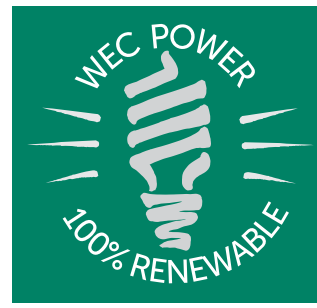




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CO-OP CURRENTS



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The newsletter of Washington Electric Cooperative, Inc., East Montpelier, Vermont.

June 2017

With New State Laws, Increasing Costs, and Declining Sales

WEC Eyes Changes To Its Rate Structure

It's ironic that there's such a thing as "static electricity" (defined as an electrical charge typically caused by friction), because there's nothing static – as in "unchanging" – about the electric utility industry these days. New laws, smart meters, electric vehicles, home generation, our members' heightened expectations for reliability and high-quality power, and climate change are making WEC stop and rethink how it charges for its services.

New laws passed by the state legislature require Vermont utilities to offer programs that encourage their customers to reduce their use of fossil fuels – oil, propane, and gasoline. It's a two-prong effort that consists of requiring utilities to increase the portion of renewable energy in their power portfolios (this part doesn't apply to WEC, which is already 100-percent renewable), and encouraging customers to turn to this greener electric grid for such purposes as heating their homes and driving their cars.

WEC fits in here, as we must offer incentives to get people to convert off of fossil fuels and use more electricity. The trouble is, our Co-op is facing a steady stream of rising costs (transmission and regional reliability charges) that are putting upward pressure on our rates. This means our rates really aren't conducive to encouraging members to use more electricity by plugging

in their electric vehicles or heating a room with cold climate heat pump technology. In fact, they discourage this type of use, because under our two-tier system power from WEC is very expensive after the first 200 kilowatt-hours (kWh) per month. WEC established this system a decade

"This is going to be one of the most important decisions the Co-op will make in the modern era."

— Patty Richards

ago to discourage overuse and encourage energy efficiency, and members have been responsive; our members' average monthly usage, at 500 kWh, is among the lowest of all Vermont utilities.

But now that we are in 2017, with new challenges and new laws, WEC must rethink everything about how the Co-op charges

for service. Our accomplishment in becoming 100-percent renewable means that when Co-op members move away from oil or gasoline and use electricity instead, they're reducing their carbon footprint and addressing climate change at the local and individual level.

So it's time for WEC to effectively encourage use of electricity where it makes sense! That means changing how we charge.

Besides putting the Co-op in a better position to meet the state's requirements pertaining to fuel switching, there's another reason for WEC to change its financial model: While our costs have been rising, the revenues we collect to pay for them are declining.

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Moose are one of the great, majestic animals of our northern hemisphere, and have been studied, and their habitat monitored, for years by the Jericho, Vermont-based organization, Keeping Track. Founder Susan Morse shared this and many more of her wonderful photos with Washington Electric Co-op members, as guest speaker at WEC's Annual Meeting on May 4. For more on Sue's interesting and important program see our story on page 7. PHOTO BY SUSAN MORSE, KEEPING TRACK.

'Co-ops Are At Their Best When Members Are Involved'

An Encouraging Turnout for WEC's 78th Annual Meeting

Washington Electric Cooperative has dedicated itself to the goal of instilling an effective workplace culture of safety. This was an important point, stressed by WEC General Manager Patty Richards and appreciated by her audience, at the Co-op's 78th Annual Membership Meeting, held on Thursday, May 4, at Union-32 High School in East Montpelier.

"WEC has gone 575 days without a workplace accident," Richards announced. "We really want to celebrate that accomplishment,

especially because we work in what can be quite a risky industry."

The 241 members, guests, and others gathered for this annual event applauded vigorously, clearly understanding the often-stressful working conditions for WEC's staff, particularly the line workers and other Operations employees, and were grateful for their service, which is often referred to as "keeping the lights on."

Just moments earlier, Richards and WEC President Barry Bernstein

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Washington Electric Cooperative

East Montpelier, VT 05651

Inside

Looking at the next CWP. WEC has rebuilt 50 miles of line under the current Four-Year Construction Work Plan, and now it's time to prioritize projects for the next funding cycle. Page 6.

It's called Button-Up for a reason. WEC's approach to the requirement that utilities provide fossil fuel-reduction programs emphasizes tightening up our homes. There are other opportunities, too. Page 3.

RECs revisited. Despite misunderstandings about the program, RECs boost renewable energy development. Selling RECs also helps the Co-op keep its rates under control. Page 5.

The old days. A member writes nostalgically about 'Grandma's Co-op Freezer.' Page 3.



WEC rights-of-way provide sunlit, fertile browsing territory for deer. This doe (above) was enjoying herself in a remote ROW in East Topsham.

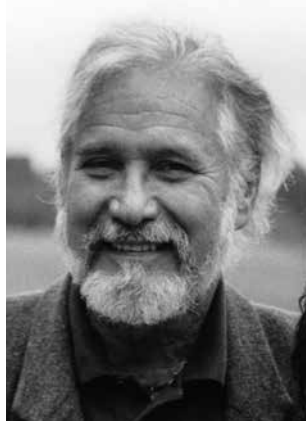
President's Message

The Way Forward

Rate Design Study Contends With Opportunities and Obligations

By Barry Bernstein

Just as most Vermonters I talked with were packing their bags and looking for a dry, sunny spot to retreat to, the sun came out and the temperatures soared into the 90s. It was a very wet spring and a long winter and I guess we'll just have to get used to some unusual weather patterns. At least it didn't stop us from having a great turnout at WEC's Annual Meeting in May, held this year at U-32 Middle/High School, to benefit the seventh- and eighth-grade class trip to Washington, D.C.



New Rate Design

Last month your Board of Directors and WEC management began the process of devising a new rate design, our first in more than 12 years. A rate-design is not a rate increase. We do not collect more money; we collect the same amount of revenue, just in different ways.

Your board is undertaking this effort as we try to balance the different obligations and mandates we have, which sometimes conflict with each other. We expect the rate-design discussion to take us through this summer, and we will look to involve our

members in the process. Ultimately, we expect the result to be that some members will experience higher electric bills while others will see their bills decrease. The likelihood is that our monthly member charge – which everyone pays – will rise, and that our initial block of affordable energy for all members will change in size and price and our more-expensive second-tier price will be reduced. We don't yet know the details and numbers for these expected changes.

Our story on page one provides further information.

History

In 1990 the leadership – your Board of Directors and general manager – changed at WEC. The new leadership was strongly committed to helping our members lower their electric bills through energy efficiency and conservation. We worked with Blair Hamilton and Beth Sachs, the founders of Vermont Energy Investment Corporation (VEIC) and later Efficiency Vermont, to design one of the first utility efficiency programs in the U.S. The program included fuel switching – off electric heat, which had become expensive with a price trajectory continuing to rise, to propane or oil. While that formula has been reversed over time as the costs of fossil fuels have fluctuated and their carbon output has become a critical environmental problem, one principle remains the same: a kWh saved is less expensive than having to generate one. It's the amount of your electric bill that's important, not necessarily the rate you pay per kWh.

We have always recommended starting with an energy audit of your home. The results can guide you as you determine how to invest what may be limited funds for home improvement. Tightening up the envelope of your home by weatherizing it, replacing old appliances with new ENERGY STAR® ones, and switching to LED lighting provide the best financial return.

In 2000, WEC had jumped at an opportunity to divest from our ownership in Vermont Yankee and simultaneously work toward having a 100-percent renewable power portfolio (again, one of the first utilities to do so in the country). The WEC board made a commitment to getting our power from renewable sources, from sources as close to our territory as possible, and procuring power that was economically priced over the long

term. We were already receiving hydro from our Wrightsville generating station, hydro and wood from the Vermont

Your WEC Board is working diligently to balance all these competing interests, and revisiting and altering our rate design is where that balance will be found.

small power producers, and in 2005 began generating power from our new landfill-gas-to-electricity plant in Coventry.

WEC then added a contract from the Sheffield Wind project that provides 10 percent of our power and fits in nicely with the fact that WEC is a winter-peaking utility. Home-installed net metering systems have become very important, too. By the

end of 2017 we anticipate that these systems – ranging in size for a modest 5 kilowatts (KW) to 500 KW – will provide some 4.4 megawatts (MW) of power, which is almost 30 percent of our peak energy demand. That's a major contribution that net metering Co-op members make to the grid that serves us all.

The State Now A Factor

WEC still believes that the best place to start economizing on home energy comes through weatherization, efficiency, and conservation. These investments give you the best return on your dollar. But now there's another consideration: WEC and all Vermont's electric utilities are now mandated by the Vermont Legislature to help their customers/members to switch off fossil fuels, even for purposes outside the normal realm for electric utilities, such as driving cars and heating homes. We fully embrace that effort, especially because, since our power is 100-percent renewable, using Co-op electricity instead of fossil fuels truly makes a difference.

However, we must look closely at how we can be successful in this effort. New technologies such as heat pump hot water heaters, cold climate heat pumps, and electric cars can help Vermont reach its 90-percent-renewable goal in all energy sectors by 2050, and we will continue to stress the benefits of being efficient such as by investing in the weatherization of our homes. At the same time as we balance these new mandates and goals, we must also ensure we collect the revenues we need to meet our costs.

Good News

Electricity is still one of the best buys for our money, providing lights, refrigeration, power for our furnace and boiler fans, computers and

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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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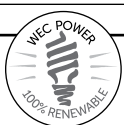
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Editorial Committee

Patty Richards Donald Douglas Jean Hamilton 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 Dawn Johnson, at 224-2332.

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Members Write

Co-op Currents welcomes letters to the editor that address any aspect of WEC's policies and operations, or any matters related to electricity. Readers can write to wecmembers@wec.coop, or Co-op Currents, P.O. Box 8, East Montpelier, VT 05651. Letters to the editor will not be published in the Annual Meeting (April) issue.

Who Remembers Grandma's Co-op Freezer?

Editor, *Co-op Currents*:

Long ago, as far back as I can remember, WEC displayed and sold electrical appliances at the East Montpelier office. I recall going there with my grandparents to pay the bill. Apparently folks hand-carried things to save the postage. Or, was it more of a social thing? Either way, I recall seeing the new appliances on display, all white.

At that time the consumption of electricity was encouraged and the modern thing to do. They had a very long chest freezer with two hinged lids and the nameplate proudly displayed on the front: "CO-OP." In 1988, when we moved into the home my grandparents had occupied, the freezer was still here. We, with great effort, moved it and eventually sold it because we had a newer one.

Recently, while reminiscing with my siblings about our youth, we fondly remembered our Grandmother and how she always had ice cream cones for the children. (Something we did not get at home.) The hinges of that freezer had a distinctive squeak when the lids were raised, which like the Pied Piper brought us running.

I'm curious if anyone still has one of those old freezers, running or not, so that I might hear and record that friendly sound from years ago. Even if you don't, I'll bet some of

you remember that sound and are thinking about Grandma and ice cream, "Granite City REAL Ice Cream."

If you know the whereabouts of such a freezer, please give me a call at 802-272-7929 or shoot me an e-mail at rbridges1951@gmail.com

Thanks,
Rob Bridges, Plainfield



We thank Mr. Bridges for writing. Certainly there was a time when the Co-op sold electric appliances – and not just household items like "Grandma's Co-op Freezer" but farming supplies, too, for the milking parlor for example. Electric co-ops across the U.S. helped their members modernize their lifestyles, achieve more income stability, and join their more urban compatriots in a world gone electric!

The Co-op's archives contain photos and advertisements hearkening back to the days when part of the mission for WEC and other rural electric cooperatives was to make modern appliances available to people who had just recently been using washtubs and scrubbing boards.

Button-Up, For Saving Money and Cutting Carbon

Washington Electric Cooperative's Button-Up Program is off and running! And it provides Co-op members a great opportunity to get financial and technical assistance from WEC and Efficiency Vermont for improvements that will make their homes more comfortable, more energy efficient, and reduce their consumption of fossil fuels.

WEC's and EVT's 2017 Button-Up Program supports the following home improvements and energy-switching, energy-saving alterations:

- Weatherization, starting with home

energy audits to identify the best energy-saving investments for your home, and then assistance in financing those improvements;

- ENERGY STAR heat-pump water heater installations;
- Solar hot water systems;
- Pellet boiler installations for home heating;
- Cold climate air source heat pumps (cHP)



that help people cut back on the usage of their fossil fuel heating systems. cHP installations should

be preceded by an energy audit and the home-performance improvements the audit indicates, so that the heat pumps can provide their greatest impact. Heat pumps can also be used to cool your home on hot summer days.

Levels of assistance vary for these Button-Up projects. In some cases, members who qualify as low-income can receive additional funding

Approved projects will be assisted on a first-come/first-served basis, as WEC and EVT have targeted specific goals (numbers of projects) in each category. Therefore, members are advised to act quickly.

Find out more here: <http://www.washingtonelectric.coop/button-up/> or contact the energycoach@wec.coop for more information today.

President's Message

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entertainment systems, charging our cell phones and cordless phones, and serving as battery backup for net metering systems when little or no sun is available. Compare your monthly electric bill with the cost of cell phones and internet services for your family!

On average our members use 490 kWh/month, one of the lowest levels of usage in the state. Almost 80 percent of our members use 700 kWh per month or less. Your electric power is also available whenever you want it: 24 hours a day and seven days a week with the exception of outages (most of which are caused by storms). I cannot

say the same for my phone or internet services. Added to the bargain is that your power is 100-percent renewable.

Hard Facts

- WEC collects an inadequate 17 percent of our fixed costs from our monthly member charge
- WEC has experienced flat to declining kWh sales for the past several years, a national trend for utilities but one that started early at WEC. This is largely due to the success of energy efficiency and conservation programs, which WEC has aggressively supported.
- In less than six months, net metering installations and permit applications

received in 2017 exceed our total net metering installations from over the past 12 years. Yet with the wholesale power market at a record low, WEC loses 12 cents/kWh due to power generated by net metering installations. That translates to a loss of more than \$600,000 – equivalent to a 4-percent impact on rates.

- WEC is committed to supplying its members with 100-percent renewable power now and for the foreseeable future. WEC has made investments in renewable generation, such as hydro and our landfill gas plant, and we have also secured long-term contracts from renewable power sources (wind and hydro). This power

will serve members for the next 20 years and beyond!

Our state is committed to 90-percent renewables in all energy sectors in 2050 and has given the electric utilities an important role in helping ratepayers reduce their fossil fuel use. We now must embrace that, as an opportunity and as an obligation.

Your WEC Board is working diligently to balance these many competing interests; revisiting and altering our rate design is where that balance will be found. We plan to engage the membership through articles in *Co-op Currents*, and possibly a membership meeting sometime soon. This is a path we'll all need to forge together.

Annual Meeting

continued from page 1

had made a related point when they handed out this year's service awards, which are presented to employees who have reached length-of-service milestones with the Co-op. It's a feature of each year's Annual Meeting. This year's unusually large number of recipients provided evidence of stability and commitment between employee and employer that helps WEC achieve its mission of providing excellent service to its members – and, just as important, being a good place to work.

Service Award recipients in 2017 were:

Ten years: First Class Lineworkers Doug desGroseilliers and Kyle Sands; Equipment Operator Class A Donnie Singleton; Information Database Technician Sandy Gendron; Member Services Supervisor Susan Golden; Finance & Administration Director Cheryl Willette.

Fifteen years: Member Services Representative Elaine Gonier.

Twenty-five years: Utility Field Technician Class A Mike Patterson.

Thirty years: Operations & Construction Services Manager Brent Lilley.

These are the people – many of them WEC members as well as employees – who build, maintain, and repair your power line system (Doug, Kyle, Donnie, and Brent); continually plan and re-engineer an infrastructure that's spread across 41 central Vermont towns to cost-effectively achieve dependability and efficiency (Mike); update and maintain the digital mapping system that, among other benefits, helps the Co-op respond to outages and restore your power as quickly as possible (Sandy); respond to member phone calls, process member-related information, and help members get answers to their questions and concerns (Susan and Elaine); and oversee the \$14-million budget of Vermont's fourth-largest electric utility (Cheryl) – a utility with heightened



Students at U-32 Middle/High School helped cater WEC's Annual Meeting to earn money for the seventh-and-eighth-grade class trip to Washington, D.C. They did a wonderful job serving and attending to WEC members' needs. Plus, it's always great having young people around!



WEC Engineering & Operations Director Dan Weston (above) is always on hand at the Co-op's public meetings to answer questions about poles and wires and WEC's service. At U-32 he was accompanied by his daughter, Tehya, a sophomore at UVM.

responsibilities to its customers because they're actually the owners of their electric co-op.

The members saluted these workers with a well-deserved round of applause.

Elections; issues aired

The Annual Meeting is a fundamental part of the Co-op's year, and highlights the democratic, egalitarian nature of electric cooperatives. People who share a rural lifestyle gather together for an excellent meal, neighborly conversation, and discussions with the leaders and policy makers of the company that provides the modern necessity of electricity.

Attendance has increased steadily in recent years, and this year reached 241. Robust attendance was the main reason the Co-op sought a new location for 2017. U-32 Middle/High School provided a spacious and comfortable facility, and abundant parking.

General Manager Richards was enthusiastic. "Co-ops are at their best when their members are involved and participate," she said. "So we've put survey cards out on the tables, because we want you guys to keep coming. Use the cards to tell us why you come, and we'll keep doing it!"

For many longtime WEC members, the meeting is an annual rite of spring, following a long winter and a tedious mud season. It features a good meal, compliments of the Co-op, more than a dozen useful door prizes provided by local companies, and, always, an interesting guest speaker.

This year's speaker was renowned naturalist Susan Morse, the founder of Keeping Track®, a nonprofit that researches and educates people about wildlife and is a leading advocate for practices and policies that nurture and protect, rather than imperil, the bears, moose, lynx, caribou, muskox, and other species in our northern hemisphere. Sue's talk, accompanied by dozens of her award-winning photographs, was titled *Animals of the North*. It was exceptionally well received. (See "A Beautiful Planet," page 7.)

Annual Meeting is also when WEC concludes the election of candidates for the Board of Directors. There were just three candidates for the three seats available on the board. The ballot boxes closed at 7:30, and the results were added to the majority of the ballots, which were sent by mail. Elected to three-year terms were: incumbent and WEC treasurer Don Douglas of East Orange (745 votes);

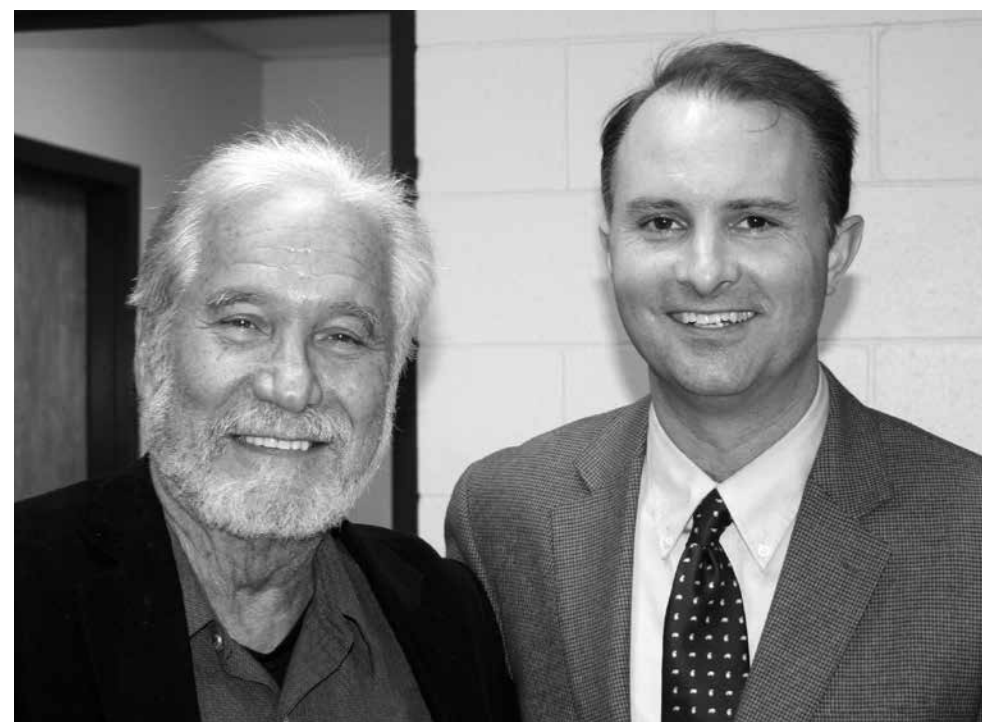
first-time candidate Jean Hamilton of Plainfield (735 votes); and incumbent Mary Just Skinner of Middlesex (699 votes).

Also featured were officers' reports. (Their official reports were published in *Co-op Currents'* April 2017 issue, which is available at the WEC website.) Among their major points were these:

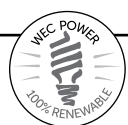
- **Treasurer Don Douglas** explained the Co-op's obligation to collect sufficient margins (revenues exceeding expenses) through members' electricity rates to ensure WEC's ability to repay its lenders. Think of this as financial elbow room above and beyond the required regular payments. Eventually, though, some of the accumulate margins make their way back to Co-op member/owners through "capital credit" returns, or distributions. Since WEC met the threshold for making these distributions and started the repayment program the Co-op has returned \$5.3 million to its members. Noting the 6.52-percent provisional rate increase WEC instituted in January, which the Co-op believes will be approved by the Public Service Board and made permanent at a modified 5.95-percent, Douglas said, "It's quite likely that your rate increase will be partly offset by your



David Magida (above, left) was an exemplary, involved member of WEC's Board of Directors for nine years, ending with the May 4 Annual Meeting as he chose not to run for re-election. Above, Board President Barry Bernstein presents an award, honoring Dave for his many contributions to the Co-op.



The Co-op is always pleased to welcome dignitaries, statewide political leaders, and the state legislators who serve WEC members at the Annual Meeting. Above, Board President Barry Bernstein (left) is pictured with Vermont Attorney General TJ Donovan.



To call the Co-op, dial 223-5245 Mon - Thur 7:30 am - 5 pm and Fri 7:30 am - 4 pm.; toll-free for reporting outages & emergencies, 1-800-WEC-5245.



While some business gets transacted, the Co-op's Annual Meetings are also social affairs. Above, Jim Meiers (left), of the Cooperative Finance Corp., chats with Cheryl Willette, WEC's Finance & Administration Director (center), and Beth Ouellette, a member of Washington Electric's Member Services team.

capital credit return next November." Douglas estimates that the 2017 capital credits will offset about 4 percent of the rates each member pays, tempering the impact of this year's increase.


- **General Manager Patty Richards** announced that WEC's Community Fund, financed by members' voluntary contributions of their capital credit returns, had contributed to 64 local nonprofits in 2016. She urged members to consider donating their returns to the fund as an investment in their communities. Richards also announced that the so-called Tier III programs that were adopted in January to comply with Vermont's Act 56, have been re-branded as WEC's Button-Up Program. Their purpose is to encourage and assist Co-op members to reduce their consumption of fossil fuels, in order to cut emissions and reduce Vermont's carbon footprint. While Button-Up provides guidance and incentives in several areas, WEC's primary focus is home weatherization; it helps members contract for home energy audits and follow up with the improvements the auditors recommend. "These are the best steps we can take to save money and energy," said Richards. "We're urging our members to take advantage of these opportunities, and start by reaching out to our Energy Coach, Bill Powell. What makes this even more important is that there are goals we're required to meet with this program, and if we fall short of

them we'll face fines. We'd rather pay our members, to help them make improvements to their homes and lifestyles, than pay penalties to the state.

- **President Barry Bernstein** briefly discussed the January 2017 rate increase. For context, he cited Green Mountain Power's recent filing for a somewhat comparable 5-percent increase. Vermont's electric utilities are facing similar cost drivers, he explained, particularly the region-wide increase in transmission and capacity costs.

Washington Electric's Annual Meetings provide an opportunity, unique to electric cooperatives, for those who purchase power to bring up with the leadership whatever might be on their minds: service, outages, rates, energy policy, or other matters. See "The REC Question," next column, for a synopsis of this year's discussion.

Then it was time to get away from it all – to leave our everyday world behind and travel, through Susan Morse's stunning photographs and inspired commentary, to the remote reaches of the far North, to learn about the animals, plants, rivers, and people that are found there, and who, in a very real sense in this shrinking world, are our neighbors.

It wasn't a simple or an untroubling journey, but all who took it left the Annual Meeting richer for the experience. 



WEC members from Cabot, Norma Dutil and Cedric Houston. The crowded dining room behind them shows a good turnout for WEC's 78th Annual Membership Meeting.

The REC Question

Member Asks: Do They Promote, Or Hinder, Renewable Energy?

Washington Electric Cooperative's Annual Membership Meetings feature reports from WEC's president, general manager, and treasurer. Equally important, however, are the voices of Co-op members themselves, expressing their opinions and concerns, presenting questions to their elected directors and the executive staff, and revealing what's important to them as WEC forms policy and navigates its way forward in an increasingly complex energy and regulatory environment.

At the 78th Annual Meeting on Thursday, May 4, a member raised an issue that's been part of the conversation about renewable energy credits (RECs) for years: whether the credits, which WEC earns through its investments in renewable generating facilities in Coventry and Sheffield, and then sells to utilities outside Vermont, help or harm the movement toward mass adoption of renewables.

"You say we're 100-percent renewable," the member said, "but we sell credits to other utilities so they can continue to not meet their (states' targets for lower) carbon."

In response, General Manager Patty Richards explained that while WEC sells some of the Class 1 RECs it earns by helping to create renewable energy, WEC then buys enough less-expensive Class 2 RECs to keep its 100-percent-renewable designation. That designation provides various advantages for the cooperative, related to regulation.

As to the question of whether selling RECs to an out-of-state utility "allows it to run a fossil fuel plant longer" (as the member suggested), Richards emphasized that that's not the case. Since mass storage of electricity is not yet feasible, a balance must constantly be maintained between supply and demand – that is, the amount of electricity people are using and the power that's being generated and provided through the regional grid. Therefore, when a renewable energy generating facility starts up, the grid operator – known as ISO-New England – instructs a fossil fuel plant to decrease its production or cease production altogether. For that period of time, thanks to the energy from the renewable source, the fossil plant's carbon emissions are lessened or curtailed.

"Renewables actually back down fossil fuel plants," said Richards.

As for the RECs, they provide a revenue stream that stimulates and helps finance further development of renewable energy projects. Without REC revenues it's far less likely that solar, wind, and other renewable systems would be constructed. So while utilities elsewhere in New England can buy renewable energy credits from WEC to adhere to their states' mandates, the system as a whole encourages regional development of the green-power alternative. (For a comprehensive discussion of this subject, members are encouraged to review an article published in *Co-op Currents* in December 2015, which remains available on the WEC website. The article – "Getting a Bum Rap" – explores the role RECs play in stimulating renewable power production.)


WEC President Barry Bernstein felt that another point should also be made.

"The money we get for RECs," he emphasized, "helps us keep our rates as affordable (for WEC members) as we can make them."

To underscore Washington Electric's credentials as a leader in renewable generation, Bernstein pointed to WEC's construction, in 2005, of its Coventry, Vermont, facility, which utilizes the renewable resource of landfill methane to fuel five Caterpillar engines that are presently producing two-thirds of this Co-op's electricity.

"We invested more than \$15 million in the Coventry plant," he said, "and this was years before anybody was thinking about RECs." That investment remains the greatest stabilizing factor for Washington Electric, both in terms of the power it provides and its affordability.

"Our contract with the Coventry landfill extends until 2035, which represents a great hedge against other, inevitable cost increases," said Bernstein. He then underscored the Co-op's commitment to environmentally sensitive power policies, regardless of state rules.

"We're not just trying to meet our obligation to the state with our Button-Up program," he explained. "We're trying to help people get off fossil fuels because that's where we all need to go." 

When a renewable energy generating facility starts up, ISO-New England instructs a fossil fuel plant to decrease its production, or cease production altogether. Thanks to the energy from the renewable source, the fossil plant's carbon emissions are lessened or curtailed.

The Care And Feeding of WEC's Power System

As One 'CWP' Winds Down, the Next Takes Shape

Washington Electric Cooperative gets a new financial shot in the arm every four years, with approval from the Cooperative Finance Corp. (CFC) of a loan to support a carefully constructed and meticulously reviewed plan for upgrading, modernizing, and in places relocating parts of WEC's 1,300-mile power system that serves 10,800 Co-op members.

Maintenance and renovation is a continuous challenge for an electrical system built across a constantly changing landscape, inhabited by 21st-century members who expect more from their power cooperative than people did when WEC's system was first built out in the 1930s and '40s. When you add new technology like "smart metering," some 330 net-metered solar generating systems scattered around the territory and contributing their surplus power from lawn and rooftop installations, larger renewable systems like the 2-MW Williamstown Solar Farm, and an infrastructure whose components (poles, wires, transformers, fuses, etc.) reflect the various eras in which they were constructed, setting priorities and formulating a plan presents a riddle that only a computer could solve.

Fortunately, WEC has the necessary resources. These include the Co-op's own computerized mapping and outage-management system, and the expertise of consulting engineer Dan Crockett, of Crockett Engineering, LLC, in Essex Junction.

"Dan has worked with us on our last three Construction Work Plans (CWPs)," says WEC's Director of Engineering & Operations, Dan Weston. "We provide data which he enters into a software package that analyzes all the factors – for example, line loss (a decline in voltage) associated with wire size and distance traveled. His program then produces cost-benefit results, which helps us select the projects to propose for financing under the next CWP."

WEC's information comes partly from its outage-management records, which reveal repeated trouble spots. Insight also comes from actual human beings: the engineers, IT staffers, and linemen who work on the Co-op's electrical infrastructure every day. Veteran employees accumulate an amazing amount of institutional knowledge about a power system that traverses some of the most remote areas of 41 towns in central Vermont.

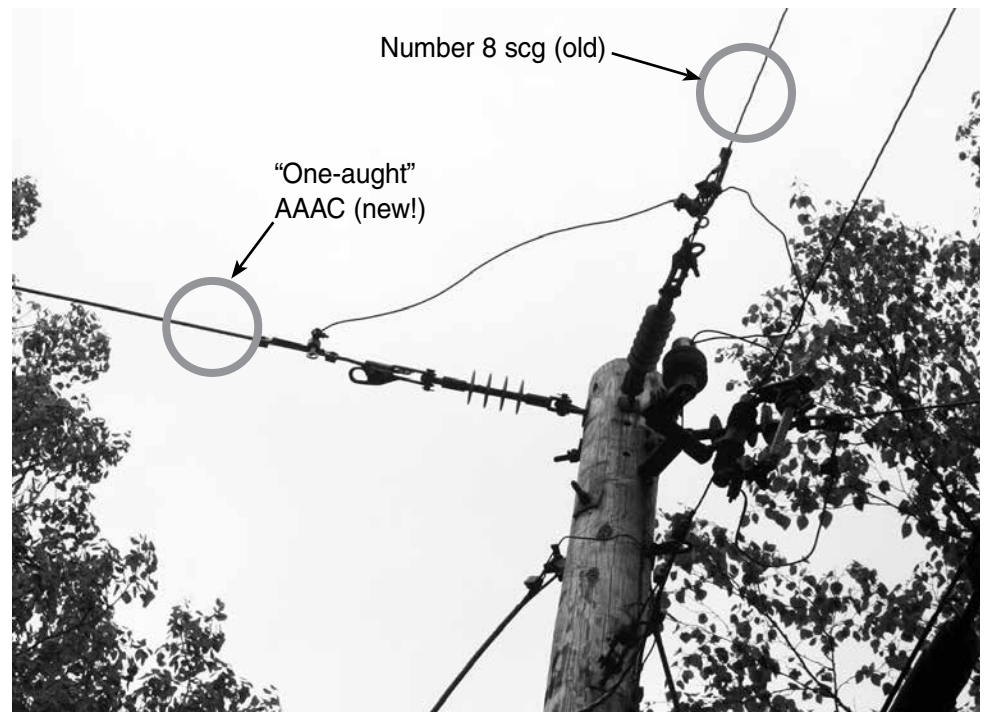
That includes Ed Schunk, a former lineman who now oversees WEC's pole-inspection and treatment program. (Says Weston, "We're the only Vermont utility I'm aware of with a program solely dedicated to examining every pole on a regular basis to identify which



ones need replacement. You really need this for a system that has 25,000 wooden poles, some in various stages of decay.")

With 30 years' experience at Washington Electric, Ed can take you to a place where a pole (among those 25,000) that was installed in 1939 is still in good condition, and to one elsewhere that has been tagged for replacement. He knows where newer, 1980s-vintage poles are deteriorating (poles in different locales endure different conditions). He knows places where the Co-op's right-of-way has been re-routed for better access and reliability, and places where property owners, for reasons important to them, have declined permission to do so.

Working with electricity since his training in the U.S. Air Force, Ed also knows about another critical component



Veteran WEC employee Ed Schunk (left) oversees Washington Electric's pole-inspection and treatment program. Ed is shown here with a vintage (possibly 1939) pole in Marshfield, still in good condition. "When it says "CO-OP" like that, high on the pole, it's one of the really old ones," he says. Above, old conductor (wire) and new meet up in East Calais, revealing how upgrades to WEC's infrastructure are incremental over periods of years.

for system reliability: the conductors (wires). Over the seven decades of WEC's existence these have changed, for many reasons. During World War II, for example, copper was scarce, so utilities turned to solid steel wire with a light copper coating. Unfortunately, though, steel is an inefficient conductor of electricity, so through electrical friction some of the energy coursing through the strands turns to heat, wasting that energy and reducing the voltage the farther the electricity travels. (This is called "line loss").

Ed and WEC's other Operations workers can spot the different gauges of wire used over the years.

"3-12 copper weld and number 8 scg is the old stuff," he said on a recent day, pointing to the top of a pole where a small number-8 wire intersected with a newer section of 1/0 ("one-aught")

AAAC (All Aluminum Alloy) wire. "I've got nine pages of lists, amounting to 270 spots, still using 3-12 and 8-aught wire. Some are three to four miles long."

Replacing old wire isn't as simple as taking the old stuff down and putting new wire up. Today's conductor, built to serve more customers and reduce line loss, is larger in diameter and has a better electrical-conductivity-to-weight ratio; as a result, it accumulates a heavier load of snow and ice in winter weather, so the Co-op must shorten the span between poles – from around 600 feet in 1949 to a standard of about 285 feet today – to bear that weight.

This is how a conductor upgrade becomes a major rebuilding project.

Evaluating factors like these, knowing we can't possibly tackle them all, and seeking projects with the greatest positive impact, are ingredients of the cake that, when fully baked, becomes WEC's new Four-Year Construction Work Plan.

"The purpose," says Weston, "is to constantly improve on our reliability and our energy efficiency. But there's a fairness factor, too. Most of our members who live close to one of our eight substations experience better reliability than people at the end of the lines. Are we ever going to be able to give those folks the same level of reliability? Practically, no. But we work to improve the reliability at those far ends, because those folks are Co-op members, too."

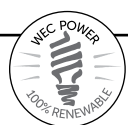
Then there's solar...

"Four years ago, when we were drafting the current work plan, it was on the threshold of rules changes that

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Lineman First Class Jason Smith operates the lift on one of WEC's off-road track vehicles, drilling a hole to set a new pole in East Topsham. On this June day, Jason and his coworkers were replacing a very remote 10-pole section of line where some of the poles were damaged or decaying.



A Beautiful Planet

Sue Morse ('Keeping Track') Urges WEC Members to Keep It That Way

Susan Morse speaks of the wildlife she has studied in New England, in the American West, the Boreal Forest of the North, and in the wind-swept barren lands of the Arctic, with a palpable awe that clearly has been deepened rather than drained by a career of more than three decades as a naturalist, researcher, writer, and photographer. Sue is the founder and field director of Keeping Track, a nonprofit based in Jericho, Vermont, that educates and enlists interested people of all ages in the work of observing and accumulating data – “keeping track” of wildlife populations and the conditions that support them – to help guide policy decisions related to habitat and the environment.

Among other accomplishments, these efforts have, according to its web site (www.keepingtrack.org), led to the conservation of more than 40,000 acres in 12 states and the Province of Quebec since Keeping Track launched in 1994.

Guiding her audience through the images in a program she calls *Animals of the North*, Sue frequently slips into a tone of reverie. Nearing the end of her presentation, as guest speaker at Washington Electric Cooperative's 78th Annual Membership Meeting at Union-32 High School on Thursday, May 4, she said, “These are the faces of our neighbors. They remind us that we have a responsibility to treat the world with love.”

Those faces – images, often up-close and personal, of lynx and martens, grizzlies and caribou, spruce grouse and moose, polar bears, muskox, and wolves, all in their grand natural habitats – held her Co-op audience in thrall. Expanding beyond her own thoughts and observations, she quoted naturalist and author E.O. Wilson (“Each species is a wonder to behold, a long brilliant history in itself to read...”); she drew inspiration from philosopher Roger Walsh's call for us to live mindfully in the natural world, and Jane Goodall's empowering statement that “Every individual matters; every individual has a role to play; every individual makes a difference.”

She even summoned the voices of animals themselves, replicating calls of the coyote, cougar, and wolf. Even within the confines of the school's cafeteria they sounded distant and lonesome.



Susan Morse, Founder and Field Director for Keeping Track, on a recent expedition to the Arctic. “Sue is one of the most capable and experienced naturalists in the United States,” says Harley Shaw, an international expert on mountain lions, from Arizona.

Most important, she had a message to convey: As the dominant species on Earth, human beings have a moral obligation, not unconnected to our own fate in the world, to protect and steward the core wild lands and the vital connective habitats that link them together, so that our co-inhabitants of the world can survive.

For she made it clear that we have imperiled them. Polar bears, on average, are some 15-percent lighter in weight than they were in the recent past because of more arduous conditions in the arctic regions. Moose, who very likely numbered more than 100,000 in New England as recently as the 1980s, are notably less numerous

now and are increasingly encumbered by parasites like brainworm and winter ticks; there can be 40,000 to 60,000 ticks on a single animal.

“Adults can survive under this onslaught,” she said, “but calves don't make it.”

In Vermont, spruce grouse are at risk. And the American marten, “beautiful creatures,” said Sue, showing a photograph of their impish faces, “is going to have a tough time if this place becomes like Tennessee.”

Lynx could similarly disappear from the state if we don't find ways to preserve their habitat.

“Lynx have a boring diet,” she explained. “Snowshoe hare for breakfast, snowshoe hare for lunch, snowshoe hare for dinner and dessert.” But as Vermont's climate warms these hare have become less plentiful. “Lynx will not find Vermont's habitat hospitable in twenty-five or thirty or fifty years if warming temperatures continue,” she warned.

Her conclusions about the state's, the region's, and indeed the hemisphere's increasingly fragmented landscape and shifting, warming climate are troubling. The alteration of stream and river temperatures diminishing aquatic life and throwing salmon-spawning schedules out of kilter for the bears that depend upon them; the gradual northward migration of tree species; the influx of ticks where, decades ago, they were scarce... these, she explained, already are having a noticeable effect upon our co-inhabitants of the North.

“More than one-third of our North



The lynx featured prominently in Susan Morse's presentation, “Animals of the North,” at WEC's Annual Meeting. It can still be found in Vermont, but its food source, the snowshoe hare, seems to be migrating north as Vermont's climate warms. If hare become too scarce, the lynx will surely follow.

PHOTO BY SUSAN MORSE, KEEPING TRACK.


American wildlife is at risk,” she said. And much of the cause is the accumulation – now reaching a tipping point – of atmospheric carbon. One of the most dramatic photographs she showed was of a state-designated Critical Winter-Range Habitat for pronghorn and mule deer, in Pinedale, Wyoming, which was virtually covered with fracking pads – a fossil fuel-extractive technology that, along with continued political and economic pressure to plunder oil reserves in the Arctic, reveals the human race doubling down on practices destructive of both climate and habitat.

And yet ... her message was hopeful. Not that government action will curb climate change, but that individuals making informed choices or acting in concert through nonprofits can steer the course toward humbler, less-abusive policies. In this respect,

she praised Washington Electric Co-op several times in her presentation, for providing its members 100-percent-renewable electricity. “It's going to take us as citizens, as with your power co-op, standing tall for our principles worldwide,” she said.

Rather than despairing, she urged her listeners to make a list – “ten things you can do each day” – to abide by those principles.

“Try to avoid plastic packaging. Limit driving to town to two times instead of four times a week. Get your kids to turn out lights. Support the organizations you believe are doing good work, both local and worldwide, because membership matters.

“Be steady,” she concluded. “Be true to your values. It's just a gorgeous world! A beautiful planet! How great it is to fight for it.” 

WEC's Power System

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have helped to facilitate Vermont's solar buildout,” Weston continues. “The impacts of solar are real, and our next CWP will take a harder look at specific sections where that's being felt.”

Here's one scenario. A four-mile “spur” off of one of the main lines (or “feeders”) leading out of a substation serves, let's say, 200 WEC members. It has well-placed fuses and automated reclosers to isolate and correct shortages that might occur, and appropriately sized voltage regulators to provide a consistent level of power from the beginning of the line to its end.

But then a few neighbors at the end of the circuit decide to install solar

panels. WEC was an early adopter of net metering, and welcomes those installations, but they do change things on the grid. A system originally designed with traditional daily patterns in mind – usage goes up in the morning when cows are milked or when families are getting their day started, then goes down through late morning and afternoon – must now accommodate an influx of, say, 50 kilowatts from these solar systems in mid-day.

“And it's not a consistent influx,” Weston points out. “You've now got power generators at the end of the line going on and off as the clouds move, which can cause fluctuations in our voltage. The fuses, capacitors, and voltage regulators have to be able to

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Rate Structure

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“We have been saying for several years that our electricity sales are flat,” says WEC General Manager Patty Richards. “We would be okay if costs were not increasing so dramatically. But we have costs we simply can’t avoid, and this is a recipe for higher rates. Our current trajectory isn’t sustainable, and we must do something about it.”

The reasons for lower energy sales are many: greater efficiency in today’s appliances; more emphasis on conservation; and more people producing their own electric power, and even adding their surplus power to WEC’s distribution lines through net metering.

These facts – rising costs, and declining sales – aren’t changing. But, says Richards, “The idea of annual rate increases for the next several years isn’t tenable. Something has to change. For that reason and due to the new state mandates, the board and staff have begun an in-depth evaluation of the Co-op’s rate design. It’s actually a very interesting discussion that we expect will carry on through the summer. There are a lot of issues and options to consider, including questions about fairness, about equity, about compassion, and simply about what works. This is going to be one of the most important decisions the Co-op will make in the modern era.”

Any change in the rate design will be revenue-neutral. WEC collects roughly \$14 million in electricity sales, and that total will remain the same at the outset if we change our rate structure. However, at the individual level it will have an impact; some members will pay more and some will pay less.

“If we don’t make changes, we know that everyone will steadily pay more,” says Richards, “and we don’t think that’s an acceptable option for our membership.”

“Beneficial Electrification”

WEC has, for many years, had a two-tier energy rate structure, combined with a very modest monthly fixed charge: members have been charged a low energy rate for their first 200 kWh per month (currently just over 10 cents/kWh), and a higher rate – now about 23 cents/kWh – for power above that amount. This structure stemmed from two core principles: that WEC should provide members with enough affordable power to meet their basic needs, and that the higher cost for electricity in excess of 200 kWh would encourage energy efficiency.

As Richards points out, that policy has worked. The past decade or so has seen a reduction in average power consumption among Washington Electric’s members, 56 percent of whom use less than 500 kWh per month. However, Act 56, passed by the Legislature in 2015, requires utilities to assist their customers (or members, for Vermont’s two electric co-ops) in switching away from carbon-producing fossil fuels for a greater portion of their energy usage, which would encourage greater electricity consumption. The

intent is to help the state reach its goal of obtaining 90 percent of all energy from renewables by 2050.

The term for this new concept is Beneficial Electricity – quite apt when applied to Washington Electric Cooperative because our power portfolio is 100-percent renewable.

“Our Co-op has responded energetically to these demands,” says Richards. “Our Button-Up Program, first and foremost, emphasizes the importance of a tight and weatherized home through energy audits and follow-up weatherization efforts. No matter what source of energy people are using to heat the home, they’ll use less of it with a tight house. Button-Up also helps people buy and install cold-climate heat pumps, which operate on electricity and reduce the demands upon their gas- or oil-burning heating equipment. Additionally, the program supports switching to solar-powered hot water heaters, heat pump water heaters, and woodchip heating systems. Furthermore, WEC is in the process of installing five publicly available electric vehicle charging stations to encourage the movement away from gasoline-powered cars and trucks.

“Our programs address the goals of Act 56 more effectively than those of almost any other utility,” says Richards, “because our power is 100-percent renewable. When you replace gasoline to power your car with WEC electricity you are completely offsetting that gasoline with renewable power. That’s great for the member, provides revenues for WEC, and helps rescue planet!”

But, she says, there’s one serious problem.

“It’s harder to convince people to switch from fossil fuels to electricity when you’re charging them 23 cents per kilowatt-hour, no matter how green it is. That undercuts the message, and it’s one of the reasons we need rate reform.”

Making this an even-more critical consideration is that Act 56 levies financial penalties upon utilities that fail to meet its requirements for getting people off fossil fuels. And those requirements get more challenging each year. Such fines would only widen the gap between WEC’s necessary expenditures and its insufficient revenues, and force unpalatable annual rate increases for the foreseeable future.

“Our practice, for quite some time and for very good reasons, has been to rely upon our electric rates to meet policy objectives of the Co-op,” says Richards. “With a modernized grid, new laws, and more home generation, we need to also change how we charge for our services. If we don’t, the Coop won’t be around.”

The membership-fee gap

Energy rates are one component of a utility’s rate design. Another component that helps utilities cover their costs is the customer (or member) charge -- the fixed monthly fee that all users pay regardless of how much power they use.

WEC’s member service charge is currently very low, at \$12.97/month. This covers a very small portion of the Co-op’s total fixed costs.

“We are studying these issues with the assistance of our lender, the Cooperative Finance Corp.,” Richards explains. “We know our fixed costs are a great deal higher than we can cover with a monthly charge of \$12.97 per member. Fixed costs include the wires, the poles, insurance, paying our employees, and supporting our office, warehouse, and vehicles – all the expenses that don’t go up or down with how much electricity our members buy.

“One of the premier things you do as an electric utility is to figure out how you’re going to charge for your product and for your services,” Richards continues. “We have concluded that the way we’re doing it no longer works for the long-range stability of the Co-op and in light of the new state laws we must comply with.”

WEC is also concerned about its low-income members.

“They are the most vulnerable to high energy rates,” she says. “In many cases they haven’t had the means to invest in weatherization and high-efficiency appliances, which have enabled others to significantly reduce their electric bills. We have these folks in mind when we talk about any changes to our rate structure.

“Certainly there are some Co-op members who achieve low usage through frugality,” she adds, “and for them an increase in the member service charge would be unfortunate.

But in the bigger picture, changes to the Co-op’s rate design would, if effective, reduce the size and impact of the rate increases that appear likely for the next several years to come. If we do nothing, rates will go up for everyone, including the low-use member.”

Your input

The first step for the Board of Directors is to clarify what steps they will consider to meet this challenge. It is likely that the monthly customer charge will increase, and the board is also looking at reducing the low-cost block to a smaller size.

“We’re having policy and big-picture discussions now,” Richards explains. “We’d also like our members’ input, and we may hold a community meeting in the summer to solicit feedback. Once we settle on a new structure we’ll need to get it approved by the Public Service Board. We’re hoping to make a filing with the PSB by year end. But we recognize how big an issue this is and we plan to take our time and share what we’re thinking and doing with all our members via *Co-op Currents*, meetings, and phone calls.”

Members are encouraged to give these issues consideration, and to share their thoughts and ideas with WEC’s Board of Directors. The directors’ names and contact information are listed on page 2. 🐿

WEC’s Power System

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respond to that, without our members even knowing.”

Then there’s this: The construction of new homes in WEC’s service territory has slowed dramatically. Ten years ago the Co-op typically added some 200 line extensions each year. Now it’s more like 50.

“However, with the advent of solar,” Weston says, “the loads are changing. During the nighttime our load requirement will reflect the demands of those 50 new homes. But during the day, when the solar installations are at their highest productive levels, it’s like removing 200 homes from our lines.”

Right-sizing, upgrading, and contending with variables like these is a constant challenge for any electric utility. For co-ops, the cyclical Four-Year Construction Work Plans represent an opportunity to try to get it right, and to secure the funds needed to keep up with the times.

A co-op for all

The federal Rural Utilities Service (RUS) requires the nation’s 900-plus electric co-ops to provide reliable power at a consistent quality (voltage) so that lights and electrical equipment operate safely and properly. This necessitates constant, costly investments. WEC’s next CWP, like the two before it, will require about \$7 million in CFC loans.

The expiring work plan contained 38 specific projects, of which 33 have been completed. These have involved the reconstruction of more than 50 miles of line over the past four years. Some of the major projects were in



WEC now has two track vehicles, enabling faster and more efficient construction projects in the most rural, off-road territory. Both were at work in the reconstruction project in East Topsham in early June.

Chelsea, Corinth, Williamstown, Cabot, Marshfield, Tunbridge, Barre, and Orange. The remaining projects will be finished over the summer and fall.

By then, the data accumulation needed to formulate the next CWP will have been completed, and with consultant Dan Crockett’s assistance cost-benefit analyses will have been performed and priorities will have been set. WEC’s members out at the ends of the power lines and far away from the substations, can take comfort knowing that their needs will have been considered, the same as everyone else’s. 🐿

