

Triple Storms Cause Late Season Outages; WEC Doubles Down On Resiliency

Co-op increases funding for right of way clearing as storms increase in intensity and frequency

Annie and Dick Dolan are researching generators. From their home on a hill between Topsham and Corinth, they've seen plenty of storms – but recently, they've noticed, the storms are getting worse.

"I've lived on this hill for 40 years, and there have never been as many power outages as there have been in the past 12 months. It used to be a couple hours or two; now it's days," observed Annie Dolan. "This last one with the heavy snow – it was scary. Trees were bent right over." The couple went out with an excavator to shake snow off arching birch trees.

Dolan knows the frequent outages aren't due to negligence from her electric cooperative. It's because in recent years storms have increased in frequency and intensity. High winds, heavy snow and ice, and trees falling from outside WEC's rights of way all cause outages. These outage-causing storms are now frighteningly commonplace – especially in Vermont.

According to data from the US Energy Information Administration (EIA), Vermont was one of the top five states hardest hit by outages in

According to the US Energy Information Administration, Vermont was one of the top five states hardest hit by outages. Winter storms are mainly to blame.

2017. A recent EIA report showed that nationally, average outage durations doubled between 2016 and 2017, due primarily to major weather events – and the EIA didn't even include in its data months-long outages in Puerto Rico following Hurricane Maria.

In its analysis of the EIA's report, the website UtilityDive.com noted,

"The states hardest-hit with outages last year were: Maine, Florida, New Hampshire, Georgia and Vermont," and confirmed that for Vermont and our northern New England neighbors, winter storms are to blame for most of the damage.

It's no longer about the Big One

Storms may grow more frequent, yet each is unique. While the first two storms of October and November 2018 ripped through with high winds, the third, Winter Storm Bruce, sat over Vermont dumping wet snow. "That's a record for us," said Operations & Engineering Director Dan Weston about the triple major weather events – October 15-17, November 9-14, and November

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Larry Gilbert

Right of way management coordinator Larry Gilbert captured these tree branches, weighed down by heavy snow after Winter Storm Bruce, making contact with power lines. The storm caused 295 separate outages on WEC lines, at least half of which were due to tree contact.

Whose Woods These Are

By Will Lindner

When biologists, climatologists, and conservationists sound the warning about humanity's detrimental impact on the natural environment, and the species that dwell therein, Washington Electric Cooperative's staff and leadership – and certainly its members – pay attention.

WEC is a rural utility, owned by and serving members who live intimately within the landscape and share it with wildlife of all forms. The Co-op therefore works to minimize the impact of its electric infrastructure, for example by rejecting herbicides to control growth in its rights of way, wrapping utility poles in protective material if they must be set within wetlands, building and rebuilding its system with aesthetics in mind.

And fortunately, we live in a state with high standards (and demanding regulations) for environmental protection and stewardship. Our tourist and recreational industries, and our sense of ourselves as Vermonters, depend on such measures, and they have indeed helped keep our state beautiful – almost pristine in its appearance.

But Susan Morse, founder and science director of the educational and advocacy nonprofit Keeping Track, warns that looks can be deceiving.

"Many people in Vermont have a superficial understanding," she says. "You can drive along our roads and look out the window at the mountains and see a lot of woods, and unless you know better, think 'This is great! There's lots of room for wildlife!'"

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Washington Electric Cooperative

East Montpelier, VT 05651

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WEC met Vermont's Renewable Energy Standard goals, p.2.

What were the effects of those late-season storms? See the Fourth Quarter 2018 Storm Index, p. 5

Which Vermont species most need conserving? See the p. 7 sidebar to Will Lindner's story "Whose Woods These Are."

Heat pump hot water heater: Switching to one could save you cash and carbon. The Energy Coach explains, p. 7.

The Cooperative Difference: in WEC's 80th year, President Barry Bernstein considers what makes the Co-op so special. P. 8.



Larry Gilbert

A fallen tree, resting on WEC's wires and blocking the road, collects snow during Winter Storm Bruce. See p. 2 for "Whose Woods These Are." a roundup of areas ROW crews are working to keep clear of "danger trees" like this one and improve members' reliability during storms.

Co-op Meets State Renewable Energy Standard Goals

WEC surpassed state goals providing renewable energy and reducing its members' fossil fuel use for the year 2017. The announcement from the Public Utility Commission (PUC), which came out in late 2018, came after the commission completed a review of state electric utilities' filings to show compliance with Vermont's Renewable Energy Standard (RES). WEC and all of Vermont's electric distribution utilities met RES goals.

The RES is mandated through Act 56, which was passed by the Vermont legislature in 2015. Act 56 formalizes Vermont's goal to use 90 percent renewable power, in all forms of energy use, by 2050. The RES creates incentives and markers to guide electric utilities toward this goal. Electric utilities must increase the amount of their power that

comes from renewable sources – not a problem for the Co-op, since its power mix already comes from 100 percent renewable sources. They must also help electric consumers reduce carbon use from non-electric energy sources, like gasoline and fuel oil, in their households or businesses. The requirements for each tier increase annually until 2032. It is important WEC meets the annual requirements, as the order carries penalties for utilities that fail to meet the levels set out by lawmakers.

Utilities are required to invest in "energy transformation projects," supporting their consumers in switching from fossil fuel use in transportation and home heating in favor of renewable options. WEC accomplished this through innovative partnerships to install electric vehicle

How WEC cuts fossil fuel use:

- 100 percent renewable power supply
- Met the state's Renewable Energy Standard goals
- Started the Button Up program to help all members improve efficiency and reduce carbon use
- For more info: 802-223-5245 or 800-932-5245

charging stations throughout its service area. It also launched the Button Up incentive program, giving members cash for home weatherization projects or to purchase qualifying energy-efficient home appliances and, new this past year, electric vehicles.

"I'm proud WEC is already 100 percent renewable, and I'm proud we met the RES goals for 2017," said General Manager Patty Richards. "As a

democratic cooperative, we've had the freedom to listen to what our members want and to innovate. Our members know best what they need, so we help them along by providing funds to help people become more efficient in the way that's best for them."

Because the state fines utilities that don't meet annual requirements, Richards says it's important for members to continue using the Button Up program as a source of capital for home efficiency improvements. "We'd rather give cash to our members than pay funds to the state in penalties and fines. For every member who wants to reduce their carbon footprint but could use some help to make it happen, call us. That's what Button Up is for." That number is 802-223-5245 or 800-932-5245.

Where's WEC?

Roundup of where Right of Way crews are currently working to keep your power reliable:

- East Roxbury, Northfield, and Williamstown
- Moretown substation into Worcester
- Tunbridge, Potash Rd.
- Transmission line to Walden substation



Co-op Currents

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

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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 Dawn Johnson, at 224-2332.

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WEC In the News

Vermont Public Radio's John Dillon covered the reasons behind WEC's 5.49 percent rate increase: a rise in renewables, and a crash in the Renewable Energy Credit (REC) market.

Find his story "Vagaries Of The Energy Market: A Boom In Renewables Leads To Higher Rates For Co-op" on vpr.net.

For more information: "WEC Announces Rate Increase in 2019 at Community Meeting," *Co-op Currents*, December 2018

Participate in Democracy: Run for a Seat on WEC's Board of Directors

Are you looking for a meaningful way to serve your community?
Are you interested in Vermont's energy landscape?
What do you envision for the future of your Co-op?

Consider running for a seat on WEC's Board of Directors. All Co-op members are eligible to run. Contact WEC Administrative Assistant Dawn Johnson at 802-224-2332 to request a candidate's packet. The deadline to submit all candidacy materials is February 9.

Every year elections are held for three of WEC's nine board seats. In 2019, incumbent directors Barry Bernstein, Roy Folsom, and Annie Reed seek re-election.

WEC benefits tremendously from its directors' service, commitment, and vision. The Co-op also knows democracy works best when we all participate. If you've been thinking about getting involved, call for a packet and start collecting signatures.

Got something to say?

Letter to the editor, comment, or a story tip? Drop us a line at currents@wec.coop or Washington Electric Cooperative, Inc., P.O. Box 8, East Montpelier, VT 05651, Attn: *Co-op Currents*.



President's Message

Capital Credit Refunds Mitigate Rate Increases; FEMA Grant and Increased ROW Funding to Improve Reliability

by Barry Bernstein

As we enter 2019, I want to share with you some thoughts about this past year and this new year. 2019 marks the 80th anniversary of our electric Co-op, and a history we should all be proud of. Thanks to the vision and efforts of WEC's founders and early adopters, we have electricity at our homes, farms, towns, schools, and small businesses.

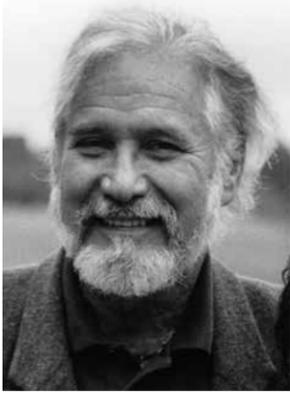
I recently received emails from a couple of our consumer-members concerned about our rate increases effective July 1, 2018 (3.72 percent), and January 1, 2019 (5.49 percent), both approved by the Vermont Public Utility Commission (PUC). Your Board of Directors - elected by members, and members ourselves - do not take raising rates lightly. Our fiduciary responsibility, as a member-owned electric co-op, is to recover enough money in our rates to make sure that we are able to provide you with safe, reliable energy service. As part of that responsibility we must also collect enough revenue to pay our mortgage obligations.

Any excess is returned to our members in the form of capital credits on our November bills each year. If you look at our rate increases since 1998, you can see that WEC rate increases have on average stayed close to the cost of inflation, or approximately 2.4 percent per year over 21 years.

If you take into account our cooperative practice of distributing capital credit refunds back to our members, the picture changes a little. The cooperative difference is that excess margins, or revenue, are returned to each member over time,

Did You Know?

Over the past 21 years, WEC's rates have increased an average of 2.4 percent each year. That's about even with the national inflation rate over the same period of time.



If you look at our rate increases since 1998, you can see that WEC rate increases have on average stayed close to the cost of inflation, or approximately 2.4 percent per year over 21 years. WEC has distributed 6,793,408 dollars in capital credit refunds to our consumer-members over the same 21-year period. These refunds effectively reduce your annual electric bill, which helps to offset rate increases. In an investor-owned electric utility, that money goes to stockholders - not consumer ratepayers.

— Barry Bernstein

and even those who leave the Co-op still receive refund checks from their time on our lines. Everyone's refunds are different. Refunds are distributed to members who were on the Co-op lines during years the credits were allocated, and are tied to how much electricity each member purchased.

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2019

Your WEC Board of Directors just approved our 2019 budget, which would not require any additional rate increase for the year. Our Coventry generating plant has finished additional improvements, along with engine rebuilds on three of our five engines, and we project our best and cleanest kWh output in the plant's

15-year history. We expect that recent improvements on some generation facilities in the northern part of the state will also somewhat lessen pressure on regional transmission costs.

We have added additional funds for increased right of way (ROW) clearing this year, which we're directing to areas that have experienced the longest frequency and duration of outages. We received approval for a 187,000 dollar Hazard Mitigation grant from FEMA (Federal Emergency Management Agency) to make our Moretown-Fayston feeder line more resilient to outages, by reducing the span between poles from 600 feet to less than 300 feet. We will receive 75 percent of the approved amount. We also just finished aggressive ROW cutting in the Loop Road area of the Northfield feeder and along the Moretown-Fayston feeder, and have just started cutting on the Middlesex line.

Proposed Rate Design

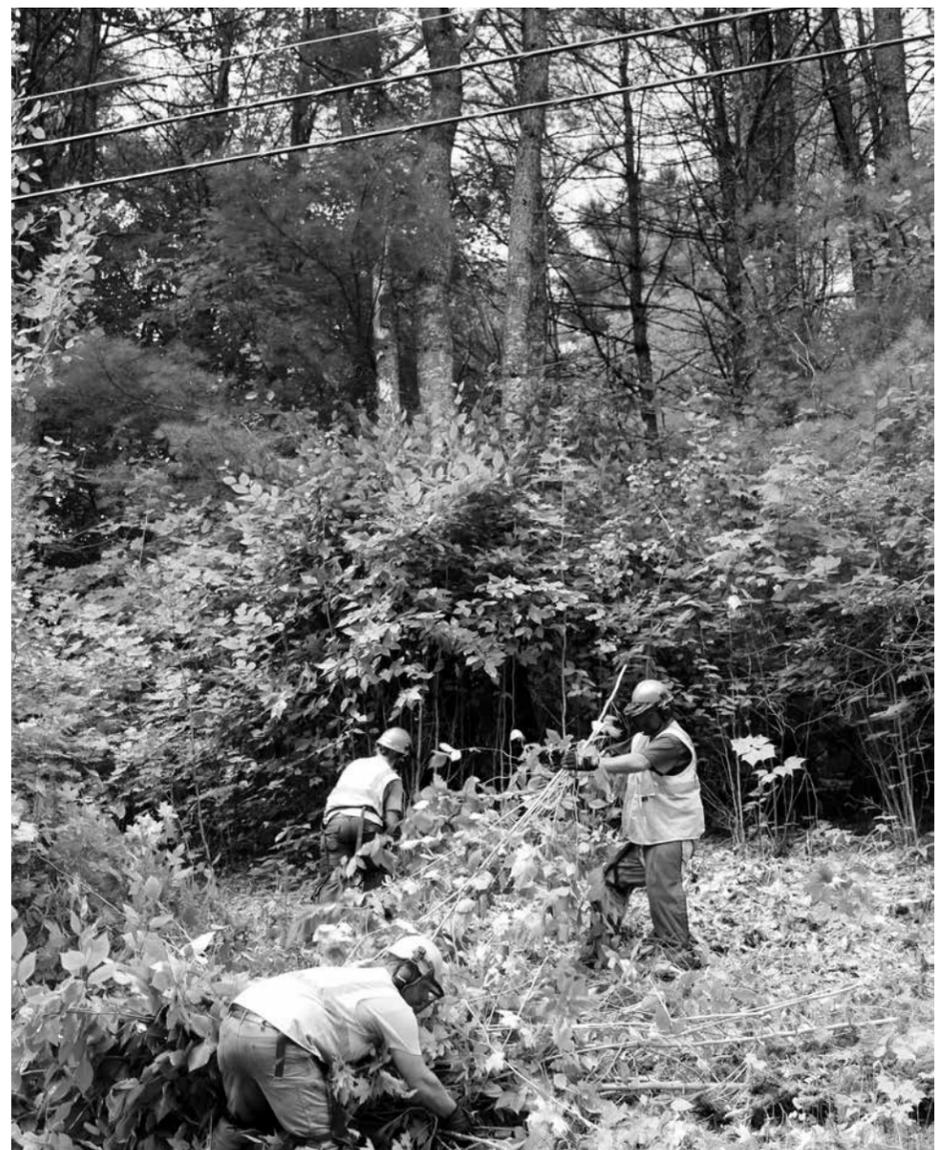
We will be filing our new rate design application in the next few months. Approval of any new design won't come until later in the year, after the PUC and Department of Public Service (DPS) have opened an investigation and had a public hearing. As I have said previously, this process has not been easy - significant change never is. Our members have been providing input over the past two years. We have been listening to your concerns and have kept a lower priced 100 kWh initial block.

The success of our efforts over the last 30 years to promote conservation and efficiency, along with a significant increase in net metering installations in our territory, has led to flat and decreasing kWh sales. This makes it necessary to collect more of our fixed costs in our base monthly service charge.

The other factors necessitating a change to our rate design are Vermont's

commitment to reduce our state's dependency on fossil fuels by 2050, and the state mandate that electric co-ops, municipals, and Energir-GMP take a leadership role by meeting increasing carbon reduction milestones. WEC strongly supports these efforts to address climate change. At WEC, we expect to face increasing costs from more extreme storms and winds, along with the costly removal of ash trees at risk from the emerald ash borer. Between the ash borer and the threat of danger trees to lines, we estimate that we will have to increase our ROW budget by several hundred thousand dollars over the next few years if we are going to maintain and improve reliability and combat climate change.

I share this not to alarm our members, but to let you know we are paying close attention to the issues that face our Co-op and our membership. We hear you and are here for you.



Tree crews working on roadside lines clear away brush and undergrowth. As WEC braces for stronger, more frequent storms and the emerald ash borer, it's increased funding for ROW clearing. Currently, crews are clearing around lines that saw multiple outages during the major storms of October, November, and December of 2018. All the work is done by hand: WEC uses no herbicides on its rights of way.

Triple Storms

continued from page 1

26-December 5.

Even so, Weston cautioned away from thinking of each new major storm as the Big One, because storm records are quick to be re-broken. “Our membership made it clear to me they want improved service reliability,” he said. He recalled a conversation with a member who told Weston that everyone knows climate change is making weather more severe, and what he wanted to know was, what’s the Co-op doing to prepare for it?

“We’ve been more than aware for four years that storms are getting tougher,” said Weston. “The answer is simple. We need to clean up our rights of way,” – the areas around power lines the Co-op is responsible for keeping clear.

WEC’s Board of Directors agreed with Weston’s conclusion. In 2019, WEC is allocating an additional 100,000 dollars to right of way work. “We’re going from 850,000 to 950,000 dollars. We’re increasing the budget significantly,” said Richards.

How right of way work prevents outages

Winter Storm Bruce caused 295 separate outages on WEC lines. The good and bad news is: more than half of those outages did not involve a broken wire. That’s good because they were relatively quick, easy, and inexpensive to repair. But repair still takes a long time, and those outages were preventable.

An outage with no broken line is often caused by a tree making contact with the lines. As heavy snow weighs down branches, some bend into the right of way. When a falling tree or branch brushes a line, equipment called an oil circuit recloser, installed on each of WEC’s lines, causes the line to power off as contact is made. In most cases, the tree or branch continues falling without actually breaking the line, and the recloser allows the line to turn back on. When your lights flicker off and on, that’s usually what’s happened.

But if the tree or branch keeps contact with the line, the recloser will attempt to restore power three times and then locks out. This safety measure keeps the wire from burning through. The system reports a fault on the line to WEC’s operations team, and a line crew goes out to clear away the branch and restore power.

This can happen at any point on a line. Weston said that a line that starts at a substation on high ground can travel several miles through open fields, evergreen forests, and other terrain before it reaches the smaller distribution lines that connect to members’ homes. A member at lower elevation might be baffled by flickering lights, he explained, but it often happens that their power is affected by its route through snow-covered trees in an uphill microclimate many miles away.

Weston said that storm analysis showed 10 to 15 lines where oil circuit



WEC crews assess heavy snow bending trees over power lines. Winter Storm Bruce caused heavy snow loads on trees throughout WEC’s rights of way, causing 295 separate outages, affecting about 28 percent of WEC’s service area over the course of the storm.

reclosers locked out power during each weather event. “We’re going after those lines first, because they’re common to all three storms, indicating we have a tree contact problem. That’s where we’ve already started, and that’s where we’ll push in the first and second quarter of 2019,” he said. By mid-December the line and tree crews had already critiqued the patterns and were in the field cutting back trees in those lines’ rights of way.

This is the work additional right of way funding allows WEC to do: figure out which lines are most vulnerable to outages, and address them. In

windstorms, it’s often large pines outside the right of way that fall through and break wires. In heavy snow, it’s bending branches. Addressing both tree issues is essential to preventing outages – along with the regular flat-cutting and trimming tree crews do throughout the year on WEC’s rights of way. And all this is done by hand, as WEC does not use herbicides on its rights of way and is the only utility in the state with this policy.

Hardening the system

Including the three late season storms, 2018 brought Vermont six

storms that the state Public Utilities Commission (PUC) said qualified as major weather events. These events affect electric utilities statewide, so for each utility’s reliability ratings, the PUC allows exemptions from outages that occur under these events. The idea is, catastrophic weather is different from day to day reliability.

But catastrophic weather, while not quite day to day, still happens far more often than it used to. “The key thing is, there were few months without a major weather event occurring,” pointed out Weston, who said storms January 3-5, April 4-8, and May 4-8 also qualified as major storms. In fact, the April storm and Winter Storm Bruce were damaging enough to trigger FEMA funding (WEC receives reimbursement from the federal government for some large and severe storms). WEC also incurred damage from a June 18 windstorm that was too localized to qualify as a major weather event.

“I want people to know: the weather is changing and it’s really impacting utilities. It’s not just WEC, it’s all utilities. WEC, GMP, the national grid,” said Richards. When a major weather event occurs in the state, she said, it’s important for WEC members to know they aren’t the only ones enduring long outages. WEC works just as hard to restore power as GMP, the largest electric utility in the state, she pointed out, “and we’re usually back online first. Before their last customer is restored, our last member is restored,” despite the Co-op’s rural lines and difficult terrain.

For staff, restoring power and assisting members is hard work, but part of the job. Fatigue occurs, but Richards says staff are trained for this work. She allowed that after each major event, it takes about a week to recover physically – let alone mentally, and let alone the task list that keeps accumulating while repair is underway.

But in the intensity of storm work, a great team can shine. “We rise to the occasion,” she said. Staff grow closer over long days repairing faults and assisting members, she said, and somehow manage to have fun, too. So Richards supports her tired, hungry, hardworking staff as much as she can, but she doesn’t worry about them. What she does worry about, she said frankly, is “our members’ perception. I want them to be confident that WEC is ready: we understand this, we’re hardening the system as much as we can.”

“Hardening the system” is a utility term for preventing and protecting against outages. Richards and Weston say that with the board’s additional investment in right of way clearing, along with years of work to improve outage response time and address tree and brush clearing, WEC is doing its best to keep its power reliable even in the face of major weather events.

But there’s only so much the Co-op can do. And that’s why Richards said, whether we’re talking utilities or households, Vermont or beyond, “This affects everyone. We all have to be prepared.”

Be Prepared

It’s essential to be ready if there’s a power outage. Here’s what you need to know:

- Call the Co-op to report the outage: 802-223-5245 or 800-932-5245.
- Keep an emergency kit on hand with basic needs: flashlight, warm clothes, etc.
- Store a few jugs of water and cans of nonperishable food.
- To find emergency shelter or other needs during an outage, call 211, the state’s emergency resource line.
- If you rely on power, consider a backup source. For help determining which backup generation is best for your situation, contact WEC’s Energy Coach at energycoach@wec.coop
- For other useful tips, visit <http://www.washingtonelectric.coop/energy-services-safety/what-to-do-if-the-power-goes-out/>



Annie Dolan



On Annie and Dick Dolan's property on the Topsham/Corinth line, heavy snow from Winter Storm Bruce caused birches to bend in half. Above, the Dolans use an excavator to shake snow off their trees. In WEC's rights of way, heavy snow loads caused tree branches to bend over and touch the wires, causing outages. To improve reliability, the Co-op is cutting back trees in the rights of way of lines with tree contact related outages during the three storms that hit in late 2018.

Fourth Quarter 2018 Storm Index

October 15-17:

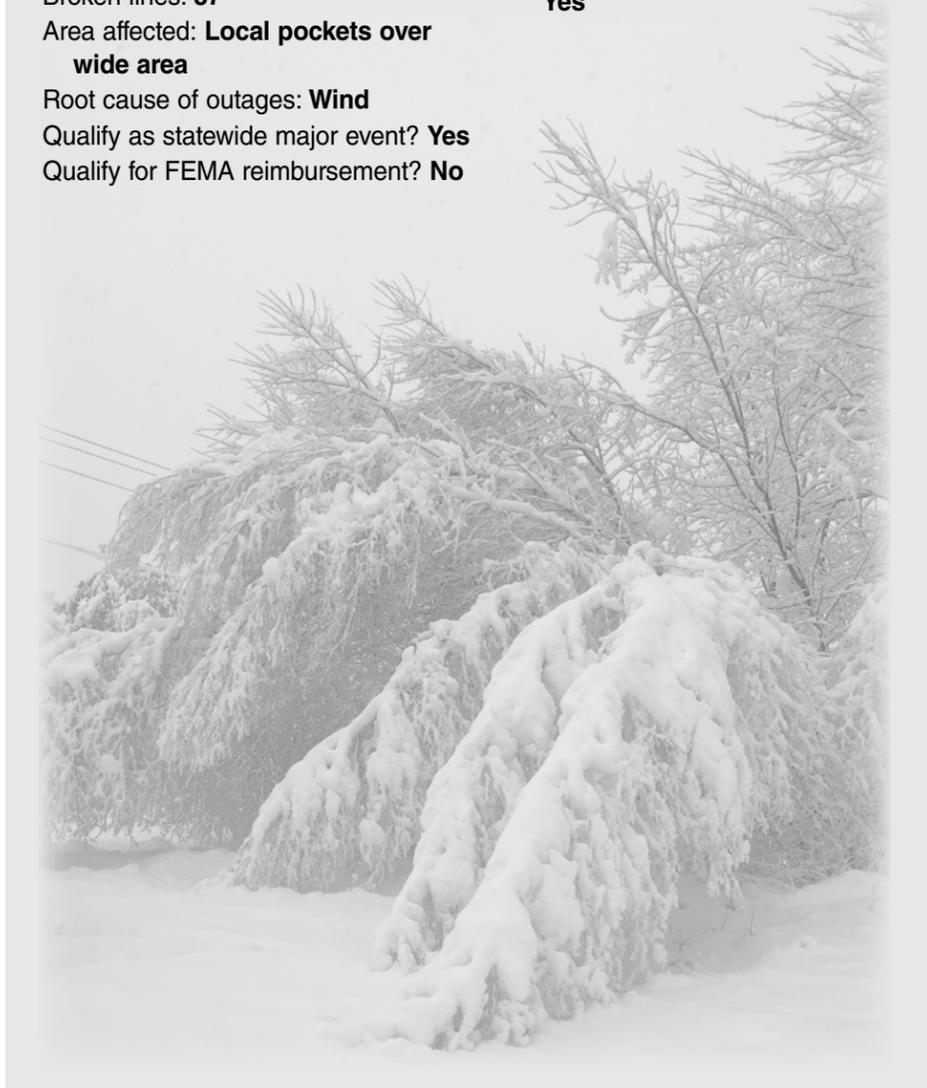
Members affected: **2,492**
 Lines affected: **7.2 percent**
 Separate repair sites: **70**
 Broken poles: **2**
 Broken lines: **24**
 Area affected: **Localized**
 Root cause of outages: **Wind**
 Qualify as statewide major event? **Yes**
 Qualify for FEMA reimbursement? **No**

November 9-14:

Members affected: **5,255**
 Lines affected: **18.6 percent**
 Separate repair sites: **179**
 Broken poles: **4**
 Broken lines: **87**
 Area affected: **Local pockets over wide area**
 Root cause of outages: **Wind**
 Qualify as statewide major event? **Yes**
 Qualify for FEMA reimbursement? **No**

November 26 – December 5:

Members affected: **14,624**
 (some members experienced multiple outages)
 Lines affected: **28 percent**
 Separate repair sites: **295**
 Broken poles: **6**
 Broken lines: **43**
 Area affected: **Widespread**
 (Winter Storm Bruce)
 Root cause of outages: **Wet snow**
 Qualify as statewide major event? **Yes**
 Qualify for FEMA reimbursement? **Yes**



“We all need to be prepared”

That's why the Dolans are doing generator research. They have wood heat, and backup kerosene lamps, but they need power for their well. “It doesn't matter what time of year. You have to have water!” said Annie Dolan.

They raise chickens, turkeys, and geese, and keep an extensive garden. So, “losing a freezer full of food would be a big problem,” she said.

On that hill straddling Corinth and Topsham, the Dolans have seen all kinds of weather get more severe – windstorms as well as snow. “The one in May of 2017, we were out for a really long time. It was a 60 mile per hour gust that took a greenhouse we'd just built and flattened it. I've never seen wind like that, after living on this hill for 40 years,” said Dolan. “I realize there's nothing Washington Electric can do about it. They can't get to everybody at once. So the generator is a definite possibility.”

In the meantime, they're talking to their neighbors, studying options online, looking to see how much of the prep work they can do to save money installing a unit. The cost is worth it to keep the water running and to save a winter's worth of food.

Richards urges every WEC member to take stock of their own individual and personal needs. “If you have medicine that needs to be refrigerated, if you have freezers that need to stay cold, if you can't go without your electricity for a couple of days without facing real

trouble or hardship, you absolutely need to have a backup plan in case of an extended outage,” she said. “Whether that's a generator or a place you can go, I can't stress it enough.

Have a plan. The Co-op is doing all we can to prevent outages. But we can't stop the weather. We all need to be prepared.”



80 Years of WEC: Moments in Cooperative Electricity History

2019 marks WEC's 80th anniversary!

To celebrate, all year we'll spotlight important events and people throughout WEC's history.

Got a story? Remember when? Let us know!

Send a message to currents@wec.coop, drop by the office, or send to Washington Electric Cooperative, Inc., P.O. Box 8, East Montpelier, VT 05651, Attn: Co-op Currents.



Public Utility Commission Approves 5.49 Percent Rate Increase

On December 17, the PUC issued an order approving WEC's proposed 5.49 percent rate increase, effective January 1 of this year. The increase was driven almost entirely by one issue: falling revenues from the sale of renewable energy credits (RECs).

General Manager Patty Richards said she shares frustrations with members concerned about rising rates. “No one likes rate increases, but this was unavoidable. The collapse in the REC market is beyond our control,” she said. “Our best strategy is to use a portfolio approach to mitigate the decline in revenue and this has helped minimize the impact to WEC members.”

The PUC stated that in WEC's next filing, the Co-op should explain how it plans to keep the falling REC market from leading to future rate increases. “We are happy to explain what we are doing and how the portfolio approach prevented a steeper increase, and hopefully the REC market will recover,” Richards said. “We plan to continue with portfolio management, as it's proven to cushion the impact of falling REC prices.”

In the meantime, she said, WEC will continue to run a lean and efficient operation, working to keep costs and expenses as low as possible. Leadership will continue to look for ways to stabilize revenues and expenses, mindful of all possible impacts to members.



Whose Woods

continued from page 1

“But the fact is we’re losing land at an alarming rate, acre by acre. We can no longer rest assured that because we see woods and bobcats and deer, things are fine. Over the next couple decades, at the rate we’re losing land, things will not be fine in Vermont.”

Not fine, she means, for great portions of the state’s wildlife. Many species are already in trouble. And because of the interconnectivity between a healthy and diverse wildlife population and our own wellbeing, the loss of species and the habitat that supports them presages a decline for the human residents of this state, as well.

This should be especially concerning for rural Vermonters, and in central Vermont that’s apt to be members of Washington Electric Cooperative. It is they who, mostly by choice, live amid the mammals, the birds, the reptiles and amphibians, and the estimated 30,000 species of invertebrates that populate our state. Therefore, it’s these rural Vermonters whose fields and woodlands will become emptier as wildlife declines – or better, who proactively amend their land-use practices to conserve them.

The state’s response

Vermont’s wildlife and the diverse habitats that support our fellow creatures have received a lot of attention over the past 15 years or so. This is partly because threats have become increasingly clear, like habitat fragmentation and parasites. We’ve seen some invasive species encroach, some native species dwindle. And climate change poses threats both known and unknown.

Vermont’s Department of Fish & Wildlife and other branches of government, along with nonprofits like Keeping Track and The Nature Conservancy, have vigorously engaged with these issues. Fish & Wildlife coordinated an exhaustive, multi-agency and multi-organization study that in 2005 produced a Wildlife Action Plan (WAP) documenting habitat conditions and creating lists of more than 300 “species of greatest conservation need” (SGCN). It defined actions that agencies, organizations, and individuals could take to support recovery of the SGCNs.

The WAP also, for encouragement, celebrated Vermont’s past successes in reintroducing historical species that had vanished, like white-tailed deer, wild turkey, moose, and osprey. The Departments of Fish & Wildlife and Forest, Parks & Recreation also collaborated in an extraordinarily successful campaign to bolster Vermont’s dwindling fisher population, importing and resettling the aggressive carnivores from Maine and other states. The 2005 WAP was updated in 2015.

A similar accomplishment, also headed up by Fish & Wildlife, with support from the Vermont Land Trust, The Nature Conservancy, and other groups, was the “Vermont Conservation Design (Maintaining and Enhancing an



Photograph © Susan C. Morse

This snowy faced bobcat was photographed by Keeping Track founder and science director Sue Morse. As wild areas become more fragmented, some wild creatures are spotted more frequently near homes and developments.

Ecologically Functioning Landscape),” published in December 2015.

“Much of Vermont is dominated by natural systems and we have a lot of opportunity to conserve biodiversity and facilitate climate change adaptation,” the VCD stated. It mapped and documented existing supportive natural features like interior forest blocks, forest connectivity blocks, surface waters, riparian corridors, and “landscape diversity blocks.” Putting these assets to their best use constituted a “design,” the study contended, for salvaging and reinforcing the state’s natural communities, and for preparing our diverse landscape and its equally diverse inhabitants for the climate changes to come.

Yet the VCD dutifully noted an additional feature of Vermont’s landscape that constantly presents

challenges: “a lot of roads and development.”

Eric Sorenson, an ecologist with the Department of Fish & Wildlife (and a WEC member), was a principal contributor to the project. “The Vermont Conservation Design,” he says, “was one of the most rewarding things I’ve done in my career with Fish & Wildlife. It gets us to this vision of what an ecologically functioning landscape will be, and comes up with a plan I have a lot of confidence in.”

But if his tone is more optimistic than the concerns overtly voiced by Sue Morse of Keeping Track, Sorenson is far from complacent – for the VCD, though a well-considered prescription for recovery and resilience, is not a state mandate.

“The huge question is, how do we make it happen?” he says. “Do we want a place where wildlife moves freely,

and rivers flow cleanly, where we can recreate in the woods, and where we can [harvest forestry products] sustainably? Or do we want it to pass along the way that is the obvious direction we see as a pattern if we look south to (places like) eastern Massachusetts and southern New Hampshire?

“Without a conscious choice that we want to keep this functional landscape,” Sorenson says, “we won’t.”

The shape of our landscape

When Morse talks about “losing land,” it’s not suburban sprawl she’s describing, like Taft Corners in Williston and the Route 7 corridor in Rutland. It’s “the house in the woods, or a new cluster of houses off the road. These things seem benign on a one-by-one basis,” she says. “But the cumulative effects are deadly.”

Such fragmentation may be almost unnoticeable to us, but for many wild species, it interrupts contiguous supportive habitat. It undoubtedly contributed to the long list of “species of greatest conservation need” in the Wildlife Action Plan.

However, fragmentation is just part of the story. Jim Shallow, director of strategic conservation initiatives for the Vermont chapter of The Nature Conservancy, explains that Vermont’s forests have lost the complexity necessary for habitat and for resiliency as climate change advances.

“It’s an artifact of past management,” he says, pointing to Vermont’s well-known history of clear-cuts long ago, which were largely for grazing purposes (sheep), and for the small hillside farms whose outlines are traced by old stone walls barely discernible in what now are woods. Parcelization – comparatively small forest blocks owned and managed individually by a multitude of landowners – only adds to the problem, as they diminish the availability of deep, dense forests controlled only by the whims of nature.

It’s true that one of the real strengths of our landscape, cited in both the Wildlife Action Plan and the Vermont Conservation Design, is that trees have regrown on those once bare hills, to the extent that the state is 78 percent forested.

“But it’s a largely even-aged forest,” says Shallow, “by-and-large a middle-aged forest that is structurally simplified. There are a bunch of species, like marten, that need older spruce forests that are structurally complex, where you have big standing trees and big dead trees on the ground.”

Birds in New England, he adds, do best in forests with multiple layers, which he describes as “a good understory, a thick mid-story, and a canopy that’s not completely closed. What we need,” Shallow concludes, “is messiness – a messy, complex forest.”

And like Eric Sorenson of Fish & Wildlife, he says that because Vermont’s landscape is 80 percent privately owned, it will ultimately be up to Vermonters to bring this about.

“We should be encouraging people

continued on page 7

How WEC Works to Protect Wild Spaces

Electric utilities aren’t usually known for keeping ecologically small footprints. But WEC, our electric cooperative, has an environmental mission. WEC works every day to protect our priceless landscape, through climate advocacy and on the ground.

- 100 percent of WEC power comes from renewable sources.
- WEC’s policy, unique in Vermont, is to use no herbicides on its rights of way.
- While poles are treated with the non-migrating pesticide pentachlorophenol, WEC takes extra steps to place poles away from wetlands, and wraps them when it is unavoidable.
- Whenever possible, WEC re-sites poles to be closer to the road and out of forested areas.
- WEC helps members reduce their fossil fuel use, giving cash to help pay for energy efficient electric appliances and electric vehicles.
- WEC helps members use all forms of energy more efficiently, giving cash to help pay for home weatherization.
- WEC is the first utility in Vermont to make a climate change policy statement.



Whose Woods

continued from page 6

to think about the whole landscape first, and where their property sits in that landscape, and what's going on in that landscape," Shallow explains.

The state's response to the VCD includes helping landowners learn about and prioritize habitat in the management of their property. In 2010, the Department of Forests, Parks, and Recreation modified the Use Value Appraisal program, better known as Current Use, by adding ecologically significant treatment areas (ESTAs) to the approved management practices available to forestland owners.

Thousands of Vermonters are enrolled in the program, which provides property tax relief in return for professionally guided forest-management practices that have strengthened and supported Vermont's valuable forest-products industry.

With ESTAs, Sorenson says, people can employ practices that protect significant natural communities, rare species, vernal pools, and habitat. "You don't have to manage for silviculture alone," he says. "People can manage for wildlife. And there can be a lot of overlap in those purposes."

Not all species are suffering, or impaired by interruptions of their corridors across the landscape. Vermonters know there is no shortage of deer, and that black bears show up even in settled neighborhoods. Sue

Morse says bobcats are appearing more abundantly in places like Shelburne, where large suburban yards blend into surrounding meadows, wetlands, and the brushy edge of woodlands. The same is true of the eastern cottontail.

"Their range is expanding," she says. "I can't say exactly why. But sometimes these animals figure out that they're

safer closer to people than in the wild, because there are fewer predators."

On the whole, however, Morse is convinced that humans' effects upon the landscape have been profoundly detrimental to wildlife.

"Without a conscious choice that we want to keep this functional landscape, we won't."

— Eric Sorenson

Before we sleep

This inevitably presents questions about what to do about it. Interestingly, and certainly unintentionally, Robert Frost's famous poem, "Stopping by Woods on a Snowy Evening," presents an option that, nearly a century later, advocates of sustainable land-use practices call "Smart Growth."

"Whose woods these are I think I know.

His house is in the village, though..."

More radically, in 2016, the noted naturalist, biologist, and author E.O. Wilson published a book titled *Half Earth: Our Planet's Fight for Life*, which called for "a grand retreat" by the human race from 50 percent of the planet, allowing biodiversity to thrive and re-establish itself. Though Wilson is perfectly serious, the solution he proposes would, for most people, be more aspirational than literal – a call to

be more conscious, and conscientious, about our land-use practices, to leave more places undisturbed, and to act more in concert with our neighbors making choices about how and whether to inhabit the landscape.

"These are hard questions," Morse says. "At some point we have to draw the line in the sand. Where do we agree to stay out of?" Clearly, as we strive to solve these problems, we have miles to go before we sleep. 

ENERGY COACH

Does A Heat Pump Hot Water Heater Make Sense For You?



- Do you currently use propane to heat your hot water?
- Is your household two people or fewer?

If yes: switching to a heat pump hot water heater could save you money and reduce your carbon footprint.

Efficiency Vermont offers 300-500 dollar incentives on heat pump hot water heaters. There are dozens of qualifying options to choose from. And if you're replacing a fossil fuel-burning water heater, WEC's Button Up program will add another 250 dollar incentive.

Combined, these incentives could save you between 30 to 70 percent off the cost of the device.

To learn more, contact the Energy Coach: 802-224-2329 / energycoach@wec.coop

Which Species Are in Greatest Need of Conservation?

The Wildlife Action Plan (WAP) coordinated by Vermont Fish & Wildlife identified many Vermont species under threat. More than a third of Vermont fish species require conservation help. The list includes:

- **Birds** – 57 out of 268 Vermont bird species, including the American bittern, purple martin, Bicknell's thrush, spruce grouse, and whippoorwill
- **Fish** – 33 of 94 species, including the lake sturgeon, arctic char, American eel, and channel darter
- **Mammals** – 33 of 58 Vermont species, including several bats, shrews, and voles, the American marten, and the lynx
- **Amphibians and reptiles** – 11 out of 40 known species, including the Jefferson salamander, Fowler's toad, both the spotted turtle and wood turtle, the eastern ratsnake, and the timber rattlesnake
- **Invertebrates** – Scientists believe there are thousands of invertebrate species in Vermont that have not yet been identified or catalogued. Working, therefore, from an estimate of 30,000 total species in the state, these are some that are included on the SGCN list: 9 species of bumble bee (including the rusty-patched bumble bee, the yellow bumble bee, and the "confusing" bumble bee); 7 tiger beetles (including the Boulder-beach tiger beetle and the hairy-necked tiger beetle), and 14 butterflies (among them the monarch and tawny emperor) categorized in three habitat groups: grasslands, hardwood forests, and wetlands. Freshwater snails, mussels, and crustaceans are also listed.
- **Pond- and stream-dwelling odonates** (carnivorous insects, including dragonflies), various freshwater snails and mussels, and crustaceans – crayfish and amphipods – are also listed.

Get to Know Your WEC

Have you ever wondered who that is fixing the line up your road, or who you spoke to when you called in about an outage or a bill? Co-op Currents profiles Co-op staff in this feature.

Jason Smith, Construction Foreman

What he does

Jason Smith is not new to WEC. In fact, he's been working on WEC lines for 13 years. Earlier in 2018, Jason was promoted from First Class Lineman to Construction Foreman. In this new role, he said, he's now "overseeing the jobs, planning them out, doing the paperwork."

Jason got started as a lineworker just because he wanted to try something new. He'd been working at the wood furnace makers Sam Daniels Co. in Montpelier, when "one of the old foremen that used to work here told me there was an opening." He got the job and has been at WEC ever since.

A central Vermont native, Jason grew up in Hardwick. He lives in Woodbury now with his wife and three kids: his oldest son is nine, and the twins, a boy and a girl, are seven. The family also has two labs, Decoy and Tonka.

When he's not at work, Jason is probably with his family, and they're probably outside. "I do outdoor stuff all the time with them, he said. He loves to fish, go four-wheeling, and spend time at their camp on East Long Pond.



The Cooperative Difference

WEC's board president reflects on the Co-op's 80-year history, why he got involved in cooperative electricity 46 years ago, and why he's still working for WEC's membership

By Barry Bernstein

2019 marks 80 years Washington Electric Co-op has been providing electricity to Central Vermonters. We're also celebrating a very rich history of individual and cooperative leadership, bravery, and integrity. 80 years ago, Vermonters joined together to initially secure an essential necessity — electricity — on behalf of our rural farms, homes, and businesses, when they were denied service by investor-owned electric utilities. Today, we continue that cooperative vision and speak out, when warranted, on behalf of our members, and all Vermont ratepayers and citizens.

Over this next year we plan to highlight some of these people, events, and issues. We're talking about what I call the "Cooperative Difference," where decisions are made based on people's needs and environmental responsibility, not based on shareholder profits. At the core of the Cooperative Difference is our integrity.

When I got involved

Ever since I moved to Vermont in 1971, I've received electricity from WEC. I'd had a couple years' exposure to cooperatives when I worked in England, but really first became

involved through the food co-op movement in Vermont.

Right after the oil embargo of 1973, and a year after the Vermont Yankee nuclear power plant came online, I read a notice about some WEC members who were concerned about these events and were meeting to discuss them. I thought I would go listen. That was the beginning of my active involvement in our Co-op.

They were asking the Co-op's leadership at the time for financial information; they wanted to discuss looking at alternative energy as a resource, and were concerned about nuclear power. I thought the group's requests were reasonable, and signed on. WEC had oil and nuclear in its portfolio. Vermont Yankee was running below 50 percent capacity because it had issues with faulty fuel rods. And we were all wondering what happens when the oil taps shut off.

Unfortunately, the Co-op board and management reacted defensively to members asking questions. I found that though not everyone was vocal about it, members were paying attention, and more and more of us opposed the Co-op's reliance on unsustainable fuel sources and its leadership's lack of transparency. A cooperative is a democratic organization, so since we didn't like what was happening, we decided to work to change it.

In 1976, three new members were elected to the Co-op board. We made some progress, but we met a lot of resistance, and our candidates were defeated after their first three-year term. However, slowly, over the next several years, the makeup of the board started to change.

In 1985, that original group of concerned members reconvened. This time, the issues were cost overruns at the Wrightsville dam site, and moving the whole direction of the Co-op away from nuclear power and toward energy efficiency. At that point, the Co-op had purchased interest in the Seabrook nuclear power plant, which was also experiencing significant cost overruns and delays in coming online.

We'd learned from the 1970s and reached out to more members to build a stronger coalition. It was an intense period for the Co-op. In 1985, when the coop had about 6,000 members, the Co-op had its highest election turnout, with almost 2,500 members voting at Annual Meeting. Our slate of opposition candidates lost by less than one percent of the vote.

Then we started to gain seats each year. By 1990, opposition members gained a majority, with five seats on the board. We replaced the manager and made a strong commitment to energy efficiency and transparency. We avoided bankruptcy by getting out of the Seabrook contract [1989], got out from Vermont Yankee [2001], built the Coventry landfill gas plant [2005], and contracted for power with Sheffield Wind [2011]. This enabled us to bring our members 100 percent renewable power, generated close to home, at a reasonable price.

I'm proud to say many of the people who opposed us, and who were fearful of the changes we might make, came to respect the hard work we did and the vision and growth of the Co-op.

Past and future

When I came to Vermont, the only thing I knew about electricity was if you flip a switch, the lights go on. As I became more involved and started going back through WEC's history, I learned about how its founders struggled, what hard work it was for the first 150 people the Co-op served. Those people were so determined and brave. At different times, the investor owned utilities were really slanderous with people in rural areas who only wanted to get electric to their homes. These were hardworking farmers and store owners in Vermont's most rural reaches that were left

behind by the initial wave of electric grid development. They were harassed and called socialists because they wanted to form a cooperative to get their electricity.

We can't forget this history. When we wanted to change things in the 1970s, we were called communists. Rather than labeling and dividing each other, I want us all working respectfully and collaboratively to solve Vermont's energy problems. We're at a turning point again. Our climate is rocked by our global dependence on fossil fuel, and resulting weather and other factors are changing our landscape and affecting our reliability. But there are exciting opportunities available to change how we power our lives, to once again set an example to our state and beyond.

Change is hard. It's hard when you're comfortable with the status quo and fear change, and it's hard when you see change that needs to happen but it takes such long, incremental work to accomplish it. Participatory democracy takes work. It can often be unsettling, but it can be so positive. WEC is a democratically controlled institution at a time when there's a tendency to think bigger is better. "Bigger is better" syndrome has disassociated us more and more from things we need to be involved in.

Over the last several decades, some of the best work we've done is evident in our commitment to efficiency, renewable energy, and treating each member equally and equitably. But it's also in the transparency of our operations. There's nothing hidden, and that's why WEC is a valuable jewel. Our decision making is open and transparent, as hard as it is sometimes. Having members elected to the board who are affected by the decisions they make has provided very sincere and committed leadership for dealing with a fast-changing energy environment. I'm proud to serve on a board that's representative of our members and ready to tackle today's most important issues, from reliability to climate change.

I strongly believe that WEC is a positive yardstick for this industry. We've set an example for other electric utilities. We've spoken up when we're uncomfortable with energy issues. After 80 years, it's as important as ever for the Co-op to remain strong, independent, member-controlled, and driven by the integrity and openness that sets us apart. That's right — the Cooperative Difference. 

Annual Meeting Call for Photos and Contest

Submit your photos for WEC's 80th Annual Meeting photo contest! Categories are: **Historic WEC** and **WEC Today**.

Historic WEC photos can include anything that had to do with life on WEC's lines between 1919 and the present day.

To submit to the **Historic WEC** category, please send high quality scans to currents@wec.coop or mail hard copies to the WEC office: Washington Electric Cooperative, Inc., P.O. Box 8, East Montpelier, VT 05651, Attn: *Co-op Currents*/Historic WEC. Please include the photographer's name, a description, and your contact information. If you would like your photos returned, please include a self-addressed envelope.

The **WEC Today** category is for digital images taken within WEC's service area over the past few years. Any current member is eligible to enter.

To submit to the **WEC Today** category, please send high resolution digital images to currents@wec.coop. Please include your name and contact information, a description, and identify the picture's location. If you are submitting on behalf of another WEC member, please indicate you have permission to do so. Maximum three photos per photographer, and no previously published photos, please.

Winning photos will be displayed at the Annual Meeting and in *Co-op Currents*. Judges and prizes to be announced!

