

# WEC CO-OP CURRENTS

## Voters Settle Four-Way Contest For WEC Board

*Methane, wind and door prizes liven up Annual Meeting*

The parking lot was full at the Montpelier Elks Club on Tuesday evening, May 25. While a few of the cars belonged to golfers hoping to get a game in between cloudbursts, mostly they belonged to members, employees, guests and friends of Washington Electric Cooperative.

It was WEC's 65th Annual Membership Meeting – and a well-attended meeting it was, drawing about 180 people for the traditional dinner of chicken, mostaccioli, salad, rolls and ice cream, and the door prizes that had everyone studying their ticket stubs each time General Manager Avram Patt interrupted the proceedings to call out winning numbers. There were dozens of prizes, contributed by 16 local merchants, banks, businesses and individuals – items such as tool sets,

clothing, auto supplies, golf balls and electrical equipment. The big winner of the night was WEC member Charles Ballantyne of Cabot, who won the \$100 cash prize donated by the Co-op, just moments after his wife Hedi had won a shiny new towing chain (which, hopefully, they won't have much use for).

Serious business was conducted, too. Ballot Committee member Joe Kelly certified a quorum, with 1,094 votes cast by mail and 14 more cast at the meeting. By the time those votes were tallied WEC had two new members for its Board of Directors – Cabot dairy farmer Roy Folsom (755 votes) and Middlesex attorney Kimberly Cheney (738 votes). The voters also returned Board President Barry Bernstein of Calais (877 votes) for

*continued on page 5*



**Fox news:** To the delight of Co-op staff, a family of foxes found a home beside WEC's office in East Montpelier this spring. Here, three kits check out the big, wide world.

Kevin Stevens

## Coventry Project Goes To WEC Voters

After all the planning, the community meetings to inform members about the Co-op's landfill gas-to-electricity project in Coventry, and consultations with state officials to make sure the project met permit requirements, Washington Electric laid its groundbreaking proposal before the voters in June. The Co-op acted quickly after receiving a Certificate of Public Good from the Vermont Public Service

Board on June 4. Its aim was to win voter approval, then start work and have the new facility on-line and making electricity for the Co-op by January 2005.

Voting took place by mail over a period of approximately two weeks in June, with information and ballots provided in a general mailing by the Co-op. A formal "special meeting" – an

*continued on page 7*

### Inside

'Broadband over Power Lines' still fraught with problems, says one WEC member. See letters to the editor, page 2.

Poor indoor air quality (IAQ) in your home might be remedied with help from Co-op program. See 'Efficiency Saves,' page 6.

2003 outage report: a mixed bag. Page 4

Solid Waste and Methane-Electricity. The Central Vermont Solid Waste Management District weighs in. Page 8.



*Old paint cans are amassed at a hazardous waste collection event sponsored by the CVSWMD.*

### Washington Electric Cooperative

East Montpelier, VT 05651

## 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.

*Comments on "BPL" in Avram Patt's Manager's Report in the April 2004 issue of Co-op Currents sparked responses from three readers (not all intended for publication). BPL stands for "broadband over power lines," a concept still in early phases of research and implementation. It would enable people in rural areas to receive high-speed internet service through electric utility power lines. Below is a letter from WEC member Ed Sawyer, followed by a response from General Manager Patt.*

### A Future for BPL?

Editor Co-op Currents:

I read with great interest Mr. Patt's article on using electric utility lines to deliver the internet using a technolo-

gy which has become known as BPL (Broadband over Power Lines). I would like to offer a few comments from the perspective of an electrical engineer and radio amateur (Callsign N1UR).

BPL is indeed enticing as a possible solution to the delivery of high-speed internet to rural areas. The lines are running everywhere and that seems like a good thing. You might ask yourself, if the attraction is that the lines are running everywhere, why not just increase the speeds on telephone lines? After all, those lines run everywhere too.

Well, it turns out that the telephone company learned long ago that at speeds above 56K on analog lines or 128K on digital lines, the high-speed data cause interference with the telephone itself, and the lines become sus-

ceptible to picking up noise and other interference from outside sources.

Why? These original telephone lines (the four-wire colored wires inside a plastic covering) were never designed to carry high-speed data. Fiber optic and cable TV lines were.

Moving on to electric power lines, it is reasonable to ask, why would they be better designed to carry high-speed data? The answer: they are not. The reason they are being looked at for use in carrying high-speed internet is that the internet won't interfere with your electric power. However, like older telephone lines, the lines are susceptible to interference from outside sources.

What kind of sources could interfere with your new internet service? CB radio, family radio, Walkie Talkies, police and fire (communications), taxis, AM broadcast stations, my amateur radio.

Well, if they do interfere, they will have to stop, right? Unfortunately, no. These people are legally using the frequency they have been assigned by the FCC, and in many cases they are licensed by the FCC. As long as the station causing interference to the BPL internet user is using good engineering practices with its transmissions, nothing can be done to stop this interference.

It gets worse. In addition to the possibility of being interfered with by legal users of other radio services, the BPL system also interferes with them, sometimes causing very high levels of interference which the FCC calls "harmful levels of interference." The current FCC proposal, which would allow the widespread use of BPL, requires that the utility company immediately shut down the interfering spot on its system to stop the interference, because the utility is not a licensed user of that radio frequency and is interfering with those that are. This means that if you happen to live near a licensed user of radio service, or even an unlicensed user of open frequencies (CB, baby monitors, family radio, Walkie Talkies), your internet service could go on and off often without you even being aware of why. Not a good, reliable system, in my opinion.

Many countries have attempted to use BPL, including Japan and Germany. None – that's right, none – have decided to implement it. It's no surprise that many of the test installations are in areas where there are underground power lines. This effectively contains the

interference. The BPL industry appears to be interested in selling equipment to rural utility companies and uninterested in answering any of the concerns that I have outlined above. In fact, the one thing they did do is try to get the FCC to raise the level on what they call "harmful interference," to hopefully reduce the ability of licensed users of radios to shut them down. The FCC appears to be refusing to do so.

I would ask that Washington Electric Co-op get good answers to these questions and let some other, unknowing utilities be the guinea pigs for this system before investing any money in it. I would also submit that a much better use of your infrastructure would be to put lots of wi-fi antennas on your existing telephone poles and bring high-speed to us that way. We get high-speed data, there is no interference, and the cost is a lot cheaper than erecting a separate tower and fighting Act 250.

Think about what would happen if the cell phone and wi-fi industry said, "What we would like to do is put 30-to-70-foot towers all over the state, say every 300 to 500 feet or so." The Act 250 commission would laugh so hard it would hurt. Well, that's exactly what you (the Co-op) already have up, and it would seem a great use of them to put wi-fi and cell antennas on them.

Ed Sawyer  
East Montpelier

### General manager replies...

*I want to thank Mr. Sawyer and other readers who wrote to us about BPL in response to my recent article.*

*I hope I made it clear that the Co-op is not rushing into anything regarding broadband, whether it is BPL, dish or other options. We are in contact with state officials and the Vermont Broadband Council, as well as quite a few members, and are exploring the different ways we might help get service out to the more rural areas.*

*A number of issues have been raised regarding BPL. One of these is the necessity of bypassing transformers, which would obviously add to the cost of service compared to more densely populated areas. But I would note that there are financial, technical, topographical and other barriers that make every technology option less*

## 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.*

## President's Report

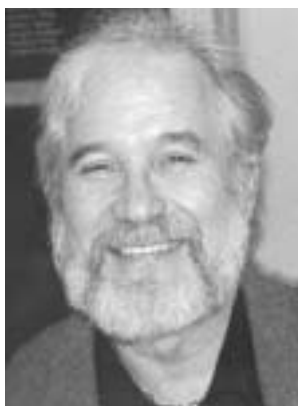
# Big Projects This Summer For WEC

## *Sad loss in a Co-op family*

By Barry Bernstein

**W**EC completed its 65th Annual Membership Meeting on May 25, and as *Co-op Currents* went to press we were holding a special membership vote for approval of our Coventry landfill gas-to-electric generation plant, to be concluded on June 29.

These two events represent important milestones in your Co-op's history. The annual meeting marks 65 years of service to our member/owners in the 41 towns in our territory, which is testimony to the dedication both of



Barry Bernstein

present and past boards of directors, and of generations of employees who have worked on the membership's behalf for more than six decades to provide electricity and safe and reliable service.

The Coventry vote represents today's board and management's efforts to secure membership approval for a long-

term, renewable, in-state energy source to provide a major portion (conceivably more than 50 percent) of our power supply at a stable economic price.

On behalf of the board of directors, our employees and our membership, I want to offer the Gray family of Calais our heartfelt condolences.

As summer begins, the WEC efforts will be focused on bringing the Coventry plant on line by January 2005 if the voters approve our proposal. At the same time we are beginning our new four-year work plan, which will include rebuilding one of our substations. I would note here that final preparations are underway at the new South Walden substation, and that that facility will begin serving members in South

Walden, Cabot, Woodbury and other towns very soon.

I want to congratulate and welcome two new directors to the WEC Board: Kim Cheney of Middlesex and Roy Folsom of Cabot. We look forward to their input and energy on helping the Board face the challenges and work ahead of us. I want to also thank member/owner Tim Guiles for running for the board in this past election.

I do want to take a moment on behalf of the Board of Directors, our employees and our membership, to offer the Gray family of Calais our heartfelt condolences for the loss of their son, Jamie, while he was serving in Iraq. Jamie's grandfather served as a Trustee in the early days of Washington Electric Cooperative, and his uncle was a Co-op employee from 1966-1999, with 25 years in the Engineering Department. Jamie's presence, along with other Vermonters who have died in Iraq, will be missed in our state.

On behalf of the WEC Board and WEC employees, we wish all of our members a good summer.



## Members Write

*cost-effective in rural areas like ours. (Otherwise we would all have high-speed internet access available by now.)*

*Concerning interference and privacy issues, I am not a technical expert of these matters. I read reports regularly indicating that many of these problems either have been addressed or are being worked on – with the FCC's encouragement in some cases. There are now a significant number of electric customers throughout the country testing BPL, including members of a very rural co-op in Virginia. We should be able to tell before too long whether this technology is feasible or not. News reports I was reading a few years ago said there were still significant problems with making BPL work commercially, while more recent reports are more optimistic.*

*This is an area where Washington Electric Co-op has been taking a "wait-and-see" approach. My article was intended to respond to member*

*interest in broadband, and to let people know that the Co-op is looking into options.*

Avram Patt

### Energy Alternatives All Around Us

Editor, *Co-op Currents*:

I look forward to the day when the oil-rich sheiks have their first cup of oil. (Sugar, anyone?) It won't be their last cup, either, for they won't be able to afford coffee, and there'll be nothing much to do with the oil other than drink it.

Yes, once US corporate bigshots in the oil and related industries figure out how they can make as big a profit on alternative energy as they do on oil, we will come out from beneath the thumb of Middle Eastern oil sheiks and thumb our noses at them. We will use what the good Lord freely gave us ... the sun, wind and water, and what our good animals give us profusely on a daily basis (my fields are dotted with it).

Why, even we humans can contribute

to that supply. Energy waiting to be used is found everywhere – even in our garbage, our trash, and yes, poultry guts!

With American expertise in technology sprinkled with innovation, topped with determination, nature can do for us anything that oil can, and do it cleaner. We put a man on the moon, and robots on Mars that we control from Earth! Of course we can employ substitutes for oil – and employ ourselves doing it!

Meanwhile, what can we ordinary folk do? Those with dishwashers could become "old-fashioned" and use their hands again. Forgo the clothes dryer and hang the wash out to dry. Even apartment dwellers could figure a way to do this: it certainly would make for colorful neighborhoods.

The beautiful state of Vermont would be even more scenic with wind towers lining our ridges, especially when we are reminded by viewing them of oil we don't need because of them. Sunshine has already proven itself in solar heat, vehicles (and) solar-generated electricity.

I am happy to note that the power

company serving my area – Washington Electric Co-op – is diligently pursuing alternative energy usage.

Of course, the oil sheiks are far from dumb. If we don't hurry up, they could develop alternative energy before we do. Imagine if we had to buy shares of sunshine, wind and water from them!

Hey, it's free – so far. So let's stop abusing these gifts from God, and start using them!

Ruth Lowry  
Marshfield

### (We Like 'Em, Too)

Editor, *Co-op Currents*:

Thank you for a job well-done in putting up our new power line.

These employees – Brent Lilley, Steve Hart, Phil Poulin and Mark Maloney – were a pleasure to work with in construction our power line.

Thank you.

Richard and Susan Ferno  
Williamstown

# Lessons Learned From 2003 Outage Report

*Replacement strategy would leave nothing to 'Chance'*

2003 may be receding from our memories, as the summer of 2004 begins, but for the Co-op it survives as lines on a graph and numbers on a chart. The lines (see "Outage Analysis 2001-2003," this page) reveal that, as a group (though not necessarily as individual households), WEC members experienced more outage hours in 2003 than in 2002. And the graph shows when it happened. Most of the outages hit us in October and November, with further incidents in December, during a period of stormy, windy weather.

At the end of each calendar year, Washington Electric Cooperative prepares reports for the Vermont Public Service Board and the federal Rural Utilities Service, summarizing its outages over the previous 12 months. The report compares outage records over a five-year period, lists the major causes, and indicates which areas in WEC's 41-town service territory were worst hit.

It turns out that in 2003 there were 973 separate outage incidents on the Co-op's system, which exceeded the running five-year average of 886 outages per year. (In 2002, by comparison, there had been 744.) The major cause of outages was trees or branches falling into the Co-op's power lines – always the biggest problem for rural utilities in our part of the country. Last year trees accounted for 69 percent of WEC's outage hours.

Locations of outages are charted in the report by substations (WEC has nine of them). The areas most affected in 2003 were served by WEC's Moretown substation. The Moretown station is the Co-op's newest, having been built in 2001 to replace an aging and inadequate facility at the same location. The substation itself was not responsible for the outages; again, the biggest cause was trees, and the members who suffered most were in the North Fayston area, where poles and power lines were damaged on

several occasions as a result of severe weather.

The graph below shows that from January through September, 2003 was a good year for WEC and its members.

Outage hours were nearly the same as in 2002, and from June through September the Co-op fared better than in the previous year.

Then came the autumn storms. The final three months of the year alone accounted for 68 percent of 2003's total outage hours.

Happily, while the frequency of outages from all causes was 18 percent

higher than the five-year average, the duration of the outages in 2003 declined by 15 percent. To some extent those statistics were related: WEC initiated more "planned outages" to perform system upgrades, and in such cases outages tend to be briefer because the crews don't have to go looking for the problem. Shorter outages system-wide also indicated improvements in WEC's response systems.

After trees – which, for the most part, means storms – the second-leading contributor to system down-time was failed "cutouts," a fuse mechanism manufactured by the A.B. Chance company and installed by the

thousands on WEC's power lines between 1991 and 1999. These ceramic devices have turned out to be duds, at least in our climate.

They are prone to cracking in severe winter weather, and the problem gets worse when moisture enters the cracks and expands them until the mechanism totally fails. The A.B. Chance cutouts have caused problems for utilities all over New

England.

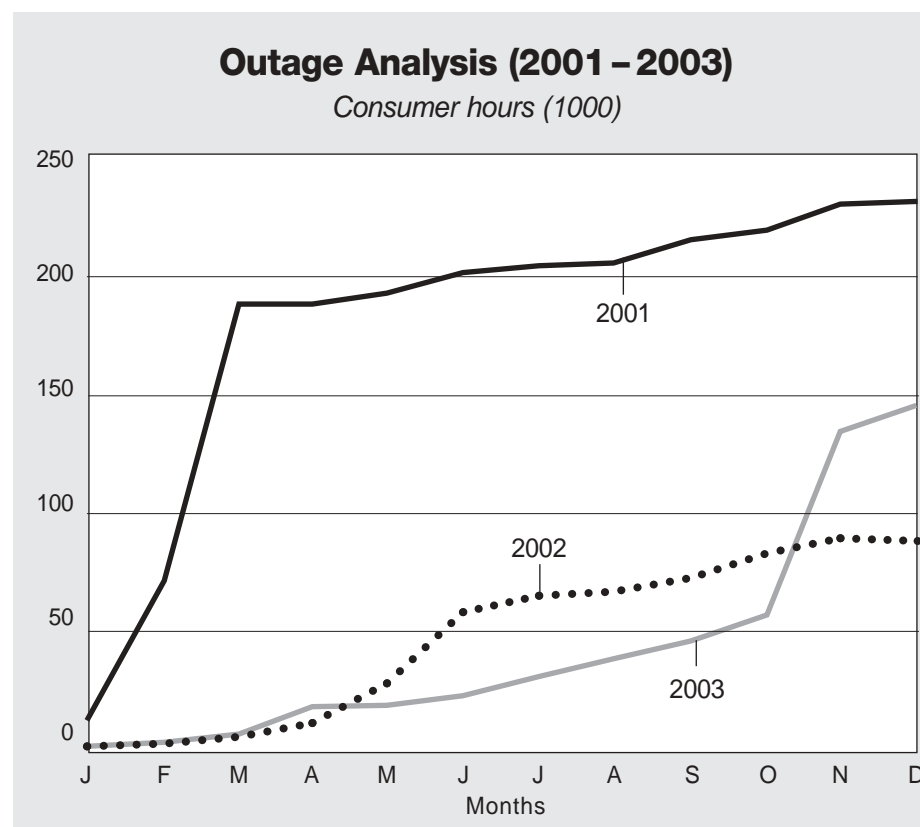
Rather than wait for the cutouts to fail, the Co-op's policy, when time allows, has been to try to find them first and replace them with polymer-based devices. Which leads us to the third-leading cause of outages in 2003: planned shutdowns to enable workers to go in and make the switch. But with thousands of cutouts still on the lines it's a major undertaking. WEC will continue its preventive campaign to find and replace the cutouts this summer, while also performing seasonal maintenance and line extensions for new members.

Finally, the fourth most-common cause of outage hours was damage to transmission lines owned by other utilities, which provide high-voltage electricity to WEC substations. When transmission lines go down and power doesn't reach a substation, every Co-op member connected to that substation – typically up to 2,000 homes, farms and businesses – loses electricity. In 2003, transmission-line failure accounted for 6 percent of WEC's consumer-hours of outages, or roughly 8,700 hours. The Co-op has been working with GMP, the Hardwick Electric Department and Morrisville Light & Power to improve the transmission system upon which those utilities all rely.

**'Storms hurt us, but they always do. A utility can't just sit back and say, gee, it's the weather.'**

— Dan Weston

**From January through September, 2003 was a good year for WEC and its members. Then came fall and early winter.**



## Making ports in a storm

Silver linings aren't hard to find. Outage hours were up for the Co-op in 2003 because there were more outage incidents, but outage durations were down; a leading cause of outages – planned shutdowns for "cutout" replacement – was preventive; and 2003 was a better year by far than 2001, when storms battered Co-op Country week after week from January through March.

"Storms obviously hurt us, as they always do," said Operations Director Dan Weston. "A utility can't just sit back and say, 'Gee, it's the weather.' You have to try to minimize storm damage. When we have opportunities in our work schedule, we have our people out there patrolling the system looking for danger trees – dead or dying trees close to our lines that are outages in the making. We took down almost 400 danger trees last year and we'll be doing the same in 2004, every chance we get."



# Keeping Track

*WEC finds new way to measure problems*

Outage reports (see page 4) aren't just "report cards" for electric utilities. Their purpose is to provide information companies can use to improve their services. That's what Washington Electric will be doing with information revealed in the 2003 outage report.

The state and federal reporting systems require utilities to group their outages by substation – i.e., which areas, served by which substations, had the most problems? However, with the aid of E-PRO Consulting Inc., of Montpelier, WEC has adopted what Operations Director Dan Weston believes will be a more helpful way to identify and analyze failures on the power lines.

Most of the time substations have no direct role in outages. Though equipment at substations *can* fail, and substations *can* go dark when a transmission line providing power to

the facility is damaged, most outages have more local causes, such as trees falling across the power lines, or failed "cutout" fuses. Using substations as a reference is mainly a way of grouping outages for statistical purposes.

But if you're going to group outage histories in an effort to improve services, why not use a system that provides more relevant information?

With the help of E-PRO, that's what WEC is doing.

"We have now analyzed the outage record of each three-phase circuit out of each substation," said Weston, explaining that the three-phase circuits are the major circuits that carry power to a general area, where single-phase circuits then disseminate it to rural homes and neighborhoods. (Think of an interstate highway, and the two-lane roads that pick up traffic at the exits.)

"Each of those three-phase circuits has been analyzed from a reliability perspective, identifying the frequency of outages and the cause of each outage,


broken down into nine separate categories. We can now track the worst-performing circuits statistically, know the reasons they've failed, and look at improving our performance circuit by circuit.

"Computers! They're great. It would have been very difficult to do that without technology. We've got more than three years of data entered in. This is a very important step for us; it gets us closer to the root cause of outage problems on particular circuits."

Here's an example that shows why compiling data by circuit beats compiling data by substation. The Moretown substation has three three-phase circuits leading out. The circuit carrying power to Middlesex had a good track record last year, with few outages. The circuit extending toward Fayston, on the other hand, and the single-phase circuits off of the Fayston connector, experienced numerous outages, especially in the fall when high-wind storms struck the area. In terms of

revealing patterns, these two circuits in effect cancelled each other out (the third circuit – or "feeder" – serves areas of Moretown itself), so in all, the substation had a decent record. If that's all WEC had to go on, repeated problems around Fayston could have been less obvious.

This more-specific information will help WEC direct its maintenance dollars where they'll be most effective. That could mean targeting right-of-way (tree-trimming) efforts to areas that suffer more in storms, or prioritizing a circuit for "cutout" replacement or fuse coordination, or for replacing old conductor (wire) with new.

"Now that we have the means to compile the data, I think its going to enable us to address reliability problems more effectively," said Weston. "Continually improving reliability for our members is among our highest priorities." 

## Annual Meeting

*continued from page 1*

another three-year term. Williamstown pianist and music teacher Tim Guiles (638 votes) was outpolled in the four-way race for three Board positions, but was thanked from the podium by Bernstein, who encouraged Guiles to stay interested.

"I appreciate all the candidates for running," said Bernstein. "We need people to be involved in their Co-op, especially younger people."

Cheney and Folsom will fill seats vacated by Carla Payne (eight years on the Board) and Monique Hayden (six years). Said Hayden, "This has been a wonderful board to work on, and I'm going to miss being part of the discussions." She encouraged others to run in future elections.

A bylaw amendment also was on the ballot. It proposed adding a longstanding Co-op policy – taking a property lien, if possible, when people leave WEC's lines without paying their bills – to the bylaws. The measure passed, 774-209.

The Annual Meeting attracted elected officials (State Sen. Bill Doyle,

R-Washington, State Reps. Wayne Kenyon, R-Bradford and Co-op members Heather Shouldice, I-Calais, and Tony Klein, D-East Montpelier; also Chuck Ross, Vermont director for U.S. Sen. Patrick Leahy's office), and representatives of a variety of regional public-power companies closely associated with Washington Electric.

Just as important, the "honored guests" included WEC employees

receiving service awards for employment milestones. These were: Lineman Richard Halstrom and Member Services Representative Beth Hodgkins (both for five years), Safety & Environmental Coordinator Steve Anderson (who also oversees the Co-op's hydroelectric station at the Wrightsville Dam) and Lineman Phil Poulin (both for 10 years), and Field Technician Steve Hart (15 years).

"This Co-op could not function without the quality employees we have," said Bernstein, who noted that WEC had recently received letters from members praising Hart and other workers for exceptional service. "When I hear these stories I know why I'm proud to be a member of this Co-op."

## 'A life-saver'

Annual meetings provide an opportunity for officers to report to the membership. Treasurer Don Douglas of East Orange led off by citing his formal report, published prior to the meeting in *Co-op Currents*. In that report, Douglas said WEC had ended 2003 with \$222,083 in net margins, which met the requirements for a financial cushion set by the Rural Utilities Service (RUS). If margins (comparable to "profits" for investor-owned utilities) were much higher than required it would mean Washington Electric was collecting more money than necessary from its members, Douglas reported. However, if the margins were insufficient to meet RUS requirements WEC would have to raise its rates.

The wild card in constructing annual



*Members file into the Elks Club for the Annual Meeting.*

*continued on page 7*



## Concerned About Indoor Air Quality?

*It could be related to your foundation walls*

By Bill Powell  
Director of Products & Services

This article will focus on two aspects of home-construction practices that might appear unrelated: indoor air quality (IAQ), and insulating foundation walls. This is what they have in common: (1) both are “out of sight, out of mind,” and (2) both have health and energy-cost implications. Another thing they have in common is that the Co-op can help members address these concerns through our Home Comfort Services program, which helps people analyze energy and weatherization issues and make their homes healthier to live in and more affordable to operate.

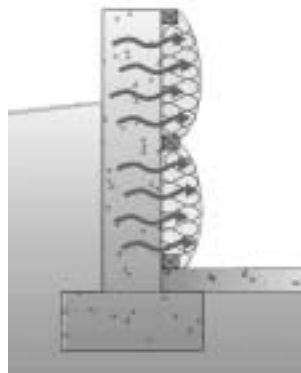
### Indoor Air Quality (IAQ)

Washington Electric Co-op has long advocated that indoor air quality be recognized as a health consideration in new residential construction. Through our participation in the Home Energy Rating process for new construction in the 1990s, and more recently through the Vermont Energy Star Homes program statewide, there has been an increased awareness of air-quality conditions in homes.

The conventional recommendation for dealing with IAQ has been to (1) install an effective mechanical ventilation system, and (2) measure the home’s air-leakiness, using a blower door test. The truism is that while there’s no such thing as over-insulating a building, it can be under-ventilated.

The rise of asthma as a chronic condition among children and young adults is an indicator of IAQ issues.

There appear to be a number of possible causes: airborne particulates from power plants, pollution caused by fossil-fuel combustion (automobiles, furnaces and other sources), chemical cleaners used in the home, and materials used in construction, such as glues, finishes, PVC compounds, etc.



**Moisture of construction**  
*Thousands of pounds of water are contained in freshly placed concrete in basement foundation walls; drying in uninsulated exposed walls takes many months, longer in walls with impermeable insulation systems*

Our pursuit of home energy efficiency has reduced the degree to which indoor air leaks to the outside. This conserves energy and reduces costs, but it makes concerns of indoor air quality more important than ever before. As less air leaks out, the need for adequate fresh air for occupants increases.

### Energy Code and IAQ

Fortunately, strategies exist to allow adequate fresh air in our homes, and the solutions are applicable whether the home is new or existing.

A change in state law makes an appropriate mechanical ventilation system a requirement in new construction and substantial remodeling, effective January 1, 2005. Since mid-1998 Vermont has had a residential building energy code (RBES), based on generally accepted national codes modified for Vermont. Meanwhile, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has been working on IAQ issues. Recently, ASHRAE passed an IAQ standard for residential construction, which has been approved by the American National Standards Institute (ANSI). Vermont’s law is likely to be amended to include the ASHRAE standard.

The result of these code and statutory adaptations will be that newly

constructed homes will have some mechanical system in place to deal with IAQ. However, most homes are *not* new. Issues of IAQ and energy loss due to air-leakiness are enormous in our existing housing stock compared to the relatively small number of new homes built in Vermont each year.

Back to the question posed: What’s the connection between IAQ and foundation insulation?

Nothing, directly. But indirectly, there may be a connection, depending on the foundation of the home. To expand on the IAQ issue and possible sources (besides airborne particulates, fossil fuel combustion for transportation, home heating and electric generation, and the presence within our homes of VOCs), let’s now add: mold.

### Mold and Basement Insulation

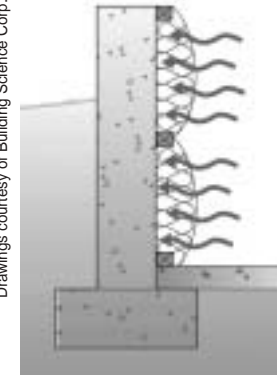
Molds are organisms that live on moisture and the presence of “food” – which can be materials used to build our homes. Mold can cause serious and chronic respiratory ailments. An important strategy to avoid mold growth is to avoid construction practices that allow moisture to condense or develop undetected.

Mold growth is mitigated by fresh air and the avoidance of moisture within a building’s walls. This is where foundation insulation comes into play. Common practice in Vermont has tended toward insulating interior basement walls while leaving exterior foundation walls uninsulated.

Research now indicates that exterior foundation insulation may be preferable – but not only because of the energy-saving consequences. Rather, there are significant concerns that moisture trapped within sections of interior

foundation insulation leads to mold, IAQ issues, and damage to building sections.

Most interior basement-insulation techniques involve (1) interior stud wall framing of the foundation, insulated with fiberglass batts, or (2) “blanket” insulation. However, after conducting studies nationwide, Building Science Corp. (BSC) – a nationally recognized building-systems research company – has concluded that these practices are unsuitable for use by the home building industry. Interior foundation wall framing insulated with fiberglass batts and blanket insulation can cause moisture to accumulate within the insulated frame wall, or within the blanket insulation itself. The polyethylene vapor barriers are incapable of allowing foundation walls “to dry to the interior.” The accumulated moisture, BSC reports, “leads to mold, decay and odors.”



**Diffusion from interior**  
*This is also a “summer” problem; occasionally a “winter” problem*

### What To Do?

Since basement walls will at times get wet in spite of good design and construction, they must also be able to dry. Therefore, BSC concludes, any interior basement insulating wall system must have the following properties:

1. It must be able to dry to the interior, since the below-grade portion of the wall will not be able to dry to the exterior during any time of the year. This precludes an interior polyethylene vapor barrier or any impermeable interior wall finishes.
  2. The wall assembly must prevent any significant volume of interior air from reaching the cool foundation wall. It must therefore have an effective air barrier (or a method of elevating the temperature of potential condensing surfaces).
  3. Materials in contact with the foundation wall and concrete slab must be moisture tolerant – that is, the materials should not support mold growth or deteriorate if they become wet. (There are various recommended methods for successfully installing exterior insulation, also available from the BSC website.)
- The final point BSC makes about proper foundation insulation is that the best materials and construction practices don’t cost much more than the typical stud wall/fiberglass technique

cited above as “not recommended.”

If your home has such foundation insulation, or if you have questions and concerns about indoor air quality, please contact the Co-op to discuss them. See our website for “Home Comfort” services, including full diagnosis of building systems, IAQ analysis and thermal evaluation of your home and heating system.

## Web References and URLs

Mold:

<http://www.epa.gov/iaq/molds>

Asthma:

<http://www.lungusa.org>

Building Systems:

<http://www.buildingscience.com/>

<http://www.washingtonco-op.com/pages/audit.htm>



## Coventry Project Vote

*continued from page 1*

Open House, to which members were invited to visit, discuss the project and vote in person if they wished – was held June 29.

Because electric co-ops are owned by their customers (members), Vermont statutes require that they obtain their members' approval of major development projects. That was the purpose of the June 29 vote.

The timetable did not synchronize with *Co-op Currents'* publishing schedule. While relying on news media to cover the outcome of the vote, *Co-op Currents* will provide an update on the \$7.32-million renewable energy project in July. Meanwhile, people can visit WEC's website – [www.washingtonelectric.coop](http://www.washingtonelectric.coop) – to read the results of this historic Co-op vote.

“The vote is a requirement of the state,” said General Manager Avram Patt as the voting deadline approached, “but this is also a privilege that we as co-op members have. Co-op members, more than the customers of investor-owned utilities, can participate in the most important energy-related decisions, projects that will affect themselves, their community and their state for decades.”



## Annual Meeting

*continued from page 5*

budgets is weather.

“When we have a big storm it costs a lot of money to put the staff in place for repairing the system and keeping members informed,” Douglas explained. “If we have a mild summer (resulting in less power used for air conditioning), that can throw off our revenue projections. If someone can find a way to control the weather maybe we can build better budgets.”

Board President Barry Bernstein's message focused on the availability and cost of wholesale power – the driving forces that determine what electric utilities charge, in rates, for retail power.

“The state is going to lose 70 percent of its power by 2015,” he said, referring to the approaching termination of contracts between major Vermont utilities and both Entergy Nuclear and Hydro Quebec. Foreseeable options for replacing those sources will likely increase wholesale and retail prices.

“Fossil fuel is going through the roof,” Bernstein said. “(Electricity produced by) natural gas is at 8 cents per kilowatt-hour. People in the Northeast are particularly vulnerable because natural gas has been the fuel of choice for power generation in this region.”

WEC's response has been a significant development proposal: a Co-op-owned generating plant in Coventry, using methane from Vermont's largest landfill to produce electricity. The project will tap into a source of dependable, low-cost, renewable energy that will not be weather-dependent, and will provide a third to a half of WEC's electricity demand. Methane-based electric power does produce exhaust – from the combustion engines used to generate the electricity – but it is considered “green” because 1) the generation process makes use of methane that would otherwise merely be flared into the atmosphere, and 2) it has the capacity to replace electricity produced by fuels (coal, oil, nuclear) clearly harmful to the environment.

The base cost of the power is projected to be 5 cents/kWh, and the landfill will produce sufficient methane for power generation for 30 years. Financing for the \$7.32-



WEC attorney M. Jerome Diamond, left, and new Co-op director Kimberly Cheney.

million proposal will come in the form of a federal loan.

“This project will be a lifesaver for our Co-op,” Bernstein said.

Note: Shortly after the Annual Meeting (on June 4) WEC received state approval for the project, then put the proposal to the members for a vote, with results due June 29.

## Douglas policy questioned

Following a detailed presentation on the methane-to-electricity project, with questions and comments from members and guests, about half the crowd at the Elks Club stayed to watch a 20-minute video on wind electric generation.

Wind energy has become controversial in Vermont, with opponents

claiming that wind turbines upon mountain ridges would harm aesthetics, property values and tourism, and supporters citing economic and environmental benefits that would come from local production of renewable electricity.

Introducing the video, General Manager Patt voiced the Cooperative's concerns over recent policy announcements by Gov. James Douglas. With a legislative study underway, the governor has expressed support for a moratorium on wind-farm development in Vermont – on private as well as public lands. Patt said that would threaten WEC's \$1 million federal grant for wind power, on hold since 2001 while the Co-op searches for partners and a suitable project. He added that a moratorium would contradict Douglas' position that the state must remove barriers to economic development, not impose them.

Because of this, Patt said, “Wind development may not happen in Vermont, for Washington Electric or anyone else. We've taken the position that it needs to happen at a few carefully selected sites. It's Vermont's only significant new, long-term resource for energy, which the state is desperately going to need.”

It was something to think about as members walked to the Elks Club parking lot and drove off into the night.



Co-op Manager Avram Patt presents a five-year service award to Member Services Rep. Beth Hodgkins.

# Power From Methane Okay, But Waste District Is Even More Ambitious

In September 2003, Washington Electric Co-op launched a series of community meetings in various towns around the Co-op's service territory, partly for the purpose of introducing members to the concept of generating electric power from methane gas captured at New England Waste Systems' landfill in Coventry, Vermont. As WEC Board members and staff described the proposal, most members responded favorably. The cost of power from the in-state landfill sounded good, and deriving power from a renewable resource struck most people as a good idea.

However, a few members, such as Virginia Barlow of Corinth, had reservations.

"I thought the Co-op should put some effort into reducing solid waste, as an indication that even though we would be getting power from solid waste it didn't mean we were endorsing the waste stream," Barlow said later. "The Co-op has been dedicated to reducing energy consumption. This would be philosophically along the same lines."

Donna Barlow Casey (no relation) is executive director of the organization that, in central Vermont, is at the forefront of efforts to reduce consumer waste and make sure that toxic elements are culled out of the waste stream and disposed of appropriately. The long-range vision of the Central Vermont Solid Waste Management District (CVSWMD) is even bolder.

"We've taken the position that we're going to move toward zero waste in the region," said Barlow Casey. "We want to move the community from thoughts about 'waste' to thoughts about 'discards,' eventually eliminating the need for things going into a landfill. Organic matter that produces methane does have a higher value; it can go to composting or other endeavors as seedstock for commercial enterprises. We'll be looking at the flow of material from the perspective of sustainable economic and community development opportunities."

In the meantime, though, Barlow Casey wholeheartedly supported

WEC's intended direction.

"What's in the landfill already is going to generate a gas that will either have to be managed carefully to protect the environment, or be put to positive use to produce electricity for Washington Electric Co-op.

"(The waste) is there. You can't change that. Maybe in the future we can get to the point of not putting so much organic material in the ground, but if the Co-op is employing best management practices to achieve some benefit from the way we've managed

communities, enabling residents to drop off materials such as cardboard, cans and glass that might otherwise find their way into the waste stream. It also provides hazardous waste collection sites to divert paint, oil and other substances that can damage soils and groundwater. The District sponsors special events and educational programs, for both adults and children, to combat illegal dumping, and it has an illegal-burning curriculum that teaches about the health dangers associated with burning waste.

Other programs include Greenup Day Grants, and assistance for removing junk cars, the bane of rural communities everywhere. Drop-and-Swap events help people get rid of unwanted clothing, and there are many more programs besides.

"We're getting involved now with composting partnerships," said Barlow Casey. "We try to make connections between farmers and institutions like restaurants and school cafeterias, creating situations where farmers get food discards from local sources and use their farm equipment

to make compost. Under state law, the farms have to become permitted compost facilities. We help them get permitted."

Barlow Casey is also interested in the electric-generation potential of waste, including animal waste from farms. Vermont is not far along on that path compared to some Midwestern agricultural states, such as Wisconsin. There, such waste is more abundant and farmers can work cooperatively to combine farm wastes and generate power cost-effectively.

## From here to zero

"Zero waste" in central Vermont poses both a lofty goal and, one might think, a threat for CVSWMD.

"Our main source of revenue is from a surcharge on garbage," said Barlow Casey. "We receive \$16 per ton, which is remitted to us (from landfill facilities) on a monthly basis. Every time a hauler

takes garbage to Coventry, for example, the landfill (staff) asks where it comes from, and if it's from towns in our district we get the fee. Ours is one of the lower fees among waste management districts in the state."

(Member communities also pay a per-capita fee to the District. Plus, the District pursues grants.)

"Cutting off the landfill fee seems like an illogical business practice," Barlow Casey admitted. "Why would we work really hard to eliminate our major source of revenue?"

The answer is, to begin forming a new economy that redirects waste to create products, systems and jobs.

CVSWMD's director understands that at the present time "zero waste" is a startling, almost absurd, concept. However, the concept is gaining currency in (for now) a minority of places in the U.S. and the world.

"If you say you're going to divert 50 percent of your waste as a goal, maybe you'll achieve it and maybe you'll fall short," she explained. "If you say your goal is zero waste, again, maybe you'll achieve it and maybe you'll fall short. But it's very likely to take you further than if your goal was 50 percent. Ask yourself how you'd approach managing waste material if you had to achieve zero waste instead of 50 percent, and you get a really different answer."

"Thoughts," she concluded, "lead to action. We should work to change the concept that our society is always going to create more waste that has to go someplace where it's environmentally threatening."

For further information on the Central Vermont Solid Waste Management District and its programs, go to [www.cvswmd.com](http://www.cvswmd.com).



Scenes like this one, somewhere in central Vermont, are becoming more rare through the efforts and programs of the CV Solid Waste Management District.

waste over the last 20 years, that makes sense."

Still, Barlow Casey said, making power from landfill gas should be looked at as a short-term strategy.

"The danger is getting locked into that. Creating so much waste and trucking it long distances to a landfill is not a system we should perpetuate."

## Diverting the waste stream

The Central Vermont Solid Waste Management District operates in 22 towns spanning parts of Washington, Orange and Caledonia counties. Its Mission Statement is to "(provide) leadership, education and services for residents and businesses in reducing and managing their solid waste in order to protect public health and the environment to the greatest extent feasible."

In pursuit of that goal the District runs recycling depots in nine

## Correction

WEC members in the northern part of our service territory who are served by the South Walden substation received an insert with their May bill explaining that many of the outages affecting them over the past twelve months were caused by problems on transmission lines operated by neighboring utilities. In addition to explaining the cause and what WEC is doing to get these utilities to correct the problems, the insert listed the dates, times and durations of the outages. However, the outage listed as having occurred on April 20, 2004 actually occurred on April 24.