLITE Grant Enables Partnerships with Host Members

"If you build it, (they) will come."

Organizations seeking to promote the use of plug-in electric vehicles in Vermont have adopted a strategy similar to that now-familiar promise, whispered by a ghostly voice in the 1989 Hollywood film "Field of Dreams."

But the "it," in this case, isn't a ball field in Iowa; it's an infrastructure that would facilitate the use of plug-in electric vehicles (EVs). And the "they" are people who would respond by purchasing emissions-free cars powered by electricity rather than fossil fuels – or hybrids, which use a combination of gasoline and electricity, and at least reduce fossil-fuel consumption.

Components of such an infrastructure would include more EV charging stations, widely distributed and strategically placed around the state; convenient payment mechanisms to make it easy to buy an electric charge; and signage on state roadways advertising the location of EV chargers (similar to the gasoline pump image that alerts travelers about the services available at interstate exits).

So far, there aren't a lot of electric vehicles in Vermont, neither fully electric nor hybrid – though the latter are more plentiful than the former. But proponents of building out the infrastructure are convinced that it's not a case of putting the cart before the horse.

Proponents of building out the EV infrastructure are convinced that they're not putting the cart before the horse. How many people would buy internal combustion automobiles if gas stations were hard to find?

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Supporters of this approach include the Vermont Agency of Transportation (AOT), the Agency of Natural Resources (ANR), and the Department of Public Service (DPS). Another, which has played a very influential role, is VLITE – the Vermont Low-Income Trust for Energy, a public-benefit corporation formed in 2012 by order of the Public Service Board. VLITE is funded by revenues from VELCO – the partnership of Vermont utilities that owns the state's electric-transmission network. One of the causes VLITE supports, as a public benefit, is increasing the use of electric vehicles to reduce pollution and greenhouse-gas emissions.

Washington Electric Cooperative entered into discussions with VLITE in 2013 – and now, in the last months

continued on page 4



Sara Wing, Director of the Wellness Program for Cabot Cooperative Creamery, demonstrates the process for recharging her Prius plug-in hybrid at Cabot's administrative headquarters in Waitsfield. Cabot embraced the opportunity to host one of five new EV charging stations that WEC is finding homes for in its service area.

Dodging The Worst Of 'Damon'

A Year Later, the Hardships Are Remembered, But there's Good News

As mid-December approaches, many Washington Electric Co-op members, and the Co-op's entire staff too, may be thinking back to the ordeal that nearly all of us endured a year ago at this time.

Winter Storm Damon showed up on Tuesday, December 9, 2014. Before the storm and its aftermath – ice-covered trees in much of WEC's heavily forested service territory, and ice-covered power lines and electric equipment, sagging under the burden – were finished, Damon had knocked a greater portion of Washington Electric Cooperative's membership out of power at one time or another than any other storm in the Co-op's history: about 55 percent.

It took nine full days and nights to restore power to all of WEC's affected members, the longest single outage being an impressive seven and a half days for a Co-op member in Tunbridge. Damon delivered wet and heavy snow, and lots of it. Trees continued to break under the weight during those nine days, falling into or through the power lines and knocking out the power for many people who had already lost and regained their power at least once. Over the course of the nine-day ordeal, Washington Electric's line crews restored power to 29,886 meters, which is almost three times the number of households and

continued on page 8

Washington Electric Cooperative
 East Montpelier, VT 05651


Inside

Reliability and excellent staff are WEC's strong points according to a recent member survey, but cost concerns are real for many members. Story on page 3.

Co-op to co-op. Cabot Creamery opts in on WEC's EV charging station project. Page 5.

Getting it right on renewable energy credits. RECs are moving the region toward more green power. Page 6.

Start thinking about Board elections. WEC balloting is still months away, but deadlines for candidates, bylaw proposals, are approaching. Page 8.



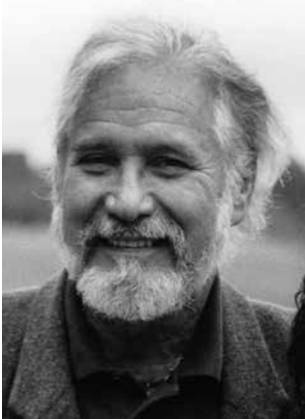
A role for the Co-op in Vermont's transition to cleaner energy for transportation has been in WEC's thinking for some time. Drive Electric Vermont hosted a display and information booth at WEC's 2013 Annual Meeting (above).

President's Message

Seasonal Thoughts On Getting Prepared And Sharing Thanks

By Barry Bernstein

Wow!! What a beautiful Indian Summer/Fall we have had as we approach the winter solstice on December 21. We have truly been blessed, after such a hard winter last year, with a long reprieve. Although there are predictions of a milder winter most of us know we need to be prepared.



five-gallon plastic storage containers filled with drinking water on reserve; a land phone that is not battery operated, and an "emergency list" of people you can call if you lose your power, where you and your family can go to stay warm and comfortable until repairs are made.

Also, if you have a backup generator please make sure it is wired correctly – and for this we recommend that you consult with a professional electrician. Gasoline-operated generators should be run at least once a year to make sure they are working order, and they should not be kept in a confined space in or near your house (they must be run outside),

because of the threat of carbon monoxide poisoning and out of concern that the gasoline could ignite.

Don't forget to change the battery on your smoke alarm, and get a carbon monoxide monitor. Both these safety devices are well worth the investment.

The Time to Give

I would also like to encourage our members to consider donating a few dollars extra on your electric bill, if you can afford it, to support the WARMTH program, which will help our neighbors in need with fuel assistance and help with their electric bills. I have added \$5 to my monthly bill for the WARMTH program. You can make a one-time donation, a recurring donation of a set amount as I do, or contribute through Operation Round-Up, which authorizes the Co-op to round up your monthly electric bills to the next dollar amount; our Member Services Representatives then forward the additional money to the WARMTH program.

We also have the WEC Community Fund, which is supported by your donated capital credits (I have donated all my future capital credits to the fund). Through your donations we are able to give roughly \$20,000-\$25,000 each year in small grants, ranging from \$100 to \$1,500, to nonprofit and community-service organizations in our WEC territory. You can ask our Member Services Representatives about either of these programs, and they can help you sign up any time.

Electric Heat Alert

As winter approaches beware of the free standing plug in electric heaters for sale at the local hardware stores and chainstores. They may be inexpensive to purchase, but they are very expensive to operate at 22 cents/kWh, no matter what they say on the box. Those "pennies" can add up significantly on your electric bill. Every winter we have members calling us who cannot figure out why their electric bill was so high, and too often it is because they purchased one or two "Amish" type electric heaters, or small box-like devices for supplemental space heat. Even if they claim to be efficient, using 1,000 watts instead of 1,500 watts, your


bill will go up the more that they're on.

Energy

Over the next several months we will keep our members abreast of the energy issues as they are discussed and debated in the Vermont Legislature and in our communities. As I continue to read about many difficult issues and choices we face as we attempt to try to respond to climate change and guide our future, I am often disappointed. It seems it is so easy to react to opinions and statements of others without offering any real alternatives to enhance our dialogue toward finding solutions. To just say "NO" weakens our chances and opportunities to move forward together.

Thank You and Happy Holidays

I want to thank all of our Co-op employees, and our right-of-way contractor crews, for their hard work and dedication this past year, whether just doing their daily work or being there for all of us during after-hour outages or major-duration storms. They are quite a special group. My many thanks to your nine, elected Co-op Board of Directors members, who really do work hard on your behalf, and Vice President Roger Fox, Treasurer Don Douglas, Secretary Annie Reed, General Manager Patty Richards, Engineering & Operations Director Dan Weston, Operations & Construction Services Manager Brent Lilley, Finance & Administration Director Cheryl Willette, Products & Services Director Bill Powell, Member Services Supervisor Susan Golden, Administrative Assistant Debbie Brown, and our General Counsel Joshua Diamond of Diamond & Robinson. Also Ron Shems of Diamond & Robinson, and John Murphy of Stantec, for their recent work related to our Coventry electric generation plant.

I want to wish all of our valued WEC employees, their families, our WEC members and their families, and all those who work with us to ensure that we bring you clean, renewable, and economical power, generated as close to our service territory as we can, a happy and healthy holiday season. 

Winter is Coming — Be Prepared

At this time of year it is important to pull together an "emergency box" to have handy if needed: fresh batteries in your flashlights; a battery-operated radio to follow the weather; a couple of

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 2016)	1237 Bliss Road, Marshfield, VT 05658 Bbearvt@myfairpoint.net	456-8843
Vice President	ROGER FOX (May 2018)	2067 Bayley-Hazen Rd., East Hardwick, VT 05836-9873 rfox@pivot.net	563-2321
Treasurer	DONALD DOUGLAS (May 2017)	21 Douglas Rd., East Orange, VT 05086 dondougl@gmail.com	439-5364
Secretary	ANNE REED (May 2016)	3941 Hollister Hill Rd., Marshfield, VT 05658 annereed48@gmail.com	454-1324
	ROY FOLSOM (May 2016)	2603 US Rt. 2, Cabot, VT 05647 RoyGrnsy@aol.com	426-3579
	STEPHEN KNOWLTON (May 2018)	160 White Rock Drive, #2, Montpelier, VT 05602 knowlsf@auburn.edu	223-2230
	DAVID MAGIDA (May 2017)	632 Center Road, Middlesex, VT 05602 vtmagida@aol.com	223-8672
	RICHARD RUBIN (May 2018)	3496 East Hill Rd., Plainfield, VT 05667 rrubin@sover.net	454-8542
	MARY JUST SKINNER (May 2017)	P.O. Box 412, Montpelier, VT 05601 mskinner@sover.net	223-7123
	PATTY RICHARDS General Manager patty.richards@washingtonelectric.coop	WILL LINDNER Editor Willind@sover.net	TIM NEWCOMB Layout

Editorial Committee

Patty Richards Donald Douglas David Magida Anne Reed 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.

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Energy Tips

You can use motion sensors on lamps to save money on your electric bill. Sensors turn lights on automatically when someone enters a room, and turn them off after the person leaves.

Do your part for conservation by unplugging your wireless devices when the recharge is complete.

From Reliability to Competence to Cost...

Member Survey Reveals Overall Satisfaction With WEC's Performance, But Room To Improve

Washington Electric Cooperative members who participated in a "Residential Satisfaction Survey" that was conducted in September by a professional polling organization gave their Co-op generally high marks for its performance, particularly in terms of service reliability and the competency and courtesy of WEC staff.

This was good news for the Co-op – even more so because the categories of "Providing reliable service," "Having competent and reliable employees," and "Being friendly and courteous in the service they provide" were deemed by those poll respondents to be three of the four most important "service attributes" they wanted from their electric utility. The fourth of those most-important categories, in these WEC members' opinion, was the ability to "Handle individual complaints and problems," and there, too, Washington Electric scored very well.

The Co-op is required by state regulators to survey its membership every five years. WEC's last member survey was in 2010. One of the differences between that exercise and the recently completed survey was the inclusion, in the new report, of a "gap analysis" (reproduced on this page). Members were asked what aspects of a utility's service were most important to them on a scale of 1 to 10, and then were asked to grade WEC's performance in those areas. The difference between the scores, for each category, was the "gap"; obviously, the smaller the gap between "importance" and "performance," the better – especially in the top-tier (most important) categories.

"The gap analysis is a surveying tool that we asked to be included in this time, as it gets to the heart of issues quickly," said WEC General Manager Patty Richards.

The seven highest-ranked categories in terms of importance to WEC's members were all graded, by the participating members, in the 9's (example: 9.66 for "Providing reliable service," which respondents said was the single most-important category). For performance, the methodology used by NRECA Market Research Services – the Virginia-based organization that analyzed results and prepared the report WEC received in October – considers "mean" scores (a balance between results collected by phone and a smaller number done on line) between 8.00 and 8.99 to be "good." Scores above 9.00 are considered "excellent."

WEC's performance scores in the four "most important" categories were 8.85 for service reliability, 8.98 for

	Importance		Performance		Gap: Difference Between Mean Importance and Performance
	Mean Rating	Rank	Mean Rating	Rank	
Providing reliable service	9.66	1	8.85	3	0.81
Having competent and knowledgeable employees	9.56	2	8.98	2	0.58
Handling individual complaints and problems	9.36	3	8.62	4	0.74
Being friendly and courteous in the service they provide	9.35	4	9.06	1	0.29
Providing a good value for the money spent	9.35	5	7.85	8	1.50
Looking out for the members' best interests	9.19	6	8.04	7	1.15
Communicating with members and keeping them informed	9.03	7	8.45	6	0.58
Being committed to the community	8.96	8	8.48	5	0.48
Helping members learn to manage their energy use	8.11	9	7.43	9	0.68

having competent and knowledgeable employees, 8.62 for its ability to handle individual problems and complaints, and 9.06 for the courtesy and friendliness of staff members. Put another way, the results reveal that WEC does an exemplary job of meeting its members' most-important criteria for an electric utility.

The 0.81 gap between importance and performance in the category of "reliable service" was the largest; yet at a performance score 8.85, respondents still gave their Co-op a strong endorsement.

Not all of the news was good, however. The Co-op's mean performance score for "Providing good value for the money spent" was 7.85. NRECA's methodology counts scores in the 7's as indicating need for improvement. "Providing good value" came in fifth, in terms of importance, with a score of 9.35. The 1.50 "gap" between importance and WEC's performance was the largest in this report.

In a category called "Helping members learn to manage their energy use" poll respondents gave WEC a mean performance score of 7.43 – the only other score in the 7's. (This category came in ninth on the importance list, at 8.11.)

WEC's other performance scores in the top nine categories were 8.04 in "Looking out for members' best interests"; 8.45 in "Communicating with members and keeping [members] informed"; and 8.48 in "Being committed to the community" – solidly within the "good" range.

"We would like to have more grades of 'excellent,' and we'll hope to achieve that by the time of our next survey five years from now," said General Manager Richards. "We feel we can do that by maintaining high standards for our staff, and by continuing to improve the technology that has already led to vast improvements in our system reliability and 'keeping the lights on.'"

The lower scores can also be addressed. In fact, Washington Electric has several tools already in place for "Helping members manage their energy use." SmartHub is one of those tools: a secure, computerized platform that enables members to see how much daily power they use, at what times of the day, with the ability to track their usage over

time. That information can help them identify patterns in their usage that might be costing them, unnecessarily. SmartHub can be accessed from the Home page on WEC's web site, www.washingtonelectric.coop. The Co-op also provides a full-time staff member – "Energy Coach" Bill Powell – who can help interpret the information on SmartHub and help members work toward reducing their electricity usage.

"We need to find ways to attract more of our members to SmartHub, and to make use of WEC's staff," said Richards. "They shouldn't feel they're on their own to figure out ways to cut their power costs."

The other low-scoring category – "Providing good value for the money spent" – is also cost-related, and Richards said the survey results probably reflect the fact that

Washington Electric's top residential rate is comparatively high (\$.218 per kilowatt-hour for power in excess of 200 kWh/month; the first 200 kWh is charged at a much lower \$.097/kWh).

"We're a rural co-op, so we have fewer people per mile of line contributing to the cost of our power and our infrastructure than any other utility in the state," said Richards. "So we can understand that at first blush people might perceive that they're not getting satisfactory value for the money they spend on electricity."

"The rural landscape does make it challenging," she added. "But there really is a tradeoff between rural living and the cost of services. For a WEC member who uses 500 kilowatt-hours per month, the bill translates into paying \$3.44 a day. When you consider how much we rely on electricity, and the convenience and necessities it provides, that's a pretty good value."

Who are we, and what do we value?

The 2015 Residential Satisfaction survey compiled results from 302 telephone interviews (161 people declined to participate) and 178 surveys completed on line. In its report, the research firm included this observation:

"The co-op has experienced some recent events that are likely to have an impact on members' attitudes and satisfaction:

- The co-op last raised rates in 2014. (This was a fairly modest increase of 3.78 percent, but may have been a factor in WEC's comparatively low score in "Providing a good value");
- In the past year the co-op has introduced solar hot water installations;
- The area experienced a 10-day

continued on page 8

EV Charging Stations

continued from page 1

of 2015, WEC has begun unveiling its contributions to the EV infrastructure program. Supported by a \$147,000 grant from VLITE, Washington Electric has worked closely with organizations within the Co-op's territory to install five new EV charging stations at their sites by the end of the year. The VLITE grant covers the purchase and installation costs; the hosts' lease on the equipment is cost-free for five years, and WEC's contribution is limited to Bill Powell's (substantial!) investment in time and dedication. Powell, WEC's Director of Products & Services, has spearheaded the charging-station campaign.

The new EV stations are not all in a state of readiness, and in fact the arrangements for one site recently fell through (Powell is pursuing a replacement for that site). The other four, which are in various stages of development, are:

- at the AOT park-and-ride lot in Middlesex, just off I-89 at Exit 9;
- at the administrative headquarters for Cabot Cooperative Creamery in Waitsfield;
- at the Rumney School in Middlesex;
- at a former garage in East Montpelier across from WEC's office building on Route 14. The property, which is used as a bus turnaround, will soon change ownership from Washington Electric Cooperative to the Town of East Montpelier, and the town has signaled its commitment to hosting an EV charging station at a park-and-ride at that location. It sits conveniently within East Montpelier Village, and the intersection of two major Vermont roadways, routes 2 and 14.

The EV charging equipment consists of a tower with an underground connection to WEC power; a retractable cable (something like the hose at a gas pump) that attaches to the car and re-energizes the battery; a reinforced concrete pad for stabilizing the apparatus, and in some places sturdy barriers to protect them from snowplows and wayward vehicles; and telecommunications equipment that enables customers to pay for their electricity with charge cards.

The final piece of the puzzle is the link WEC has provided to ChargePoint, a nationwide network of EV charging stations with a total of 35,399 charging spots. ChargePoint is what Bill Powell calls "the mother ship." Not only does it sell EV charging equipment, it also provides a payment infrastructure; customers can hold their ChargePoint cards in front of a scanner (like EZ Pass) and receive a monthly bill for their EV charges, or pay with a credit card.

AOT connection

This is the system in place for ChargePoint facilities nationally,



Washington Electric negotiated a five-year contract for its charging-station project with ChargePoint. Above, a close-up of the screen that welcomes users to ChargePoint's system. At right, Cabot's Sara Wing holds her ChargePoint card up, to be read by the monitor. The next step (far right) is detaching the retractable electric cord to connect it to your car.



but as WEC launches its initiative, the arrangement here is somewhat different. WEC charges its standard rates to the WEC member that hosts the site. However, the host, which is

"There are variables, but we've found that you can effectively charge up your vehicle for around \$1.25. It's really not much more expensive than using a parking meter."

— Gina Campoli, VTRANS

leasing the equipment for the five-year contract period and has the direct relationship with ChargePoint, can decide how, or whether, to charge users for re-energizing their vehicles. At the park-and-ride at I-89 Exit 9, the AOT, for the moment, is footing the bill.

"We view this installation as something we're going to learn from," says VTRANS

(Vermont Agency of Transportation) Environmental Policy Manager Gina Campoli.

VTRANS has very little experience with Level II charging equipment, Campoli explains. The agency has

made Level I charging available at scattered sites; these are essentially just power outlets identical to household power at 110 volts; Level II charges, such as those at the new WEC sites, are stronger and quicker. The AOT wants to make such facilities more available to Vermont drivers, but is an interstate park-and-ride a good place to do it? What kind of usage patterns would there be? (If a commuter is leaving his or her vehicle for most of the day, would it tie up the charging station so others couldn't use it?)

"There's research going on about where we should actually place these facilities," said Campoli. ChargePoint will provide monthly reports to VTRANS about usage at the Exit 9 facility, which will help the agency accumulate data to determine how it can best support

building out Vermont's EV infrastructure.

On one point, though, Campoli provided very interesting news for anyone considering the purchase of a plug-in electric vehicle: recharging the battery is cheap!

"People think that charging an electric vehicle is like putting gasoline into the tank," she said. "But it's not. There are variables, like the level of the charger and the size of the battery in the vehicle. But we've found that you can effectively charge up your


vehicle for around \$1.25. It's really not much more expensive than using a parking meter."

No one yet knows exactly what a full-blown EV-charging infrastructure will look like. It may in fact take years for the players – state agencies, electric utilities, users, and the companies providing the charging services – to sort out what works and what doesn't.

WEC's contribution toward this effort could prove very helpful, Campoli said. "We're very excited about the opportunity to learn more and identify what will get us to our goal," she said, "and we're thankful to WEC for providing it for us."

WEC, in return, is thankful to the agency and to the other organizations that have agreed to host the sites, and to VLITE for providing the funds.

"We all have the common goal of reducing climate change and advancing the state's energy policy," said General Manager Patty Richards. "We're all working toward a time of using less fossil fuels in our state, and reaching this goal in a fiscally responsible manner. At the Co-op, our retail energy is 100-percent renewable, so when EV owners charge their vehicles at one of these charging stations they are doing it with clean, renewable power. That is a big deal, and a tremendous success story for the state.

"We are very appreciative of VLITE for helping us to fund and bring to realization these charging stations, and we're proud to be working with them and our WEC members." 



Another of WEC's electric-vehicle charging stations is located at the park-and-ride at I-89 Exit 9 in Middlesex. The host at this site is the Vermont Agency of Transportation. AOT will collect data there to guide the agency's decisions on how best to facilitate EV usage in Vermont.

Cabot Joins Other Players In WEC's EV Campaign

Also: Visit www.driveelectricvt.com for News

With gasoline prices at lower levels than most people, a few years ago, ever expected to see again, this could be a tough time for proponents of electric vehicles to make their pitch.

On the other hand, climate and emissions concerns remain unabated and may be getting the attention they deserve. So there's no time like the present.

And if more impetus were needed, Vermont is creeping nearer its interim

and long-term goals for displacing fossil fuel usage. Vermont's Comprehensive Energy Plan envisions the state meeting 75 percent of its energy needs from renewable sources by 2032, and while those goals are cited frequently in *Co-op Currents* in reference to electricity, the electric grid might actually be the easier lift. As VLITE says on its web page, "Transportation is the single largest energy-use sector in Vermont, accounting for 34 percent of the state's energy consumption and creating 46 percent of our greenhouse gas emissions."

As the electricity sector becomes greener, with WEC and the Burlington Electric Department already being 100-percent renewable, providing a greater share of our transportation energy from electricity makes sense. That's a primary reason that Cabot Cooperative Creamery has signed on to host one of the five electric-vehicle charging stations that WEC is installing in its service territory. The Level II apparatus (see "WEC Debuts EV Charging Stations," page one) is now situated at the cheese co-op's administrative building in Waitsfield.

"This is a part of our broad sustainability program," says Jed Davis, who is Cabot's Director of Sustainability. "We're interested in looking at our impact [on Vermont's environment] and managing our practices in ways that we can mitigate those impacts."

Cabot, Davis says, has three retail outlets in Vermont (its products, of course, are widely available at other stores): one at its creamery in the small rural village of Cabot, another on Route 100 in Waterbury Center, and a third in a shopping center in Quechee. The Quechee Village and Waterbury Center sites attract lots of local and tourist traffic.

In Quechee, Davis says, he worked out an arrangement among the property's owner, the electric utility that serves it (Green Mountain Power), and other parties in the mall to install "a place for the shopping public to charge up." He has started a similar conversation at the Waterbury Center location.

"We need to be doing things to support infrastructure around plug-in vehicles, especially on major routes," says Davis. "How can we get people traveling from New York to Montreal to be able to make it in an electric vehicle? And can Vermont be a partner in providing a solution?" (Responding to that question, he praises the new WEC charging site at the state-owned park-and-ride off I-89 Exit 9 in Middlesex.)

The installation at Cabot's administrative building in Waitsfield has a somewhat different purpose. Its focus is Cabot's employees. At this point, Davis is aware of only two among the staff or around 100 workers who own plug-in electric vehicles (one of them is Davis, himself; he and his family drive an all-electric Nissan Leaf and a Honda Accord hybrid), but the convenience of recharging at work could stimulate more interest.

"We hope there will be employees who will rethink some of the options when they buy their next automobile," he says. Behavioral change takes time, he points out, "and it helps to have a few pilot projects, like the WEC charging station, to get people talking about it, to get their level of awareness up."

Surmounting difficulties

Besides recruiting host members like Cabot Cooperative Creamery and the state Agency of Transportation (which owns the Exit 9 park-and-ride), some challenges for Bill Powell, as WEC's chief organizer for the charging station project, have been technical. Cabot's employee parking lot is a case in point.

It was first installed at a spot where Cabot officials became concerned that it might get damaged by heavy snow periodically falling off the building's roof.

"So we moved it to a well-protected spot, which was safer, but it created a challenge in terms of cell service. The station needs to be able to communicate

with ChargePoint," Davis says, referring to the company that owns the EV charging stations WEC has introduced, and thousands more in the U.S., Europe, and Australia. ChargePoint provides cards that users hold before the screen at the top of the charging tower; once the equipment verifies their card they can charge up their vehicles. ChargePoint records the duration (time) of their charge and – under WEC's arrangement – bills the host (in this case, Cabot).

All this, of course, requires cellular communication, which was available on one side of the parking lot but not the other. That's been a bit of a theme for Powell in his efforts. Vermont's notoriously spotty cell coverage in rural areas has also presented problems at the Exit 9 and Rumney School locations. There needs to be sufficient signal strength to ensure that the charging operation and the financial transaction will be successful.

Placement isn't done blindly; it's guided by radio frequency readouts within ChargePoint's equipment that indicate whether it can find and connect with a cellular network. When Powell found those readings to be highly variable, he ordered new "heads" for all five of the charging facilities in WEC's project. That has helped, but Powell says the communication glitches aren't fully resolved at Rumney.

"I've really been impressed with Bill," says Jed Davis. "He has been relentless.

He's negotiated solutions, including taking a three-year contract with ChargePoint and extending to five years, that's been to everybody's benefit."

As far as technological bumps in the road, Davis says, "Adoption is always hard. It involves education and overcoming initial hurdles."

The road ahead

Despite the headwinds – intermittent rural cell coverage, low gasoline prices – Dave Roberts, senior consultant for Drive Electric Vermont, says electric vehicles are gaining traction here.

Drive Electric Vermont is a nonprofit formed in 2012 through a public-private partnership of the Vermont Energy Investment Corp. (VEIC) and a handful of state agencies. Its web site – www.driveelectricvt.com – is the place for information about electric vehicles and services relating to them in Vermont. That includes a statewide map showing publicly accessible charging stations, which can be uploaded by any mobile device. (Besides, "there's an app for that" – a digital program that helps people use their iPhones to find EV chargers anywhere in the U.S.)

Some of the factors affecting EVs' appeal are being addressed by the industry, Roberts says, including the limited distance vehicles can travel before recharging – a real problem in a rural state.

"As time goes on, range is continuing to increase for the all-electric vehicles," says Roberts. "Over the next year or two we expect models that will get 200 miles" on a charge, he says, due to advances in battery technology and production of lighter cars.

The industry is also addressing affordability. Roberts explains that manufacturers are moving toward mass production of EVs, which will bring their cost down. And as earlier-generation cars get older they're showing up more cheaply in the used-car market. Federal tax credits – between \$2,500 and \$7,500, depending on battery size – also bring down the price of new electric cars.

"VLITE has also provided help for building out the EV infrastructure," says Roberts. "The WEC program is an example of that."

The combination of these contributing factors – financial programs, improved (and improving) technology, environmental awareness, and convenience (no trips to the gas station when you can re-energize at home) – have had an impact. Roberts says there were 88 EVs in Vermont in July of 2012, and 1,046 that he's aware of in November 2015.

"That's pretty robust growth, and we expect it to continue."

The next five years will give Washington Electric Cooperative an opportunity to contribute on this front in Vermont's turn to greener energy. It's not just about "keeping the lights on" at home, but moving the needle toward renewable energy in the transportation sector as well. This will take a well-planned and concerted effort, and WEC is eager to do its part.



Cabot's Director of Sustainability, Jed Davis (above left), is leading the dairy co-op's effort to minimize its environmental impact. Ermin Milak (center), Facilities Manager at Cabot's Waitsfield offices, worked with Jed and Washington Electric to site and install the EV charging equipment. Employee Sara Wing (right) owns a Prius hybrid that will use the new station.

(Getting a Bum Rap)

Renewable Energy Credits, And Their Positive Effects On U.S. Power

As wind- and solar-energy generating sites have increased around Vermont, so has opposition to them. Primarily, this opposition is rooted in their impact upon the landscape: tall wind-power turbines on mountain ridges at four sites so far, with proposals for a few more at various stages of development; and a growing number of commercial solar sites on previously open areas and fields. Opponents raise other objections, too, some complaining of noise under certain conditions at wind sites, of a permitting process they believe bars effective input from towns and local citizens; opponents frequently assert that the economic benefits accrue unfairly to out-of-state, sometimes transnational, corporations.

Washington Electric Cooperative, it is well known, favors renewable energy – for its climate benefits and its economic role, creating a growing industry and new jobs in the state. Yet the Co-op's board and management accept that others will have different points of view, and that as a society and a state Vermont must strive to work its way, fairly, through the issues that arise.

One area of great importance to the Co-op is the subject of renewable energy credits, known as RECs. There have been repeated mischaracterizations in public dialogue about RECs and how the REC market works. Some charge that RECs encourage pollution, while others think they are a sham that enriches foreign investors and undermines claims to progress in the cause of renewable power. Many critics contend that, because electric utilities in states with renewable portfolio standards (which require the utilities to use specific percentages of green power) can purchase RECs to meet those requirements instead of building their own clean energy generators, the REC system actually boosts production from carbon- and nuclear waste-producing power plants.

But the facts reveal the opposite. Renewable energy credits stimulate investments in, and development of, renewable power projects that put more green power on the grid. Bulk electricity cannot be stored, meaning that our regional grid, ISO-New England, performs the exacting task of seeing that there's a constant balance between customers' use and the supply that ISO provides. Without that balance, the grid fails and equipment breaks. Thus, whenever a renewable generating plant is running, another plant somewhere is idle. In New England, it's generally a fossil fuel (oil or natural gas) plant that's backed down. Replacing hours of generation by plants that emit carbon and other

pollutants with renewable energy that emits none has unequivocally resulted in less pollution and emissions from the electricity sector in our region.

(Opponents also contend that weather-influenced wind and solar resources are so unreliable that fossil fuel plants must be kept at standby to replace them.

In fact, because of the equilibrium required by the grid and its innate volatility, that is no less true of oil and gas plants.)

One might argue, legitimately, that RECs are a form of subsidy to renewable-power industries. They are meant to encourage further development.

Government subsidies for fossil fuel generation are as old as the industry itself, and far exceed those given to the new but growing renewable sector. Furthermore, nuclear power receives a form of government support that could, someday, dwarf all that's ever been done for other energy providers; federal law exempts the nuclear industry from carrying liability insurance sufficient to cover catastrophes it causes, shifting those costs to the American taxpayer instead.

As for the income stream provided by selling renewable energy credits, count Washington Electric Cooperative – a nonprofit utility owned by its customer/members – as one of those beneficiaries. The revenues WEC receives from selling RECs, primarily

Renewable energy credits stimulate investments in, and development of, renewable power projects that increase the percentage of green power on the grid.

to utilities in southern New England, have enabled your Co-op to keep its rates fairly stable, with mostly modest increases, in an era when electricity sales for nearly all utilities can be characterized as flat. A stagnant economy during and after the Great Recession was one reason for this, but the popularity of net metering, the improved efficiency of modern appliances, and

greater awareness by members of the importance of energy conservation, have continued to dampen the growth of WEC's revenues from power sales. Meanwhile, its expenses in labor, material, and other costs of doing business have increased.

REC prices also fluctuate, and have periodically trended downward. But to a very significant extent, it's the revenue WEC receives from renewable energy credits, which Treasurer Don Douglas details in his Treasurer's Report to the membership each year, that keeps what could otherwise be a significantly negative impact of modest electricity income in check.

That's hardly a "boon to foreign corporations." It's more like a safety net for central Vermont households.

Keeping track

State and regional governments and authorities sometimes find ways to encourage progress toward a common economic or environmental goal. An example is the cap-and-trade system through which entities like RGGI – the Regional Greenhouse Gas Initiative, of

which Vermont is a part – work toward reducing carbon emissions by local industries. Companies – for example, manufacturers -- are allowed a certain amount of emissions yearly, and if they produce less they can provide the remainder – up to their designated "cap" – to another company, for a price. The overall emissions cap for the region is gradually reduced, nudging these industries toward a lower carbon footprint and thus benefitting the environment.

Renewable energy credits also are a market-based mechanism for reducing carbon emissions, but, says WEC General Manager Patty Richards, "RECs are more effective and make more sense. For all its benefits, the cap-and-trade system provides emissions allowances that enable polluters to keep polluting. The virtue of RECs is that they actually create the alternative to the problem. They don't merely reduce fossil fuel generation of electricity, they increase power produced from renewables. It's there on the grid, displacing power from carbon sources, causing the fossil fuel plants in our region to run less."

RECs are sometimes called green tags. They are tradable certificates attached to each megawatt-hour (MW) of power produced and delivered to the grid by a qualifying renewable-power generating facility. Generally, those sources include solar, wind, geothermal, and biomass systems. WEC's generating plant in Coventry, Vermont, which fuels its power production with landfill methane, qualifies under biomass. Small, low-impact, "run-of-river" hydro stations may also qualify; large hydro systems with major impoundments and dams, like Hydro Quebec, do not qualify for renewable credits in the markets where WEC sells its RECs.

WEC earns the green tags that it sells from its investments in the Coventry plant and Sheffield Wind, which the Co-op does not own but which it assisted economically at a crucial time for that project.

When a REC is sold, the "environmental benefits" it represents go with it. That's why the Massachusetts utility that buys it can claim it toward meeting the Bay State's renewable portfolio standards (RPS). Once the purchaser buys that REC and applies it toward the energy it sells – and documents that to its regulatory agency – the REC ceases to be usable or marketable. (Green tags have their own identification systems.)

As for the entity that sells the green tag, such as Washington Electric – it can no longer claim those environmental benefits, even if it produced the megawatt of power from wind,

continued on page 7



Washington Electric Co-op earns renewable energy credits associated with its investments in the Cooperative's landfill-methane power plant in Coventry, and in Sheffield Wind (above). RECs stimulate the development of renewable energy facilities, reducing the operation of fossil fuel-burning generators. They also provide income that helps stabilize WEC's electric rates.

RECs

continued from page 6


biomass, etc., that the tag represents. This prevents so-called “double counting” of the REC – and making that point clearer to doubtful legislators and industry officials in southern New England markets was one of the reasons Vermont’s Legislature passed a new energy bill in 2015. WEC quantifies the RECs it can no longer claim, and buys back enough credits to assert its claim that the Co-op is meeting its members’ electricity needs with low-cost renewable energy.

Typically, states with a renewable power standard for their utilities are also, like states involved in cap-and-trade agreements, moving toward cleaner-energy goals. As many Vermonters know, the goal in this state is for 90 percent of our energy, in all energy sectors, to come from renewable sources by 2050, with interim goals along the way. In California, utilities are instructed to reach 33-percent from renewables by 2020. Approximately 30 states in the U.S. have adopted an

RPS, as have the District of Columbia and Puerto Rico.

Renewable energy credits help states achieve their green energy goals. Ultimately, for every REC traded, a renewable power facility had to be constructed and operated to produce that credit. Revenue from REC sales makes it more likely that other renewable facilities will be built, providing construction jobs, and the companies will hire staff to operate them.

Meanwhile, REC sales make it more likely that Washington Electric can keep its rates affordable for its members.

Those who dislike the increase of renewable-power facilities in Vermont have objections that seem very legitimate to them, and which the state’s legislators and energy regulators will probably have to address. Renewable energy credits, however, are a direct, effective, and publicly accountable tool for enabling the states and the country to move steadily toward a greener, safer, energy future, with a cleaner environment that helps preserve the way we live. 

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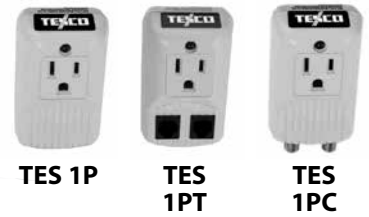
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Winter Storm Damon

continued from page 1

businesses, school, barns, and other connections on WEC's lines. That gives a sense of the nature of the storm and the repair efforts that were necessary.

WEC's crews, line workers brought in from other utilities to help, other Washington Electric operations staff who assisted the crews by scouting the damage and providing other help, and WEC's vegetation-management contractors who chain-sawed away the forest debris so the line workers could make their repairs, worked basically two-shift (16-hour) days for more than a week. In the office, people staffed the telephones for shifts just about as long, taking thousands of calls as Co-op members reported their outages and sought updates on WEC's progress. Others in the office mapped out and strategized the storm-restoration efforts. And when they weren't doing that, they were joining with Co-op administrative personnel, the Finance Department, and friends, neighbors, and relatives from Co-op Country to provide warm meals at the start and end of every day at the Old Brick Church next door for those who were working in the field.

It was a monumental, sustained effort – and for Washington Electric Co-op members, an almost endless ordeal of finding ways to live without electric power, and waiting, waiting for normality to return.

But! No one that we know of, and definitely not WEC's storm-recovery workers, perished because of Winter Storm Damon, as we hear of in major storm events in other parts of the country. For the most part, we came through it unscathed.

And now, a year later, we can say that the financial impacts on Washington Electric – which could have



Winter Storm Damon really made a mess of things when it struck Vermont in December, 2014. Trees were so burdened by heavy wet snow that they continued to collapse for days after the storm itself was over. Above, a team of right-of-way contractors works to clear fallen trees away from a power line in Tunbridge (visible at the top of the photo), so that WEC line workers can get in to restore members' electric power. This chaotic scene was far from unique; similar devastation occurred in many parts of WEC's 41-town service territory.

been severe for a storm this severe and a cooperative this modest (10,800 members) – were not devastating, either.

"We got a substantial recovery of funds from the Federal Emergency Management Agency, or FEMA," says Patty Richards, the Co-op's general manager, looking back on 2015.

To begin with, utility personnel – including from Washington Electric – worked closely with emergency management officials in Vermont, even while recovery efforts were still underway, to document the damages caused by Damon. The exhaustive information they compiled was the basis for a report FEMA presented in Washington to President Barack Obama. Early in February the president

signed a disaster declaration that included 10 counties in Vermont, among them Orange and Washington counties where the majority of the Co-op's costly damages had been sustained.

That declaration paved the way for towns and nonprofit utilities like WEC to request and receive substantial federal reimbursement, primarily for labor costs, which were by far WEC's largest expense.

WEC's costs for power restoration reached about \$641,000. The help from FEMA put a sizeable dent in those obligations, and WEC's financial and administrative staff members have been working over the course of the year with Vermont's regulatory officials to address the remainder. It appears that these efforts will enable the Co-op to spread

out the remaining costs from the storm, to lessen the financial impact on the Co-op's members.

"We expect that we're going to be able to take care of these costs without resorting to a rate increase," says Richards. "Because of the help we received from FEMA as a not-for-profit utility, we were able to manage the financial impacts and keep our rates stable.

"We'll keep our members informed as the final results become known," Richards added. "And let's also hope we get through the end of 2015, and all the way through 2016, without a repeat performance from a visitor like Damon!"

"And oh," she remembered, "Happy holidays and Happy New Year, everybody!"

Member Survey

continued from page 3

storm in December 2014, during which up to 55% of the membership was without power."

Some other interesting results:

Renewable energy: "Sixty-three percent of Co-op members feel it is very important that WEC provides them with renewable energy sources, giving it a rate of 9 or 10."

Internet: Three-quarters of the members say their family accesses the internet from home.

Age: Almost half of the responding members were 65 or older, and 60 percent have been served by WEC for more than 20 years.

Member identity: Recognizing the difference between being a customer of a for-profit utility and being a member of a cooperative (which provides member-owners the right to run for the Board of Directors and to vote for board members, to approve or disapprove of certain large power contracts, and other advantages) is called "member identity." Fifty-four percent (54%) of respondents expressed member identity. Many of these tended to be older members, long-term members, people in smaller

households, and those using less electricity. These also tended to favor renewable electricity.

Appliances: Clothes dryers are the electric appliance present in the greatest percentage of WEC households (58 percent), followed by electric water heaters (36 percent).

Not far down the list, unfortunately, are portable electric heaters (18 percent). *Co-op Currents* featured an article in October explaining that these devices can add significantly to people's power bills.

"This one really caught my eye," said General Manager Richards. "These units are cheap at the store but they are very expensive to use to heat homes. Members are better off financially to use other sources of heat than plugging in these energy guzzlers. And, again, this might be an area where our staff can help with advice and insight."

Co-op Currents: More than seven in 10 WEC members say they read *Co-op Currents* "regularly" or "fairly often." By industry standards, this is a very high readership, and is consistent with the 2010 survey results.

"The survey was great feedback," Richards said. "We are going to use the results to make changes in our

operations and to realign the level of service we offer to improve members' reactions. It's our mission to respond to our member-owners' needs. We

received terrific feedback and lots of comments. Now it's time to put these results into action."

Board, Bylaw Elections Coming Up

Washington Electric Cooperative's 77th Annual Membership Meeting is still several months away, scheduled for **Wednesday, May 3, 2016**, at the **Canadian Club in Barre**.

But it's already time for WEC members to consider running for a seat on the Co-op's Board of Directors, to leave room to accomplish the necessary tasks. Interested parties should contact WEC Administrative Assistant Debbie Brown at 802-224-2313 to request a candidate's packet that contains the materials necessary to run for the Board. There is a **Friday, February 12** deadline for all candidates to submit these materials, including a petition signed by at least 25 WEC members, which serves as an endorsement of the candidate's legitimacy. *Co-op Currents* begins its coverage of the Board elections in our March issue, with introductions of the candidates, followed in April by their responses to questions pertaining to their interests, background, and priorities.

Similarly, the elections leading up to the Annual Meeting provide members an opportunity to petition for changes to the **Cooperative's bylaws**, WEC's governing document. You can obtain a copy of the bylaws through the Co-op or read them at the WEC web site. If there is a change you would like to see, as a Co-op member you have the right to petition for it and bring it to a vote of the membership. In this case, the signatures of a minimum of 50 WEC members are required. Petitions for bylaw changes will be due on **Wednesday, February 10**.

We'll publish more related to the Board elections and bylaws in our January 2016 issue.