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WEC CO-OP CURRENTS

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Getting Certified

Woodsmen Sharpen Their ROW Skills

With trainer Peter Dubish (center figure in righthand photo) watching, WEC's contracted ROW workers became certified in rescue and other operations in June.

It's 7:30 on a damp June morning, and a dozen men are gathered in the woods behind WEC's warehouse in East Montpelier. They are dressed in jeans and t-shirts, and most are young, in their 20s and 30s. One fellow, wearing an orange hardhat, with ropes and climbing gear strapped at his waist, is poised at the foot of a maple like a sprinter in racing blocks. Some 30 feet above him a dummy, roughly man-shaped, is wedged among the branches.

At a signal from Peter Dubish, who is standing nearby with a stopwatch, the climber calls up to the branches, "Fred, are you all right?"

No answer.

"Mark, call nine-one-one," he says to another of the men, then starts scrambling up the tree. He wraps his arms around the lowest bough and walks his feet up the trunk until he's hanging from it like a sloth. Then he pulls himself up, stands on the branch and reaches for the next ones, until he has worked himself up to the dummy.

"Pulse?" he shouts.

"No pulse," Dubish calls back from the ground.

"Breathing?" yells the climber.

"Not breathing." The questions indicate that the climber has remembered the two most critical issues in this staged emergency. Now the climber – we'll call him Bill – must simulate the rescue of a co-worker who has suffered a serious illness or injury. He has at most four minutes to get the dummy down to the ground, where, if it were a human being, Bill could administer CPR before oxygen deprivation caused brain damage and possibly death.

Hauling a dummy down from a tree, belaying with ropes and pulleys, isn't an easy task. As the dozen men took turns practicing the rescue under trainer Dubish's eye, the dummy would sometimes catch on branches, slowing the descent and wasting critical moments. For some of the men things went well; whether by luck or the climber's skill, the dummy slipped past

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Saving Money at the Adamant Store

Local Co-op Gets Serious About Energy Efficiency

By Erika Mitchell

One of the first lessons I ever learned about business is that you can't control your income; you can only control your costs. To put it another way, the easiest way to improve profits is to decrease overhead expenses.

I volunteer at the Adamant Co-op, a friendly community-owned co-op in my neighborhood. The Co-op is always struggling to make ends meet while serving the needs of the community. Our Co-op is more than just a store; it is a place where community members, young and old, interact with each other on a daily basis.

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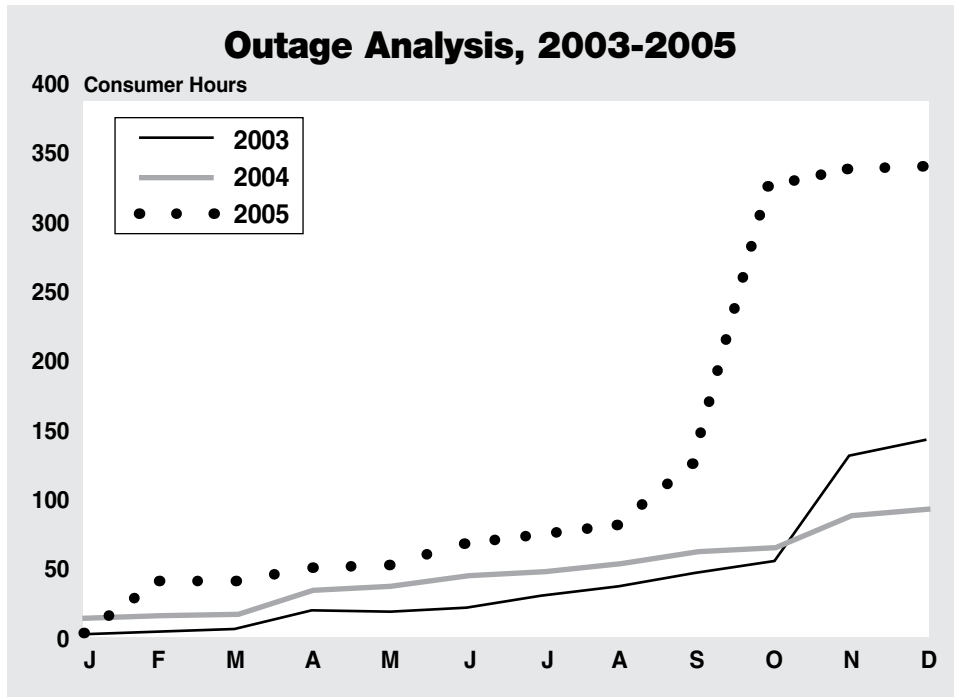
Inside

Co-op member and wind-energy opponent Katie Anderson addresses her fellow members at WEC's 67th Annual Meeting in May.

Washington Electric Cooperative
East Montpelier, VT 05651

2005 System Reliability Report

Improvements Yield Fewer, and Shorter, Outages



The most severe blow to Washington Electric Cooperative's electric-distribution system in 2005 was the October 25 snowstorm that socked the state with wet, heavy snow while the leaves were still on the trees. The weight of the snow on the leaf canopy snapped branches and split the trunks of maples, willows, locusts, apple trees and other species, sometimes bringing down entire trees. The consequences were severe for electric utilities and their customers. At one point Washington Electric had more than 5,000 members without power. With Co-op personnel busy in many places cutting away fallen trees before they could reach and repair damaged power lines, outages in some cases lasted as long as four days.

Details of this severe and memorable storm are revealed once again in the Co-op's 2005 System Reliability Report, a report filed annually with state regulators. Late-fall storms in 2005 – primarily the storm of October 25-29 – accounted for approximately 73 percent of the entire year's "consumer-hours out."

But the real purpose of the System Reliability Report is to track the progress of electric utilities in providing dependable power to their patrons on a daily basis. Thus, while the effects of major storms are reflected in the report, for comparison purposes the report concentrates on information exclusive of those storms. Not counting the October storm and other "major storm" events (as defined by WEC's approved Service Quality and Reliability Plan), the total number of "consumer-hours out" in 2005 (which measures every hour without power by each individual Co-op member) was 96,244. The average annual number of consumer-hours out over the previous five years was 115,709.

Other factors measured include the frequency of outages on WEC's system due to all causes – which includes everything from fallen trees to animal damage to equipment failures to planned outages that enable linemen to make repairs and improvements. Also tallied is the duration of outages. The report found that the *frequency* of WEC outages was approximately 5 percent less than the five-year average, and the *duration* of outages was 21 percent less. This trend is a result of improved system coordination, quicker fault location, and improved storm-response procedures, all of which resulted in shorter outages.

Trees continued to be the leading cause of outages, which is typical for rural electric systems. Trees accounted for about 32 percent of the outages and 47 percent of total consumer-hours out. The second-leading cause was malfunctioning "cutouts" (a fuse mechanism) manufactured a company called A.B. Chance. The devices were installed throughout WEC's system some years ago. The product later proved to be unreliable, and the Co-op, like many utilities, has had to contend with replacing them.

The third-leading cause of outages for WEC members was electric faults occurring on transmission lines owned and operated by Green Mountain Power Corp., which accounted for nearly 10 percent of Washington Electric's consumer-hours out. Planned outages – initiated by the Co-op to provide an opportunity to replace A.B.Chance cutouts prior to their failure – was the fourth leading cause of down time.

The System Reliability Report also details the Co-op's many-faceted "action plan" for addressing problems on the system, and progress made during the past year. Plans include replacement of the Maple Corner substation (an expenditure approved by a vote of the membership in May)

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Co-op Currents

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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 Deborah Brown, 802-223-5245.

Members Write

***Co-op Currents* welcomes letters to the editor that address any aspect of the Co-op's policies and operations, or any matters related to electricity. Readers can write to *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.**

Co-op Manager Misquoted On Wind

Editor, *Co-op Currents:*

In an "Open Letter to Washington Electric Co-op" that I distributed outside its annual meeting in Barre on May 23, I made the statement that "on at least two occasions WEC [Manager] Avram Patt has freely acknowledged that he would not care to see industrial wind towers on his own vista." The statement appears in the fifth paragraph on page one, which concludes by characterizing Mr. Patt as "an honest man."

I still believe him to be so, but as he has since pointed out to me, and as a review of my available sources has confirmed, Mr. Patt did not make the statement I "remembered" him making. He has requested no more than that I correct this mistake in any future circulation of the document, but surely he is entitled to more than that.

I hereby acknowledge the error and apologize for it. I also wish to acknowledge Mr. Patt's gracious manner in pointing it out to me. Finally – and as I'd intended to do from the start – I wish to acknowledge the conduct of those WEC members who received my letter, not a one of whom was rude to me and not a few of whom were very kind.

Garret Keizer
Sutton

Adamant Store

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The building is old, however, and its facilities are limited. In order to undertake special maintenance projects for the building – like adding a screened porch so that we could offer a welcoming space for community coffee breaks that is blackfly-free – we needed to improve profits at the store, but we didn't want to do this at our customers' expense.

In studying our bills, I noticed that our highest overhead expense is electricity. If we could just get our electric bills down, we would have some more money left over for community projects.

Ninety-five percent of our electric bill was coming from our coolers and freezers. So Washington Electric suggested we study how much each unit cost to run and compare that to how much profit each one makes in a year.

The location of the Adamant Co-op would be great for solar collectors, but at our rate of energy consumption we would need to spend at least $150,000 to get a solar system big enough to provide for our needs. And even if we had that kind of money, how would we keep our seafood cool on cloudy days?

A more realistic approach to saving money would be to get serious about conservation.

In order to start saving electricity, we needed to find out exactly how much we were using, and where it was all going. I began by contacting our electric utility, Washington Electric Co-op, where I spoke to the director of products and services, Bill Powell. Powell was extremely helpful. He visited our store and measured the electric usage of each major electrical appliance. He reported to us that 95 percent of our electric bill was coming from our coolers and freezers. He suggested that we study how much each of the cooling units costs to run, and compare that to how much profit each one makes in a year.

We saw that one cooler in particular was provided for free by a supplier, but that it cost more than $600 per year to run. We told the supplier to come and take that cooler away, since the goods it held would fit easily into one of the other coolers. We also shifted products and coolers around to reduce the number of units that are opened frequently. We may even move one freezer that is used primarily for storage into an unheated area so that we'll get some free cooling from the great outdoors in the winter (as well as some added protection in case of an extended winter power outage).

Our coolers are not new, so we have considered replacing them with units that save money by being more efficient. We looked into installing a Freeaire system offered by R. H. Travers in Waitsfield, which uses outside air for cooling in the winter months. Freeaire systems improve efficiency so much that payback for installation can be less than two years. However, the minimum cooler size for a Freeaire system to have a reasonable payback period would be about 1,000 cubic feet, which is far more than we need. Instead, we're studying some replacement options for our stand-alone display coolers at the EnergyStar (www.energystar.gov) and CEE (http://www.cee1.org/) websites.

Our biggest cooler uses more than $800 of electricity per year. We need to calculate whether it is paying its own way, and how soon we would realize some savings if we replaced it. If we decide to buy a new cooler, Efficiency Vermont may provide a substantial rebate, depending on which model we choose.

WEC member Denise D'Abramo picks up a half-gallon of milk at the Adamant Co-op general store. The cooperatively owned market has been tackling energy issues head-on, and with WEC's help has been making changes to improve electric efficiency and reduce costs.

Keeping coolers cool

In the meantime, we're exploring options to make our coolers more efficient. We found out that door heaters on display coolers waste a lot of energy, so we made sure that our coolers don't use them. (If the coolers did have door heaters, we would disconnect the doors during the cooler months and only reconnect them in July and August if the door glass got foggy from humidity). I thought perhaps we could save some money by turning the beer and soft drink cooler off at night, but Matt Dooley at Efficiency Vermont told me that would not be a good idea, since it would promote mold and be hard on the compressors.

Another factor for cooler efficiency is how full it is; a full cooler is more efficient than an empty one, because of thermal mass. That is, every time someone opens the door of a cooler that is mostly empty, all the cold air falls down on the ground, but if the cooler is full, the cold stays in when the door is opened because the cold is stored in the products filling up the shelves, rather than in just the air. So we're trying to be extra-sure that our beer, wine, and soft drink cooler is fully stocked, especially in warm weather.

Shopper Denise D'Abramo, left, and Janet MacLeod, president of the Adamant Co-op Board of Directors, outside the small community store in rural Washington County.

CFLs for a well-lit co-op

While we're at it, we're upgrading our light bulbs. All our big spaces are lit with 40-watt fluorescent tubes. As these burn out we'll replace them with the more efficient Super8 tubes.

We replaced the incandescent bulbs that we use for accent lighting with CFL (compact fluorescent) bulbs, using CFL PAR bulbs in our track lights. Community members were quick to notice. Some had tried CFL bulbs in the past, but found them too weak or too bulky. When they saw how well the new CFLs lit the store, however, many decided they would like to give CFL bulbs a second chance in their homes, so we have recently begun to offer CFL bulbs for sale in the store. By working with Efficiency Vermont, we can now offer customers instant rebates on their bulbs at the cash register.

We've also added CFL bulbs to the list of products that our Buying Club members can make special orders for, and created a catalog of both common and special-purpose CFL bulbs for the Buying Club. Offering this new product line brings in a modest profit for the Adamant Co-op, but it also provides our community members with a great deal on bulbs that will save them money through lowered electric bills at home.

And saving them money is what the Adamant Co-op is really after, since our goal is to improve the lives of community members.

Erika Mitchell is a member of the Adamant Co-op's Board of Directors. The co-op is a small general store that straddles the border between East Montpelier and Calais. It was founded by the same group of residents who founded Washington Electric Co-op in 1939.

WEC Annual Meeting

Discussion Focuses on Vermont's Energy Future; Voters Back New Substation for Maple Corner

Washington Electric Co-op went into its Annual Membership Meeting on May 23 seeking its members' permission to construct a new, $849,000 substation in Maple Corner. It would replace a sub at the same location that serves 814 members but has grown obsolete. The Co-op got what it asked for. The voters at the annual meeting completed balloting that had begun a month earlier by mail, and the conclusion was a green light for the project, by a vote of 1,046-53.

Linemen and operations workers were at Maple Corner within days, readying the site for construction and rerouting power lines so that the members served by the old substation would experience minimal disruption during the changeover. The new substation will be built by the Co-op's own crews, who have gotten used to construction work. This will be WEC's third substation replacement since 2001 (previous projects were in Moretown and South Walden), as Washington Electric upgrades its 1,200-mile, eight-substation electric-distribution system to serve a growing membership with the utmost reliability that a rural utility, working in rugged terrain, can achieve. Engineering & Operations Director Dan Weston said plans were for the new substation to be on line by late July or early August.

The substation vote wasn't the only one taken at WEC's 67th Annual Membership Meeting. Also on the ballot were elections for three seats on the Co-op's Board of Directors. Re-elected to three-year terms were board vice-president Roger Fox of Walden, Marion Milne of Washington, and Richard Rubin of Plainfield.

By 656-53, voters also approved bylaw amendments that extend Co-op membership to companies that purchase renewable energy certificates (RECs) from Washington Electric. WEC earns RECs by generating power from methane gas collected at the landfill in Coventry; it sells the certificates to companies elsewhere in New England that need them to satisfy their states' renewable portfolio requirements.

The May 23 event was the first Co-op annual meeting held at the Barre Elks Club. Turnout was up this year – some 221 members, employees, guests and political figures attended – and the Elks Club proved to be a comfortable, hospitable venue for the event. Members were greeted at the entranceway by Rachel Pendleton of Efficiency Vermont, who gave each member a free compact fluorescent bulb to take home with them (in addition to their door prizes).

As always, the meeting combined business, dinner, socializing and lots of discussion – both informally around the supper tables, and at the meeting itself. A topic of intense interest and concern this year was wind power, with both supporters and opponents of potential Vermont wind-electric sites rising to speak to their fellow Co-op members and their Board of Directors. Roger Hill – a WEC member from Worcester and a well-known local meteorologist – was the guest speaker. He reviewed the past year's weather patterns, explained the influence of global climate change, and helped people understand what individual energy consumers can do to try to mitigate the worst effects of global warming. (See "Meeting Looks at Vermont's Future," page 4).

"The most optimistic estimate out there is that 25 percent of Vermont's future energy needs can be avoided by aggressive conservation measures," said Patt.

'Volatile' means 'up'

However, much of the business meeting was devoted to the subject of what the Co-op can do to mitigate the effects of increasing wholesale electricity costs.

WEC Treasurer Donald Douglas, a rural mail carrier from East Orange, explained that so far the Co-op had been able to contain costs enough to avoid a rate increase, but that WEC is not immune from region-wide trends. Rates have been going up dramatically throughout New England, which relies heavily on natural gas for electric generation. "Volatile" is a word often used to describe natural gas prices, but "volatile" has come to mean "rising."

"Nearly all of Vermont's electric utilities have been seeing rate increases," said Douglas, citing Green Mountain Power (12 percent), Burlington Electric Department (nearly 23 percent), the Vermont Electric Co-op (14 percent) and others. Other costs, such as employee health care, also are part of the economic environment in which utilities operate – and some costs, such as storm damage, are basically beyond utilities' ability to control.

"We swim in the same waters as these other companies," said Douglas, adding that "the October [2005] storm cost us half-a-million dollars."

General Manager Avram Patt said that rising wholesale power costs will be a factor as WEC responds to the gradual termination of its existing power contracts. On the plus side, however, Vermont's residential energy consumption has shown an actual decrease since the 1990s. Patt said that this was a reason for voters to ardently support the Legislature's continued funding of Efficiency Vermont, the state's "energy-efficiency utility."

But that won't be enough.

"The most optimistic estimate out there is that 25 percent of Vermont's future energy needs can be avoided by aggressive conservation measures," said Patt.

The looming question is how the state will meet its energy requirements as its largest contracts (with Vermont Yankee and Hydro Quebec) expire over the next decade. And while WEC has done much to provide for its own needs – and terminated its contract with Vermont Yankee four years ago – "We, too, will need to replace our existing sources."

At least there's Coventry

But not one existing source – not for another 30 years.

This was the Co-op's first annual meeting since it opened its landfill gas-to-electric generating station in Coventry last July. After a balky start, the plant was providing about a third of WEC's power by the end of 2005, and that proportion is expected to reach or exceed 50 percent as the project matures and another engine is added.

It has turned out to be a better bargain than even the board of directors anticipated. President Barry Bernstein said the Co-op's wholesale cost for power from the landfill station was approximately 4 cents per kilowatt hour, compared to a current market rate of around 10 cents/kWh. The facility also represents a stable, long-term supply of energy – one thing, at least, that's not "volatile."

Bernstein praised the board and staff for seeing the methane project through from inception to construction, a grueling three-year project for Washington Electric and a unique one for Vermont. Yet Vice-President Fox quickly rose to publicly place the lion's share of the credit – for foresight, imagination, and hard work – upon Bernstein, himself.

Several Co-op members expressed their appreciation from the floor.

"I'm from East Montpelier and I've been a Co-op member for 25 years," said Glen Goodall. In fact, he said, "In 1938 I dug holes for the poles for 30 cents an hour."

Capping his long perspective on the Co-op, Mr. Goodall attended the Grand Opening of the Coventry facility last July. "If you haven't been up there," he said enthusiastically, "you really should go see it!"

The Treasurer's Report printed in Co-op Currents *provides a handy reference as these members listen to Don Douglas' oral report.*

Wind Turbines? Perennial Mud Season?

Meeting Looks At Vermont's Future

"*Windy and Warm"* is the title of a composition by legendary guitarist Doc Watson of North Carolina. As it happens, variants of wind and warmth – wind power and global warming – accounted for much of the discussion at Washington Electric's 67th Annual Membership Meeting on May 23 at the Barre Elks Club.

In 2005 WEC contributed $850,000 of federal grant money to help UPC Vermont prepare its proposal for a 26-turbine wind project for high-elevation sites in Sheffield and Sutton in Caledonia County. If the company receives the necessary state permits and proceeds with construction, WEC expects to purchase power from the UPC turbines. The plan conforms to Washington Electric's policy of procuring as much of its power as possible from local, affordable, environmentally friendly sources. (WEC would *not* have an ownership stake in the wind project).

But wind projects are controversial in Vermont. Judging from the energetic discussion at the annual meeting, the majority of members endorse the Co-op's financial and logistical support of UPC. But that opinion is not universal.

Among the first members to address the subject from the floor was Alex Thayer of Plainfield. "I've seen it in Germany and I've been to Searsburg," she said, referring to Green Mountain Power Corp.'s wind installation in southern Vermont. In neither place did she find the turbines aesthetically offensive. She encouraged the Co-op to "keep up the effort" and help members see the necessity of developing wind energy.

WEC member Katie Anderson, of Peacham, rose with a strongly different view.

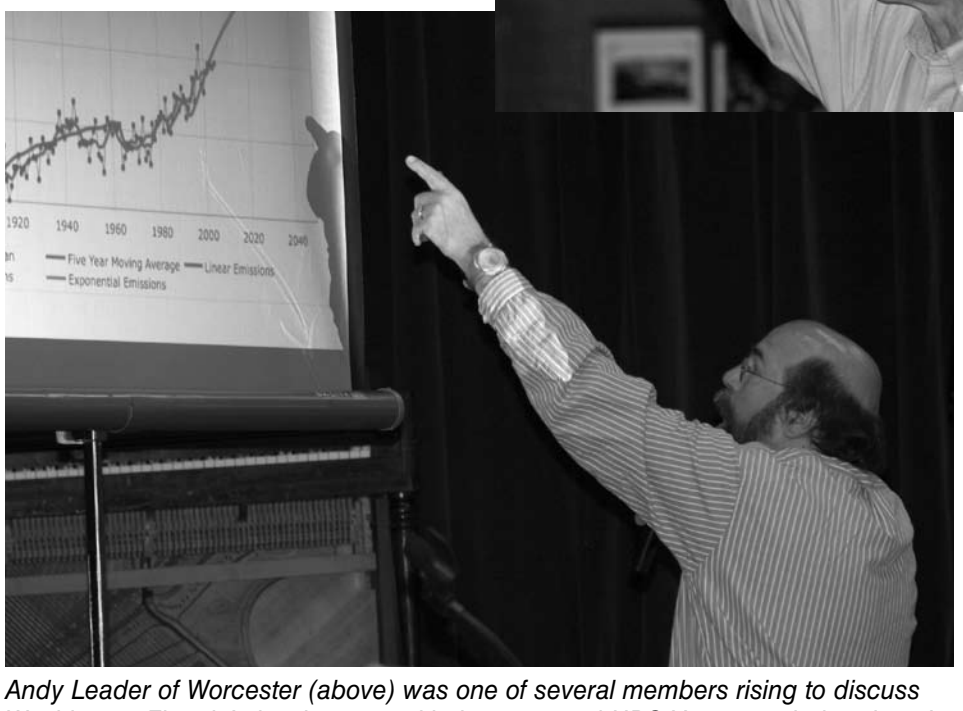
"I do not support wind power," she asserted. "I do not believe in the industrialization of our ridgelines. They're very special. It's a mistake to put our federal tax dollars into this," she continued, referring the WEC's contribution of grant money to the Sheffield project. An ardent opponent of Vermont wind-power projects in general, she also added that she was tired of the controversy, and hoped for resolution soon "so we will not fight all the time."

"In the 1930s, when people saw these power lines coming up the valley it was aesthetically pleasing to them because of what it represented: having electric power," said Michael Duane. For similar reasons many people consider wind turbines to be beautiful.

Bud Haas of Bradford, a former WEC board member, reminded people that wind power has an advantage over other electric sources in terms of their environmental impact. "Unlike nuclear plants," he said, "they are not forever. They can be taken down."

Michael Duane, a former WEC president, reminded people that there was some urgency for moving forward with wind. Referring to a comment in Avram Patt's Manager's Report – that the state could eliminate, at most, 25 percent of its future power needs through aggressive conservation – Duane said, "I don't know where that other 75 percent is going to come from," and referred bitterly to the "tradition of seeing our sons and daughters killed in wars over oil."

As for aesthetic concerns about wind turbines, Duane noted that most people consider the power lines that lace the landscape to be unsightly. "But in the '30s, when people saw these power lines coming up the valley it was aesthetically pleasing to them because of what it represented: having electric power." For similar reasons, he said, many people consider wind turbines to be beautiful, because they represent energy drawn from nature without depleting resources or producing pollution.



Andy Leader of Worcester (above) was one of several members rising to discuss Washington Electric's involvement with the proposed UPC Vermont wind project. In a similar pose, guest speaker Roger Hill, points to data revealing the pace of global warming.

But opponents had their doubts. Andrew Leader from Middlesex believed it was easy to make that judgment when it was somebody else's valley or ridgeline. "Would you like to see half a dozen 400-foot towers dominating our range at Dumpling Hill?" he asked. A neighbor, Mary McKay, replied, "I have the best view of anyone of Dumpling Hill, and I would love to have it."

Throughout the conversation WEC members were cordial and respectful, which is often not the case when wind energy is debated. Board President Barry Bernstein closed the discussion with an affirmative statement of WEC's position.

"This Co-op encourages debate, thought and the perspectives of all our members," said Bernstein. "We have made a commitment to the UPC project. If the project [is approved by state regulators] the Co-op will get as much as 10 percent of our power from this local source of energy, at very favorable terms, for many years."

"Changes in latitudes"

No single year or season provides proof of climate change, but the winter of 2005-2006 was particularly unwintry by Vermont standards. It was still fresh in people's minds in May, so when guest speaker meteorologist Roger Hill started by asking his audience, "How many thought that this winter stunk?" hands shot up all over the place. The Worcester weatherman then reviewed the winter month-by-month.

October brought a freak snowstorm, highly destructive for the Co-op and for property owners because trees were still in leaf. But on the whole, said Hill, "October was well above normal in temperatures, and very, very wet."

November was 2.4 degrees warmer than normal, with 1.35 inches above normal in rainfall.

December was actually wintry! One degree colder than normal – the only month of the winter that acted like winter.

January: ten (10!) degrees warmer than normal (this brought a collective "wow" from the audience.) Instead of snow, we had freezing-rain events that played havoc with town road budgets. "The whole month was a 'January thaw,'" said Hill.

February: People's snow shovels, Skidoos and cross-country skis lingered in the garage.

March: In like a lion, out like a lamb? Hardly. "March was a pussycat," said Hill. "It didn't do much of anything."

April was two degrees warmer than normal. However, said Hill, "It was a great sugaring season, with warm days and cool nights."

As for **May**, by the time of the Annual Meeting, rainfall had been more than three inches above normal. (And no one needs to be reminded of the near-constant rains of June, and their disastrous effect on our farmers.)

Weather is not uniform across the state, as Hill explained in his discussion of Vermont's micro-climates. For example, Jay Peak had plenty of snow and did a brisk business during the ski season, while Mt. Ascutney barely stayed open through the winter and shut down early, as did Mad River Glen. But the big picture was of a winter our Vermont ancestors wouldn't have recognized.

"Is this the future?" Hill asked.

He presented data, accepted by most of the scientific community, that document climate change, and showed slides contrasting the glacier-covered landscapes of polar latitudes in the early 20th century and those same, largely grassy regions today.

"The glaciers are in retreat,

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Efficiency Saves

Some Enlightenment About Lighting

By Bill Powell
Director of Products and Services

We are asked regularly about different lighting technologies, and what we recommend. Much has changed in lighting technology in the past 15 years, resulting in lower costs, better products and many more choices now. Co-op members have made lighting changes to save money and energy, and these are still good reasons to move from incandescent lighting to more efficient lighting types.

Generally we recommend members use compact fluorescent lights (CFLs) in any application where incandescent bulbs are now used. Below are general equivalencies for comparing incandescent bulbs and CFLs:

CFL wattage	Light Output (Lumens)[1]	Incandescent wattage
15 watts	800 – 1,000	60 watts
20 watts	1,000 – 1,200	75 watts
23 watts	1,500 – 1,600	90 watts
30 watts	2,000 – 2,200	120 watts

[1] *Lumens output varies with wattage, CFL manufacturer and product type*

Efficacy

This feature of CFLs is how and where the claim of "efficiency," or "efficacy," is measured. Simply stated, these terms refer to the ratio of lumens (light emitted) divided by the wattage. Efficacies from 50 to 80 are typical for compact fluorescent lights; the efficacy of incandescent bulbs is around 10 to 15. So CFLs are 500 percent to 800 percent more efficient than incandescent bulbs.

Ballast Types

Today's CFLs generally use electronic ballasts, an improvement over the magnetic ballasts used in earlier technology. This change allows the CFL to come "on" faster, without the background "hum" sometimes associated with older fluorescent technology.

Solid Waste Reduction

Another benefit of using today's CFLs is that they reduce the amount of solid waste produced, because CFLs can last up to 10 times as long as one incandescent bulb. The solid-waste stream could be significantly reduced as incandescent products fall from favor.

If the thought of saving money and energy motivates you to buy CFLs, great! But understand that what drives the savings equation is – making appropriate watt reductions, and putting the CFLs where they are going to get used.

Energy Savings

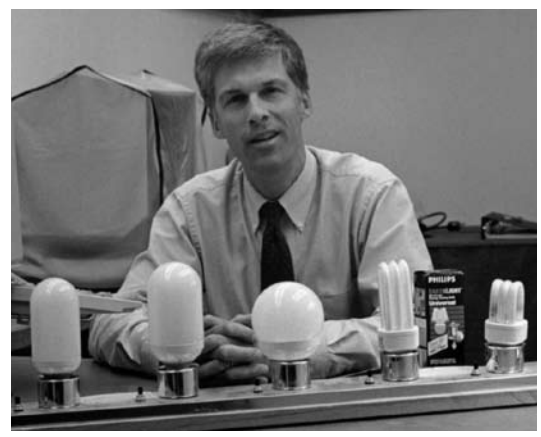
Although energy savings is a major incentive for Co-op members to use CFLs, the savings resulting from switching from incandescent to CFL lighting depends on a couple of factors. First, in terms of overall household electric usage, the share attributable to lighting is typically small (although it's a growing share in some homes). Holding daily usage constant, and based on the typical efficacies (see the chart below), the energy savings vary with the amount of wattage-reduction achieved.

Original Bulb Wattage	CFL wattage	Daily Use (hours)	Original kwh/year	CFL kwh/year	$ savings/year
120 watts	30 watts	4	175	44	$21/year
90 watts	23 watts	4	131	34	$16/year
75 watts	20 watts	4	110	29	$13/year

Let the buyer beware! If the thought of saving money and energy motivates you to change your behavior and buy CFLs, great! These savings are real. But understand that what drives the savings equation is: 1) making the wattage reductions used in these examples, and 2) putting the CFLs where they are going to get used.

In other words, replacing a 25-watt incandescent with a 25-watt CFL won't "save" anything; you need to reduce the wattage of your CFL (the good news, of course, is that they're made to provide high-quality lighting at lower wattages). And if you use CFLs in hall closets where they are "on" for 30 seconds or less daily, this is not where the savings are found.

New Technologies



Bill Powell

During the last decade the fluorescent technology was made smaller, using less electricity and moving to electronic ballasts (which work better and use less electricity). There are more styles of fluorescent technology now, such as T-5 bulbs that offer marginal improvements over the "standard practice" T-8 tube technology. Plus, manufacturers are providing more choices in fixtures for CFLs. However, migrating from one fluorescent technology to another is not likely to provide much energy savings, although there may be performance improvements associated with new technology.

LEDs (Light Emitting Diodes)

We think of LEDs as the little lights on kids' sneakers, as the indicators on the screens of calculators, microwaves and many consumer appliances. There are now commercial efforts to bring LEDs to the residential lighting market. Recently a trade magazine reported on current LED developments. Although the technology is promising, these products are not "ready for prime time," for several reasons.

Insufficient Output

Presently, the products under development neither produce adequate lighting, nor is the light output of the familiar color temperature to mimic what CFLs provide. The efficacy of the LEDs tested appears poor, shown in chart below:

LED Product tested	Lumens per watt (efficacy)
Ardee Lighting Clickstrip	10
Enlux Floodlight bulb	20
Permalight Enbryten 15 watt ENBC	40
Cyberlix Aeon Pro	55

The final LED unit cited above has an efficacy (55) that compares favorably with CFLs. However the LED unit has an installed price around $90 per linear foot (the fixture is an undercounter "strip" design).

It's clear LEDs will have a place in the efficient-lighting market in the future; the LED market may now be where the CFL market was in 1990. If members want "efficient" lighting today, good CFLs are available at more than 125 retailers throughout Vermont; at most if not all of these stores there are point-of-purchase "instant" $2 coupons available toward the purchase of a limited number of CFL products. The coupons are paid for through the Energy Efficiency Charge on each Vermont electric bill, and are made available by Efficiency Vermont (www.efficiencyvermont.com) @ 1-888-921-5990.

Contact the Co-op if you have lighting questions, including how to pick CFLs or how to switch out incandescent bulbs and fixtures.

Energy Myths and Facts:

Myth: Compact fluorescent light bulbs (CFLs) hum, flicker and cast a harsh white light.
Fact: Compact fluorescent technology has come a long way since it was introduced. Now most new ENERGY STAR CFL bulbs reach full brightness quickly and without humming and flickering. And they cast a high-quality light.

Myth: CFL bulbs only come in one type (spiral) and don't fit most standard lamps.
Fact: CFL bulbs are also available with either round or half-hourglass shape frosted-glass globes. They come in a variety of sizes, from small candelabra bulbs to flood lights, that fit in a wide range of lamps.

The Vermont Alliance of Cooperatives

The Vermont Alliance of Cooperatives is a newly formed organization bringing together a wide assortment of cooperatives to educate consumers about the history, structure, benefits and availability of cooperatives serving diverse sectors. The Alliance includes credit unions, agricultural co-ops, housing co-ops, retail and food co-ops, recreation co-ops, cooperative insurance companies, and rural electric cooperatives – all of which are active and thriving in Vermont.

Co-ops are owned by and operated for the benefit of those who use their services. They promote the values of self-help, self-responsibility, democracy, equality, equity and solidarity. They are guided by the "Seven Co-op Principals," which can be found on Washington Electric's webpage.

Cooperatives have a strong foothold in Vermont, with more than 300,000 Vermonters (nearly half the population) belonging to a co-op of one kind of another. One of the important traditions of co-ops is regular communication with their members. Washington Electric Cooperative's *Co-op Currents*, which has been published since the inception of this co-op, is an example of that tradition. Alliance members have agreed to feature a co-op from one of the sectors each month in their newsletters, websites, or other publications. These brief features will appear regularly in *Co-op Currents,* perhaps providing useful information to WEC members about other cooperative opportunities.

WASTE NOT

Washington Electric Co-op is, in a way, taking one product out of Vermont's wastestream and using it beneficially. That product (a byproduct, really), is methane, the gas formed from decomposition at the NEWS landfill in Coventry. WEC uses it to generate electricity, which avoids flaming this greenhouse gas into the atmosphere.

In this space, we will try to help our members find their own ways to reduce Vermont's wastestream, with tips about recycling, composting, the proper disposal of materials that are unsafe for the environment, and how to avoid generating some kinds of waste in the first place. Our information will come from the Central Vermont Solid Waste Management District (CVSWMD.org) as well as other sources. (The solid waste management districts are your best resource for information on waste disposal and reduction issues.)

Here's an example: **Junk mail** consumes 80 million trees and 28 billion gallons of water each year. We spend $320 million a year in taxes to dispose of it. To reduce how much junk mail you receive write to the Direct Marketing Association and ask that your name be removed from the association's mailing lists. Include the date, all variations of your name and address, and sign it. Send it to:

Direct Marketing Association
Mail Preference Service
P.O. Box 643
Carmel, NY 10512
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www.dmaconsumers.org

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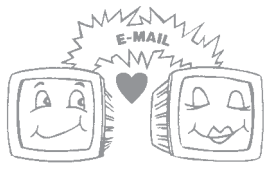

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Woodsmen Sharpen Their Skills

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the branches and settled smoothly on the ground. Dubish timed each man's performance, and – sometimes not so gently – reminded the climber of what he had done wrong.

This wasn't child's play. The men could find themselves in the rescuer's position someday – or perhaps the dummy's – in their work for Washington Electric Co-op. But these men weren't linemen, whose jobs everyone knows are dangerous. Rather, they were tree-service employees who work for the small local companies WEC hires to maintain its rights-of-way (ROW) – the corridors through the woods for the electric power lines.

Some are freelance contractors who have become Co-op regulars; others work for M&J Tree Service, or Shatney's Tree Service, both out of Greensboro Bend. But to Dan Weston and Mike Myers (respectively, WEC's Operations Director and Right-of-Way Management Coordinator), they are members of the greater WEC family.

That's one reason their training is so important.

"Their service is an integral part of our Co-op," said Weston, "and of our ability to provide reliable electric service to the membership. It's not just a contract, where we tell them what to do and they do it. It's a long-term partnership. This training addresses OSHA certification, but it also speaks to their safety."

Specifically, what the ROW workers were receiving during the final week of June was line-clearance tree trimmer certification classes, and when they were finished each would be a Certified Line Clearance Tree Trimmer. Their job demands knowledge and proficiency well beyond just running a chainsaw; this is "running a chainsaw around power lines" – which calls for a whole 'nother level of expertise.

"You need these qualifications if you're going to work within 10 feet of an energized conductor [a live power line]," Myers explained. "It takes a greater degree of professionalism than the average logger."

For example, men in this profession often have to do side trimming, where they're removing branches that could fall on the conductors once they're cut. Trimming crews have to know how to make the cuts correctly and then use ropes to work the limb away from the lines.

There were five elements to the certification training the men were receiving from Dubish, who works for ACRT, a licensed urban forestry vocational school based in Akron, Ohio. Training included First Aid/CPR, and electrical-hazard awareness. "There are minimum approach distances," said Myers. "They need to know how close they can get to an energized conductor, and the distance is different for different voltages." Then there were knot-tying skills. To be certified, trimmers must know how and when to tie 12 different knots.

They also received training in climbing: learning the proper use of ropes, belts and other equipment.

"In our rural system they usually use hooks for climbing," said Myers. "But this class teaches techniques to climb with ropes (not using their hooks). Because if we have to work in a tree in a member's lawn we want them to be able to climb without causing damage to that tree."

Then there were treetop rescues – the dramatic and difficult exercise they were conducting that June morning in the woods.

"Another thing is tree-identification," Myers added. "They've identified 25 different tree species. Trees react differently when you're cutting limbs or felling trees. If you try to work the same way on a poplar as you would on a birch you could lose control of the tree and cause injury to yourself or damage to the Co-op's system. Felling trees is dangerous enough, but if you're working next to a 7,200-volt power line you can't risk losing control. That's why tree identification is important."

Mutual benefit

The contractors WEC has hired for its ROW work have picked up a lot of on-the-job training, but formal certification is important. Myers pointed out that small tree-service companies in rural Vermont that might employee only a few workers don't have the resources to provide the training and documentation. The standards to be met are those of OSHA (the Occupational Safety and Health Administration) and ANSI (the American National Safety Institute).

So Washington Electric struck an agreement with the companies: WEC would hire ACRT and pay for the training, and the contractors would forego a week's work and income to have their men attend. (The Co-op also contracts with Asplundh, a large national arborist that can and does certify its employees).

"ACRT has a reputation in the industry for providing excellent training," said Myers.

At the end of the week Dubish's work was done, and the Co-op could proceed with even greater confidence in the now-certified "Qualified Line Clearance Tree Trimmers" who tend the 1,200 miles of right-of-way along WEC's electric system – which is the most wooded and rural, on the whole, of any Vermont utility. Because their job is about a lot more than running a chainsaw. It's about reliability, efficiency, and expertise.

But most of all, it's about the safety of those 12 good-natured young men in their hardhats and ropes, and the families who love them.

Reliability

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and continued preventive replacement of the A.B. Chance mechanisms. The Co-op has also been installing new fuse disconnects at strategic locations to minimize the number of members affected when outages occur. In 2005 WEC installed more than 800 line and transformer disconnects at new or existing locations; plans are for a similar number of installations in 2006.

To address the issue of tree damage, the staff and Board of Directors developed and funded a new Vegetation Management Plan. "Flat cutting" (right-of-way clearance projects) are primarily targeted for the summer months, while "danger trees" are removed during winter. In 2005 WEC removed more than 1,000 danger trees that threatened future outages on the system.

Transmission line failures have been a long-running problem for the Co-op, and difficult to remedy because most of the transmission lines that serve WEC substations are owned by GMP. WEC continues to work with GMP and the municipal utilities in Hardwick and Morrisville that are also affected, to secure improvements to the system that supplies power to those village and to the Co-op's South Walden substation. Improvements include the installation of remote-controlled airbreak switches on GMP's No.3319 transmission line. The switches will allow faults on that circuit to be isolated quickly, reducing the duration of outages for most customers from several hours to less than 10 minutes. For WEC, the result will be less disruption of service for members served by the South Walden substation.

Washington Electric Co-op will continue to report to its members on reliability improvements in future issues of *Co-op Currents.*

Annual Meeting

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massively, all over the world," Hill concluded. "Anthropogenic (human-caused) global warming is here; it's happening; it'll be happening for the rest of our lives no matter what we do."

Vermont could see increased snowfall in the next 20 or 30 years because warming global temperatures increase the water vapor in the air, Hill said, but it would more likely be wet, heavy snow that melts quickly. "Mud season would not be confined to spring," he said. "We would see more of it in the winter." And we can expect humid summers and an increase in flash flooding. Warm-climate insects like ticks will migrate northward, bringing lyme disease.

"But I think maple sugaring will be the canary in the coal mine," said Hill. The diurnal temperature change (the contrast between day and nighttime temperatures that stimulates sap flow) will decrease as the climate warms. According to Hill, trees in Ohio already are beginning to bud in February.

The inevitability of global warming is not a reason for Vermonters and Co-op members to keep contributing to it. We can mitigate it effects over the coming decades by consuming less of the fossil fuels that produce greenhouse gases.

"Use fluorescent bulbs," Hill advised. "Inflate your tires. Fill your dishwasher before you use it. Unplug unused electronics. Buy local foods, which saves transporation costs."

There were very few children at WEC's Annual Meeting, but it was their future Hill was discussing – and it will be shaped by how we conduct ourselves in the present.

Lola Aiken, right, was a welcome guest at WEC's Annual Meeting. Mrs. Aiken's late husband George was a friend-in-need of the rural electric co-op movement as a Vermont governor and U.S. senator some 60 years ago. With her is former WEC President Michael Duane.