



# Knights With Chainsaws

## ROW Workers Are a Breed Apart

One at a time, each of the three contract crews who clear and maintain Washington Electric Co-op's 1,250-mile right of way walked out behind the Co-op's warehouse one recent morning to have their pictures taken. And in each crew, someone glanced up at a tall, brittle, rust-colored "evergreen" amidst the maples and poplars, and remarked, "That fir wasn't dead when we were back here for training last summer."

These tree service contractors are a separate breed. They live in the woods – for 10 hours a day, at any rate – and not much about trees escapes their notice. Mark Foster says his wife has gotten used to his running commentary about trees and power lines when they're out driving. "It changes the way you look at things," he explains.

Equally true is that competent, dedicated ROW (right-of-way) crews change the way Co-op members look at their electric service. People expect their power to be on, because it usually is. WEC's Operations Department carries the burden of that expectation, but the linemen can't work to the best of their ability unless the power line corridors are accessible – which means relatively clear of vegetation, with the power lines plainly visible.

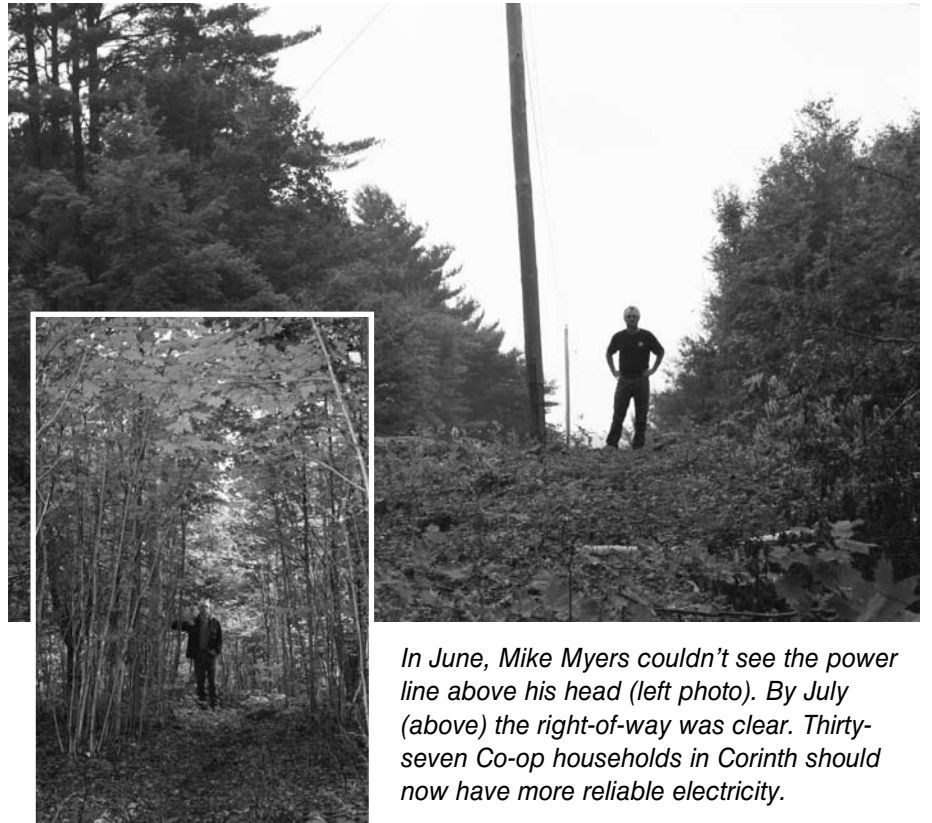
That's the job for WEC's contracted ROW crews, and the main ones are M & J Tree Service of Walden, Shatney's

Tree Service of Greensboro, and Matt Foster Logging & Tree Service of Craftsbury. WEC also hires Asplundh when needed, but relies mostly on these three small, local companies, which work almost exclusively for Washington Electric Co-op – although in the case of M & J Tree Service, which is owned by Morris and Joanne Molleur, one specific crew is assigned to Washington Electric and staffed by Ron Rich of Stannard, Bobby Sholar of St. Johnsbury, and Nick LeBlanc of Woodbury. Ray Shatney, proprietor of Shatney's Tree Service, employs Carl Baker of East Montpelier and Doug Lapierre of Greensboro to work alongside him. Matt Foster's crew consists of himself, his brother Mark Foster of Washington, and Bill Pickett of Greensboro. Shatney and Foster both take on other jobs, but it's a small component of their work. Five days a week (more during emergencies) and 12 months a year, they're at work on Washington Electric's right-of-way.

"We depend on these men," WEC Operations Director Dan Weston says emphatically. "They are not Co-op employees, but they are an integral part of the work we do. They're professionals, with a high degree of skill, and they do a great job for us."

In return, WEC invests in the contract crews, providing periodic training to help them retain their certification as "Line Clearance Arborists"

*continued on page 8*



In June, Mike Myers couldn't see the power line above his head (left photo). By July (above) the right-of-way was clear. Thirty-seven Co-op households in Corinth should now have more reliable electricity.

## A Small, Overdue 'Tap' In Corinth

The power line "tap" just north of Brook Road in Corinth was badly overgrown by the time summer came this year. Residents along Rollie Day Road, Pike Hill Road, Miller Road, and the camps and houses nearly out of sight at the ends of rough private driveways in this very rural part of Washington Electric's service territory had experienced an increase in outages, and it was obvious why.

The Co-op hadn't sent a right-of-way clearing crew to the area in more than a dozen years. The right-of-way still existed, but mostly in a legal sense (WEC controls a 30-foot-wide

easement along its distribution lines). But it wasn't detectable amidst the overgrowth. Maple, ash, and beech saplings had sprouted four or five to a stump since the last trimming, and the re-growth had completely obscured the power lines.

"Bob Fair [a Washington Electric foreman] came out here at night with a crew to fix an outage," says ROW Coordinator Mike Myers, referring to an incident in June, "and they were using flashlights looking at the underside of leaves trying to 1) find the line, and 2) find the fault."

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### Inside

**In this case, it really is the dog (the world energy market) wagging the tail (retail electricity prices).** For an understanding of how it works, and where your Co-op fits in, read Michael Dworkin's address to our Annual Meeting on page 4.

**Where to from here? The Legislature failed in its attempt to override the governor's veto** of the 2007 "energy bill," but there are important steps we can take right now to reduce heating fuel consumption. See Manager's Report, page 3.

**Planting near or under power lines? Some of our advice in June was off the mark,** but with the help of a Co-op member we revisit the subject of good, and safe, choices for plant species that you can make. Letter to the editor, page 2.

**An Open House at Coventry. And more to come,** as WEC responds to interest in our landfill gas-to-energy plant. Page 7.



*Pretty little plants aren't always as beneficent as they seem. Some are invasive and threaten native species; others are dangerous to livestock. See page 2.*

### 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.**

### Flawed Advice Corrected: Avoid Invasive Species

Editor, *Co-op Currents*:

On page 8 [of the June 2007 issue of *Co-op Currents*] at the end of your article titled "Better Homes . . . With An Eye on Power Lines," you recommend the planting of "...barberry, dwarf honeysuckle, and sheep laurel."

Two of these species are invasives, crowding out and displacing native species, which is highly destructive to our ecosystem. The other plant you recommend, sheep laurel, is toxic to livestock.

UVM, along with the Nature Conservancy, has a wonderful website listing the invasive plant species and alternative plantings: <http://www.uvm.edu/mastergardener/invasives/>

invasives.htm  
Best Wishes,  
Niki Kobacker  
Middlesex

*Mike Myers, Washington Electric Right-of-Way Coordinator, responds:*

Thank you for bringing to our attention a couple of species mentioned in *Co-op Currents* that are unsuitable for planting.

In the article, honeysuckle was mentioned. Some varieties of honeysuckle are extremely invasive. Bush honeysuckles were planted as ornamentals in the past because of their hardiness, flowers, and bright berries. They have since "escaped," and in some areas have out-competed native species and have negatively affected the ability of the forest to regenerate. The bush honeysuckles are quarantined and are

illegal to plant, distribute, or transport within Vermont since 2002.

Dwarf honeysuckle is on a watch list as a species that may have the potential to become an "invasive."

Trumpet honeysuckle is a native honeysuckle that is recommended for planting by the Vermont Invasive Exotic Plant Committee (IEPC).

Two species of barberry are also on a watch list as potential invasives.

Due to your input we have scrutinized our list of plants suitable for planting near power lines and have removed barberry and honeysuckle, even though some of these species may still be suitable for planting. Besides, there are much better choices for planting from among a long list of native species such as staghorn sumac, witch hazel, and highbush cranberry.

You stated that sheep laurel is toxic to livestock. It's also known as "lambs kill," which seems to make sense. Obviously, it should not be planted near pastures or hayfields. Mountain laurels, rhododendron, and azaleas are also

toxic.

Our tree crews have been very careful about cutting cherry near where animals pasture. The wilted leaves of cherry are highly toxic and can be fatal to cows. The wilted leaves of red maple are also highly toxic, but they only seem to affect horses and not cows, goats, or sheep. Other trees that are considered toxic include black locust and red oak. It seems that most poisoning cases occur when animals are being kept in poor pastures where they become hungry and resort to feeding on potentially toxic plants. In some cases animals will chew on toxic plants out of boredom.

In order to avoid problems with invasive plants it's safest to select native species for planting, and be extra careful to select suitable plants when planting near pastures or hayfields.

Thanks for your input. It has improved the quality of the information that we can provide our members.

— MM

## Manager's Report

*continued from page 3*

service.vermont.gov.

Whatever one's opinions about the governor's veto of H. 520, it is important that we all understand that the debate is not "just politics." Any matter of this importance must rightly be wrestled through the democratic process. We are confronted by the need to dramatically change how we deal with all our energy uses, and those are not easy decisions. No matter what we do, or don't do, there

are costs. There will be philosophical differences about the role of government and public investment in accomplishing objectives we may all agree with.

So I will finish by asking WEC members to reflect on their non-electric energy use and what we can all start doing today to use energy more wisely. Here are some statewide numbers from the GDS Associates study. I think they are conservative and that there is actually more potential than they estimate, but their numbers are impressive in any event.


You don't need numbers like these to justify investing in electric efficiency; even spending \$1 to save \$1.50 makes sense. That lesson has been learned well when planning for our future electricity needs. But can the lesson be transferred?

It may take some time before this sensible business-investment strategy is accepted when it comes to fossil fuels and thermal energy uses, but with estimates like these from the Department of Public Service's experts, we should not let the opportunity pass us by for too long.

### In the meantime

The Home Performance With Energy Star® program is a fee-for-service program that provides comprehensive home energy audits, including infrared thermal scan, blower door tests, and evaluation of heating systems, lighting, appliances, and more – a "whole house" review. The Home Assessment includes professional advice on ways to improve the comfort and durability of your home, as well as saving energy. There are certified contractors in WEC's service area who have the training to do the assessments and to recommend or install the specific

improvements that will result in the greatest savings in each home.

Whether you supported the passage of H. 520, supported the governor's veto, or chose not to pay attention to the controversy, each of us should take a good, hard look at our "whole house" and how we use our fuels and electricity. See the "Co-op Store" section of this newsletter for more information. 

### Reduction Achievable By 2016 By Percent

Heating oil . . . . 14.0 percent/year  
Propane . . . . . 8.0 percent/year  
Kerosene . . . . . 5.9 percent/year  
Wood . . . . . 14.2 percent/year

### Reduction Achievable By 2016, By Volume

Heating oil . . . . 24,457,320 gallons less/year  
Propane . . . . . 8,393,369 gallons less/year  
Kerosene . . . . . 1,240,676 gallons less/year  
Wood . . . . . 16,422 cords less/year

### Environmental Benefits Achievable By 2016

336,506 less tons carbon dioxide emissions/year  
691.3 less tons methane emissions/year  
23.9 less tons nitrogen oxide emissions/year

### Benefit Compared To Cost

The study assumed a statewide program run like Efficiency Vermont.  
"Net present value" of investment to achieve these results: \$100,088,893  
"Net present value" of savings realized by consumers: \$645,900,553  
Benefit-to-cost ratio: 4.03, or in other words, \$4 saved for every \$1 spent.

## Co-op Currents

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WEC is part of the alliance working to advance and support the principles of cooperatives in Vermont.  
[www.vermontcooperatives.coop](http://www.vermontcooperatives.coop)

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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.*

### Correction

*Co-op Currents* provided some inaccurate information in an article in the June 2007 issue titled "Washington Electric Undertakes Rate Design Adjustment." A paragraph in the article stated: "(E)very Washington Electric member – bar none – receives a 'block' of low-cost kilowatt-hours. Presently, this comes from WEC's contract with PASNY (the Power Authority of the State of New York.)"

PASNY is now called NYPA, the New York Power Authority. More important, not "every" Co-op member receives the block of low-cost power. It is restricted to residential members only. However, residential members account for 98 percent of the Co-op's total membership.

Editor, *Co-op Currents*

## Manager's Report

### As The Dust Settles In Montpelier

# Thermal Efficiency: The Low-Hanging Fruit of Energy Conservation

By Avram Patt

The Vermont Legislature earlier this year passed a comprehensive energy bill, H. 520. While it contained a great many provisions to encourage and promote energy efficiency, conservation, and the development of small- and large-scale renewable projects, there were some controversial aspects that resulted in Governor Douglas' vetoing the bill. The Legislature convened on July 11, and the House voted 86-61 to override the veto, which fell short of the two-thirds needed. Therefore, the governor's veto stands and H. 520 did not become law.



ful. Supporters pointed to Efficiency Vermont's measurable effectiveness and the national acclaim it has garnered in measurably lowering electric usage in homes and businesses. They also argued that the technology for non-electric or "thermal" efficiency already exists and has been proven.

- H. 520 would have paid for these new programs by raising the amount of statewide education property taxes the Vermont Yankee nuclear plant pays. Gov. Douglas, many in the utility industry, and some business

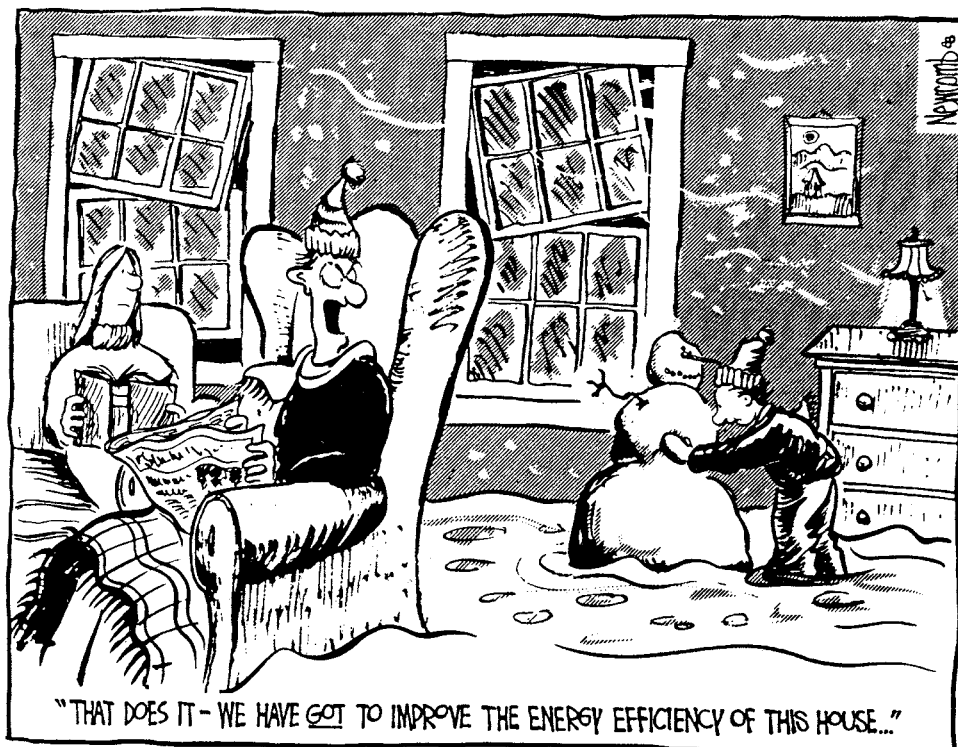
groups felt strongly that this would send a bad signal to businesses in general because the state would be renegeing on a previous agreement setting Vermont Yankee's property tax rate at low fixed amount. They also argued that this would increase Vermont Yankee's operating costs, which would eventually affect ratepayers. Supporters of the bill, including environmental and some business groups, noted that the deal that had been struck did not take into account that Vermont Yankee has since been allowed to increase its output and to profit from additional sales, and that the high-level radioactive waste from the plant now looks like it may have to be stored indefinitely in Vermont. They also pointed out that while the property tax rate for Vermont Yankee would have increased, it would have been set at the same low, preferential rate as the bill sets for commercial wind farms.

The chief objections, in my opinion, were about the Vermont Yankee tax. The "government bureaucracy" arguments seemed to be half-hearted. It should be noted that the funding mechanism originally proposed in the Senate was a small surcharge on fuel bills, more akin to the Efficiency Charge that electric ratepayers pay, or to the efficiency costs that were included in everyone's electric rates before Efficiency Vermont was created.

This broad-based fuel tax proposal evoked a loud hue and cry, and legislators quickly dropped it in favor of increasing Vermont Yankee's property tax bill above what had previously been agreed to. Many people acknowledged that a consumption tax or surcharge on fuel made more sense in theory, but it was a political hot potato. Although Gov. Douglas was very specific in his criticism of the Vermont Yankee tax, he has also stated that he opposes raising taxes from any source to fund non-electric energy-efficiency programs.

#### Thermal savings within reach

While there is much more to do,



#### What was in the bill?

There were numerous non-controversial sections of the bill. Generally, the House committees started working on sections relating to electricity, while work on fossil fuel issues began in the Senate. The bill is 45 pages long and I will not list all its many provisions here. The specific issues that led to Gov. Douglas' veto aside, the bill would have moved Vermont toward using less energy, and lessening our dependence on energy sources that contribute to global warming, harm the environment, and make us dependent on volatile world energy markets and world events. (For a discussion of these issues, see the transcript of Michael Dworkin's address to the Co-op on page 4.) A copy of H. 520 as passed is available on the bill tracking system of the Legislature's website, [www.leg.state.vt.us](http://www.leg.state.vt.us), or I would be happy to mail anyone a paper copy.

There is no doubt that many elements of the bill will be reintroduced when the Legislature reconvenes in January, and the administration has also stated its intention to move forward on some provisions anyway.

#### What were the reasons for the governor's veto?

Gov. Douglas vetoed H. 520 primarily due to the sections of the bill that would have greatly expanded statewide efficiency programs targeted at fossil fuels. The bill established an organizational structure, and a revenue source, to help Vermonters lower their use of the fuels they use for heat and for other household, business, and manufacturing purposes.

What was controversial about this?

- Efficiency Vermont, the organization created by law to operate statewide electric efficiency programs, would have had its mission expanded to cover heating and other non-electric energy uses. The governor and others argued that this would be a new government bureaucracy, with the implication that it would be waste-

Vermont has made real progress in lowering demand for electricity. Everyone has benefited from that investment, which is paid for by all ratepayers. Had we not made that commitment, residential, commercial, and industrial customers would have higher electric bills than they do now. Not only are individual ratepayers' bills lower, we have also lessened the need for new power-supply sources, and we have reduced the environmental impact from what it would otherwise have been.

The area of energy use where Vermonters waste the most is probably transportation. It is hard not to drive a lot of miles in a rural state, and public transportation won't always work outside of

population centers. But if our nation took vehicle fuel efficiency seriously (for trucks and SUVs as well as for cars), and if we put some effort into reducing by even a small amount the number of local trips each of us makes, it would have a huge impact. In some ways this is an issue that must be addressed nationally if it is going to make a difference in Vermont.

The greatest potential staring us in the face is "thermal" efficiency. Because fuel companies are not regulated like electric utilities, accomplishments are more difficult in this arena, which is why we haven't done as much yet. While an individual's fuel bill savings can be predicted, it is not as easy to measure and predict the common benefits we all derive from other consumers' reductions in use.

Although I participated on WEC's behalf in the committee hearings on H. 520, our comments were limited to matters relating to electricity. The Co-op did not take a position on how to pay for non-electric energy-efficiency programs.

I can, however, offer WEC members some comments on the effectiveness of

thermal efficiency measures generally, and especially in the residential sector. Before coming to work at WEC in 1997, I was the director of the office in state government that administers the low-income weatherization program, and I was appointed to that position the year the program's budget tripled as a new state funding source (a tax paid by all fuel dealers and utilities). Vermont's housing stock is the second oldest in the nation, and the technology used by residential

energy professionals, both to diagnose and then fix energy problems, is scientific and highly advanced. We are just not doing enough of it.

Thermal efficiency is where we could probably accomplish

the most for the least cost. It is the "low hanging fruit" of residential energy conservation. Is expanding Efficiency Vermont's role, and raising new revenue, the best way to get it done? Or would the Douglas administration's alternative proposal to create a new energy-efficiency mortgage program be more effective? As I said, WEC has not taken a position on how to pay for non-electric efficiency programs. But energy is going up chimneys and leaking through drafty sills as Vermont debates this.

#### What's the potential?

This past January a report commissioned by the Vermont Department of Public Service was released and presented to the public and the Legislature. It is titled "Vermont Energy Efficiency Potential Study for Oil, Propane, Kerosene and Wood Fuels." It was prepared by GDS Associates, an engineering and consulting firm. The full report and a summary are available on the department's website: [\*Many people acknowledged that a consumption tax or surcharge on fuel made sense in theory, but it was a political hot potato.\*](http://www.public-</a></p>
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# Dworkin On Power, Alternatives, and Co-operation

**M**ichael Dworkin, a WEC member, educator, and international consultant, was guest speaker at WEC's 68th Annual Membership Meeting on May 22. Dworkin is a former chair of the Vermont Public Service Board, and is currently director of the Institute for Energy and the Environment at Vermont Law School. His comments put WEC's energy policies and decisions in a global context. They are presented here, with references to graphics he provided, in edited form.

## On co-ops

A lot of my professional life I've had to look at both investor-owned utilities and co-ops, and I know in my head that there are successes and failures on the investors side and some successes and failures on the co-op side, and in the 100-year long issue between public and private power there's a little bit to be said on both sides. I also know that wherever my head goes on that, in my heart I was really pleased to be a member of a co-op. The reasons are fairly simple. You get to get together at least once a year, and to be part of worrying and agonizing and trying to solve things. It's real hard to do that if you're part of an investor-owned utility, but it's not that hard you're part of a co-op.

This co-op and Vermont Electric Co-op both saw serious waves of elections throughout the '80s and '90s, where really fundamental questions were hammered out and voted on. People that had some positions got elected and people that had some positions lost, and overall the general will of the electorate was what drove the big decisions about the future of the co-ops. I think that's a real good thing; it's a chance to be a player and to have some responsibility and be in on what's going on. It feels good in the gut, and I think in the long run it actually helps.

## New players

I'm going to start by talking about the world, and then coming back to Vermont. And it's not just as simple as "Think globally, act locally," although that's a part of it. I think there are some very direct real ties that matter.

I live in East Montpelier on a dead-end dirt road off the County Road. It's a house with a wife who loves me and tries to reign in my strangeness, two kids that are just starting their own life, a dog that's getting old with hips that I worry about. It's a life that a lot of Vermonters have in some ways.

But it's also true that three days ago I was flying back from three weeks in China with a conference of 200 people worrying about energy and the environment, lectures at three law schools, and a small dinner with the head of the Environmental Committee of the National People's Congress, which sets the environmental policy for one quarter of humanity. [These worlds] are not all that separate. We are all tied together, and things that happen in one place affect those in the other. Now I'd like to explain some of the reasons why.

(presents slide)

Why care about world energy trends? It's like an old question, why care about war? Because war cares about you. In the same way, world energy trends care about you. The energy price in most of the United States is based upon what it costs to buy natural gas, because that's what's on the margin – the alternative – in most places. The world price for natural gas sets the New England electric rates, and that's what WEC faces when it goes into the market.

Right now, somewhere in the North Atlantic there's a tanker filled with liquefied natural gas, and its captain has very simple orders: go where the market is highest. That'll be Montreal if the price is high, it will be Marseilles if the price is high. If they go to Montreal it will feed into the New England grid, and if they don't it won't.

We are woven into that. Take a look at this (shows slide). This is the monthly average wholesale price for electricity for half a dozen recent years. It goes up, it goes down, it goes up, it goes down, and if all you do is read the headlines you'd think it went up and down about the same, and we were in the same place that we were a half a dozen years ago.

But when you see it here, you see that that's not true. The price for electricity in the wholesale market isn't just double, or triple what it was at the turn of the century half a dozen years ago. I took a look this afternoon at a website called NYNEX.com, at the New York Mercantile Exchange, where people put real money into betting on buying power to be delivered a year out, three years out, five years out. The prices people are paying for power five years from now are in the \$18 range [per million British Thermal Units – MMBtu]. They're moving up to \$10 in the winter a couple years out, and that's compared to \$2 [or] \$2.50, for the same amount of gas five or seven

years ago – in other words, three to four, sometimes five times as high as a half a dozen years ago.

This is a price pressure for fossil fuels that is very, very strong, and lasting, and fossil fuels, as I said, are what drives the clearing price for power plants in New England and most of the US. The real

question you have to ask is, is this a blip or is it something that's going to last a while?

The answer is [found by] looking at the fundamentals that underlie it. There's a map of the world (photo, page 5). It shows all the lights on at night. It's really a composite of 578

photographs taken when there were no clouds, and it doesn't show all the energy use. But it's a pretty good approximation.

Except that's energy used 10 years ago. And what it doesn't show is all the people who would like to have energy, who are willing to pay to have energy, who didn't have it 10 years ago.

To get a sense of that, let's look at this (shows slide). The redder [regions on the map get], the more unserved demand there is. This is the yearning, the desire, the pent-up wish – and, if you will, the competitive bid for power that we're going to be competing against into the next decade. So when you ask yourself why are fossil fuel prices going up, one very simple answer is, because a billion people that were living in poverty are now getting a chance to be part of the game. And we're bidding against them in a way we didn't when they were left out.

A quarter of humanity essentially had no power in recent years. Another quarter has a tenth of what the western world does. But 600,000 million people in North America, Western Europe, Japan, and Australia have something in the range of 1,000 kilowatt-hours a month – an average of 12,000 a year. That's roughly the U.S. average. Co-op members here, if they're using 500 a month, are using about half of what the U.S. average is; if

you're using over 1,000 a month you're using over the U.S. average. But notice how many people are using not a little bit less, not half as much, but something like a tenth as much, or zero. Those are the people who really want to get into this market and are now beginning to play. And that's why those rising fossil fuel prices are not likely to be short term. They're long term.

## Don't look to coal

What does it mean in practice? It means that it makes sense to look at energy efficiency and renewables as an alternative. Because the price of wind as a raw resource is not going to change; the price of what they sell [wind-generated power] may go up and down, but the resource itself... The price of wind is going to be wind, the price of solar is going to be solar, the price of methane is going to be methane, from a landfill. These alternatives are not going to be driven the way world [fossil fuel] prices are driven, and it's a chance to do better.

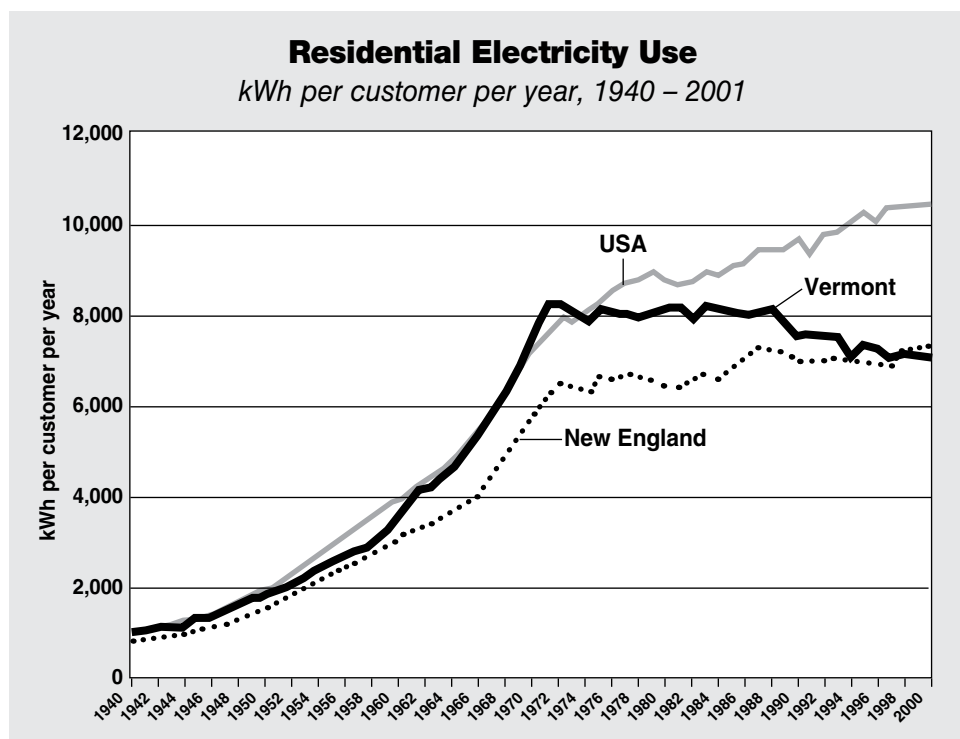
The obvious question [is] why not shoot for coal, of which we have a lot in this country, which says it will be cheap. And the simple answer is because coal is not going to stay cheap. We as a world have recognized that coal is the primary single-biggest contributor to greenhouse gases, which are having a clear effect on climate change. If you want to have a sense of the world at the end of the summer 25 years ago, take a look at the ice cap there (shows slide), then take a look at it here (shows another slide), about four years ago. That's a [melted] chunk of the arctic about as big as the U.S. continental land mass, about as big as Siberia, that used to be frozen and isn't.

Now, there are a couple of ways people look at that. My sister has a project she's doing to get her doctorate in folklore, and she talks to people about how the Inuit feel about changes in the world they're in. My mother has a cousin who [operates] a nuclear submarine. And they talk about where is the edge of the ice cap, because that's what they hide under while they're wondering whether to come out and fire their missiles.

When those two cultures both agree with what our eyes tell us – which is that there is a real big change happening in the world – it's probably true. The climate change issues that are driven by burning carbon are very real; most of the world accepts them. I sat at dinner a week ago talking to the director of the Environmental Committee of the National People's Congress. He wants to do something about it. The likelihood that coal will stay cheap is very low. Two years, four years, five years, maybe. Ten years, 15 years, no.

If you bring it down from a global scale to Vermont – this (slide) shows a maple forest being replaced by a hickory forest. For those of you who do any sugaring, that means an end to sugaring. It's a fundamental change in Vermont lifestyle. It's just an early starting point on larger changes that are coming along.

So going with fossil fuels that emit a



lot of carbon is going to run real hard into environmental constraints. [Added to] the price issues I raised, and the carbon issues ... let's just note that we should think about what are the options, where can we go from here?

### Making conscious choices

And you can see a few of them: efficiency and conservation; getting our power from Vermont Yankee; buying more from fossil plants; building cogeneration facilities within the state; net-metering lots of small projects; lots more in-state renewables; buying from Hydro Quebec to replace the disappearing contract; making a stab at getting power from the Connecticut River; small distributed generation; some new set of imports for some balance.

That's a long list, and it's pretty clear that nobody – and certainly nobody the size of Washington Electric – is going to get everything off it. But it's also clear that it doesn't make sense to get everything off any one slot. As I run through it for a minute, maybe you can see why.

First let's talk about efficiency. This is a chart (see page 4) that shows 60 years of history of the United States, from 1940 to the beginning of this century. It shows per-household residential usage. There are a couple lessons for us here. From 1940 until '73, for the U.S., for Vermont, for New England, look at that rising slope. That's what Asia looks like right now; China, India... their charts look just like that. What we've got is more and more [per-household consumption] every year, and if you had talked to somebody in the field in 1970 and said how much power are we going to need in 1980 they'd take a look at what was happening for 35 years and they'd predict [it would go] up and up.

It turns out in '73 there was an oil embargo, we started to pay attention to what oil cost, and our behavior changed. So all the expectations people had, based on 30 years of experience? Dead wrong. We didn't use as much power as we thought, a lot of power plants we were building turned out to be unneeded, and it was a real chance for us to get control on our energy use.

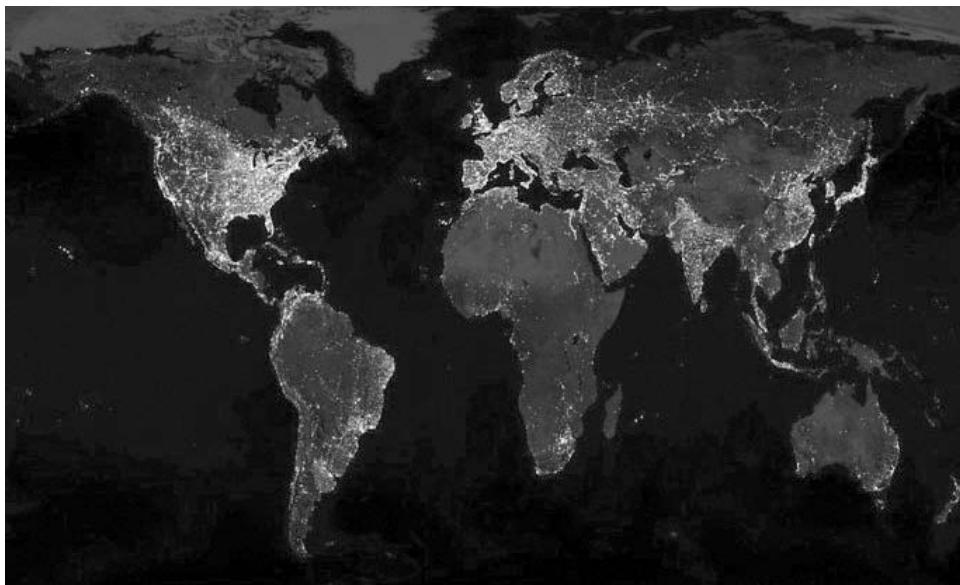
Now, post-'73, look at a couple different patterns. The U.S. changed from exponentially increased, rapid growth to pretty strong growth, but nowhere near what it had been. Vermont, on a per-household basis from '73 until 1990, was just about even. It was not because of poverty; Vermont was growing its economy faster than the U.S. during that period. We went from the bottom fifth of the states in terms of gross domestic product to just about in the middle, even though our energy growth was flat and U.S. energy growth was climbing.

After 1990 we in Vermont began a conscious effort to do ratepayer-funded energy-efficiency programs, and we found out that even while we were growing we could reduce the per-household energy use. So the future doesn't have to be the same as the past; conscious choices about how to move forward can lead to results in the real world.

### Conservation, efficiency and ...?

Can we afford it?

Not only can we afford it, the question is can we afford not to? Because (shows chart) when you pay for the delivery, the transmission charge, along with the overhead and bookkeeping that they charge [in electricity's] wholesale market



*Composed from hundreds of satellite photos, the picture above reveals what the world would look like if it were nighttime everywhere at once – and who's using most of the electricity. We can expect greater competition and higher prices as the rest of the world begins to consume at the level of the U.S.*

you wind up, in recent years, almost always paying 6 or 7 cents [per kilowatt-hour], and often paying 8 or 9 cents, for wholesale power.

What did energy efficiency cost us? We've been paying to Efficiency Vermont a price that's in the 2-cent range and when you add in what the homeowners pay to put [recommendations] in place it's still under 3.5 cents. Every penny or every 3.5 cents that we put into energy efficiency saves the need to spend 6 to 9 cents on the wholesale market. This is a chart about saving money.

So – efficiency and conservation: highly cost-effective. You do have to get the dollars up front. You put more insulation in your house and it costs you a bundle this month, it saves you next month and the month after and the year after. It really is good in terms of environmental and particularly climate change, in not burning carbon. A power plant that would have been running doesn't have to run so hard. And the money [is spent] in the state, it's highly labor intensive instead of capital intensive, so the money goes to people.

The sad fact is that [efficiency and conservation] would probably be able to stabilize our statewide demand, but probably won't cover all the [electricity] sources that are disappearing.

Let's take a look at the other choices we have. Vermont Yankee? We don't know how much longer it's going to be around. We don't know what to do with the waste there. The fixed-price contract we have runs out in 2012, so even if it's around after 2012 we don't know what price we're going to pay. There are about 500 jobs there, of which about 300 people live in the state of Vermont, a couple hundred live in New Hampshire and Massachusetts. There are significant taxes that come in. But the big money goes out of state.

Alternatively, we could decide to buy more from more fossil plants. The problem is that since fossil fuel prices are high and hard to predict, they are unlikely to sign a fixed-price contract unless you pay a huge premium for the stability. The climate issues are very strong, and the health issues in terms of emphysema and asthma for people downwind of the plants are very real. Most of the money leaves the state and we'd probably have to do even more transmission upgrades to bring it in.

The possibility of building new cogeneration in Vermont is definitely alive. Cogeneration means you do two things when you generate: you coordinate using

it for industrial purposes and for electricity purposes. Most of the money stays in the state but there are a few catches. You have to find the right place to put it, which means somebody who's got a use for it on the industrial side. It does depend on fuel prices. Environmental impacts tend to be a real issue in cogeneration; they can usually be handled, but only if you pay really close attention to pollution control equipment. It's hard to think where in Washington Electric Co-op's territory there really is the right site. I don't want to say there's none, but I'm pretty sure there's not a lot.

### How green is Vermont?

We often get told Vermont's energy mix is clean and low-carbon. In one sense that's true. A third of our power is nuclear, a third of it is large hydro from Quebec, another sixth of it is hydro within the state, and the remaining sixth is mostly from woodchip plants that have some requirements that make them pretty much carbon neutral. That's great.

But if you look at the New England power grid, it serves as a single operating unit and anytime demand goes up they turn on another power unit, and when it goes down they back off on the power unit. And the unit that's on the margin – that gets turned on or off when we demand more or less – is a fossil-fired plant 85 percent of the hours of the year. So if we demand more, somewhere in New England there will be another power plant burning more.

### In-state blend

Major in-state renewables is something that I think is very attractive. We have a problem, which is that it's been very difficult to site wind turbines and the governor has been unenthusiastic. The affect has been a slowing down of what we could otherwise have built. Whether it's a full stoppage or not we don't know, but the options for moving forward have been severely constrained and the affect has already been showing up in this cooperative's power planning.

Whether we can move forward on serious commitments in in-state renewables is going to be a political issue [but] the economics are clearly there. The interest is there, and the capability to install it in a way that is environmentally acceptable is there, even within those economics. But it will take acceptance by the government to move forward.

I will say that the big success in the state is WEC's landfill gas program in Coventry. It's going to show as a big

success for the people of the state as a whole and for the people of the Co-op in particular, I think.

Now, we've always bought a lot of power from Hydro Quebec, going back to 1907, pretty much as soon as there was any significant electricity in the state. HQ has indicated that it's probably willing to sell again. What it hasn't come up with, nor have we, is any particular reason why they should sell it to us at lower than the New England market price, which is based on fossil. So the chance of getting power is pretty good; the chance of getting cheap power is pretty bad.

The Connecticut River is not too far away. It's worth recognizing that the power in the Connecticut is highest in the spring and the fall and lowest in the summer and the winter, which is when we need the power most. And the owners are going to be looking for what they would get by selling to the New England market overall. I will say that working with the Connecticut River dams definitely [has some appeal] but I don't think there's any reason to expect it to be a bargain.


Distributed means generation that's close to the [users]. Sometimes it's costly and sometimes it isn't. Getting permission to put it in on any sites except pre-existing ones like a landfill is probably going to be moderately difficult. Air permits are an important issue because small distributed dirty power is no more attractive than big dirty power. Small distributed clean power is what you want, so it takes special attention. On the other hand, we can probably run a lot more off biofuels – including both wood and farm products – than we have. The quality of the engineering is important to get right, here.

Obviously, a ... blended balance is important. A blended balance means picking priorities about what's most important, and [what's] probably most important is to move first with efficiency and second with renewables; to operate the entire system as efficiently as you can; to help the people like us that are at the end of the line be efficient in the way we use our power, because that saves money for everybody.

### Taking stock of WEC

I think that if you notice where the co-op is, it's done well. It's moved itself in a healthy direction – not by accident, but by fairly conscious choice. There are really possibilities here that the co-op can take that an investor-owned utility doesn't go for unless it's unusually foresighted or unless it's regulators push it harder than most regulators are willing to push. The co-op can take a look at its own focus and values. Most of you lived through the history of active involvement which changed the direction of this co-op's path to a healthier and better path.

The next steps forward ... I don't think we know all the details. But I think we know the big picture of where we want to go, and how we move that way is something for all of us to do together. I know I'm happy to have a chance to be a part of it, and I'm happy that all of you in this room have [that opportunity].

I think that's the progress for us to make, while we remember that the world that used to look like that (slide of lights 10 years ago) is now going to look like this (slide showing higher worldwide demand). And that playing the fossil fuel market puts us in competition, and that playing the renewable and efficiency market puts us in cooperation. And that's a better place to be. 

### A Small, Overdue 'Tap'

continued from page 1

Fair told Myers about it the next morning. Eventually Myers would have gotten a crew out to Corinth to clear the remote three-mile-long section, but Fair's report pushed the project closer to the top of the list.

Washington Electric owns some 1,250 miles of power line and in accordance with WEC's Vegetation Management Plan is scheduled to re-clear every mile of that ROW within a time frame designed to prevent tree-related

outages; typically that's every six to nine years for three-phase line, which tend to be the main "feeders" carrying power to WEC's rural communities from the substations, and seven to 12 years for single-phase lines and taps, like the circuit off Rollie Day Road.

*"Any one of these crews can work for us for a year and never cause an outage, and that's impressive because there is no margin for error for them."*

— Mike Myers

As Operations Director Dan Weston explains, "We are playing catch-up with our own right-of-way. Under the new Vegetation Management Plan we're focusing the brunt of our efforts on improving the reliability of the main line feeders. However, we're also targeting the lines in areas such as Corinth that are showing up as less reliable than the majority of our system. Given the territory that WEC serves, we find there are varying re-growth rates; that requires us to have a flexible approach in order to maximize the annual ROW budget."

Taps (also called spurs) serve smaller numbers of people. If a main line from the Mt. Knox substation out to Corinth were to fail, it would leave hundreds of people without power, including the 37 houses connected to the Rollie Day tap. But because of fusing, which isolates small sections of the territory and confines power outages to those sections, the outages on the Rollie Day tap in recent months affected only those two-score Co-op members.

For this job, Ray Shatney's Tree Service drew the assignment. In a period of about a month Shatney, Doug Lapierre, and Carl Baker "flatcut" under the lines, side-trimmed the taller trees at the edges of the ROW, and in the off-road sections stacked the debris along the sides, where eventually it will decay. Near streams, and where the power line ran beside the roads, they chipped and removed the trunks and branches.

Washington Electric has long followed a policy of not using herbicides to control growth. Myers says that seems to be popular with Co-op members.

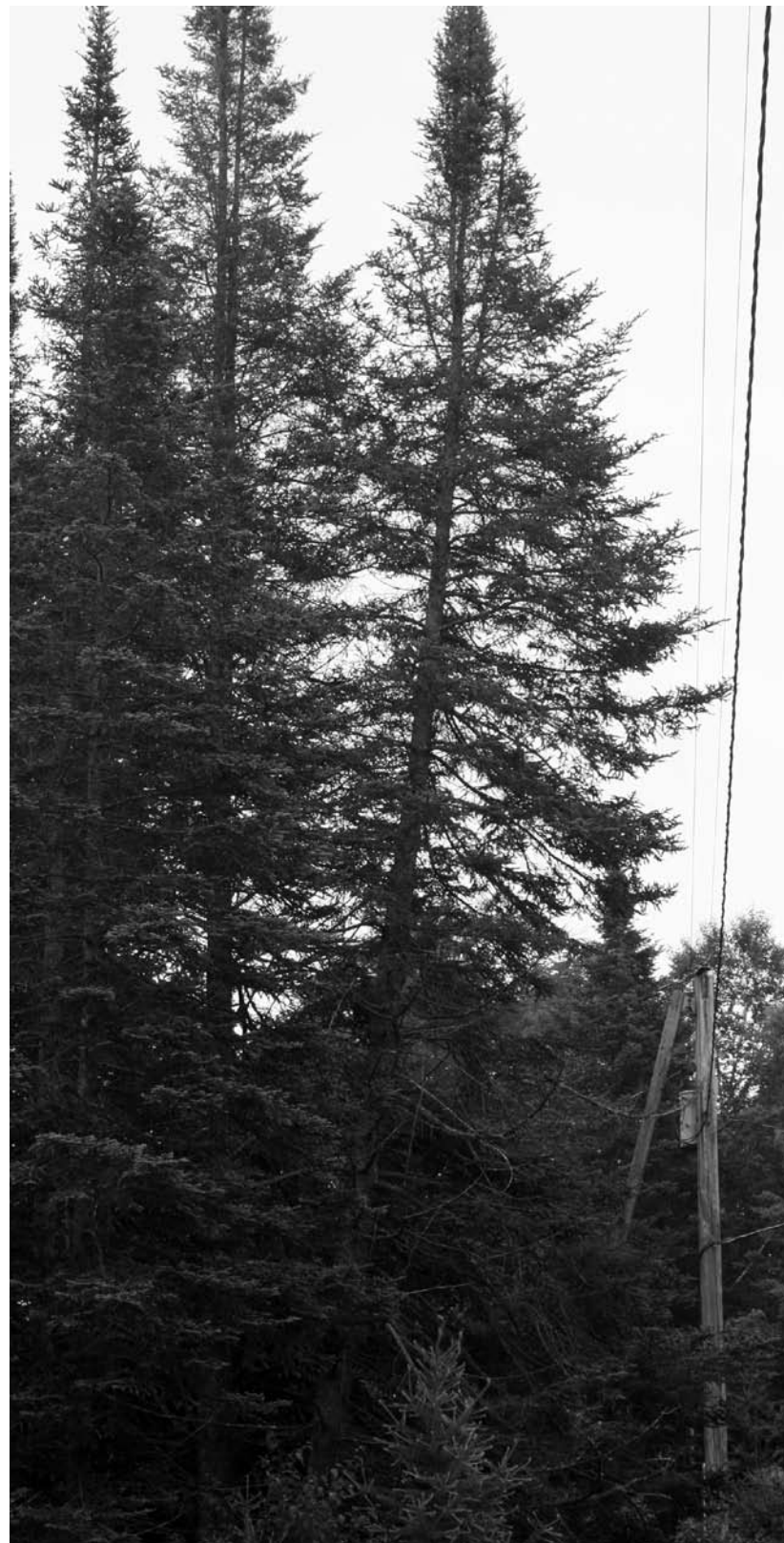
"Members ask us all the time if we're going to use herbicide on a project near them," says Myers. "I tell them no, we're going to be using chain saws. They like to hear that."

The downside is that hardwoods regenerate briskly from their unsprayed root systems. WEC has increased its ROW budget significantly in recent years, but it is not possible to keep ahead of the growth everywhere.

In time, though, the job gets done. Thirty-seven households along the Rollie Day tap in Corinth are almost guaranteed to enjoy better, less-interrupted electric service, at least for the next several years.



A Co-op power pole, before and after the woods around it received a haircut from Ray Shatney's Tree Service, a WEC contractor. Overgrowth not only causes more outages, it makes for longer repair times as linemen struggle to find the problem.



The very definition of a "danger tree" (left), this weakened, dying fir leans over the power line on Pike Hill Road in Corinth. It's on the Co-op's list for removal. In the woods, cleared brush is stacked along the right-of-way, but where the lines run beside the road, as on Miller Road (Corinth, below) the trunks and branches are chipped and cleared away.



# Co-op Opens Coventry Plant To Weekend Visitors

Washington Electric Co-op held an Open House at its Coventry landfill gas electric-generating station on June 23. Co-op officials discovered, not really to their surprise, that a fairly sizable number of people were interested in spending an hour or so on a Saturday touring a small electric plant at a remote landfill in the Northeast Kingdom.

WEC scheduled the Open House in response to expressions of interest by Co-op members, industry professionals, and local people in the Essex/Orleans/Caledonia county area. Since the 6.4-megawatt station is situated in the middle of a busy landfill – the largest lined landfill in the state – access normally is limited, so with the cooperation of NEWSVT, the subsidiary of Casella Waste Management that owns and operates the landfill, WEC arranged for the site to be available on June 23 from 10 a.m. to 1 p.m.

Some 60 people showed up over the course of those three hours – including

an old friend, retired Co-op lineman Spencer Slayton! They were greeted by WEC General Manager Avram Patt, Operations Director Dan Weston, and plant operator, Scott Wilson. Also on hand at various times were WEC directors Wendell Cilley, Don Douglas, Roger Fox, and Marion Milne. Everyone was offered refreshments and given a tour of the facility.

“We showed them through in groups of anywhere from two to five or six,” said Patt, who said the tours began with an explanation of why the Co-op decided to invest in the \$8-million facility, which commenced operation in July 2005 with three engines. WEC added a fourth engine in January 2007 to take advantage of the landfill’s rich production of methane and increase the generating capacity. Coventry now provides around 50 percent of the power Washington Electric needs for its 10,000 members, at a per-kilowatt hour cost well below the market rate. Additionally, the plant

qualifies Washington Electric to receive Renewable Energy Certificates (RECs), which it sells to an electricity retailer in Massachusetts, which produces extra revenue for the Co-op.

“We started the tour by showing the flare pipe that would otherwise be burning the methane gas off into the atmosphere if there were no plant there,” said Patt. “We showed them the pipe that channels the methane produced inside the landfill into the rear of our plant. Once you’re inside, the machinery is so loud you can’t hear, so we explained things before and after the tour, and gave people earplugs to wear inside.”


First stop was in the scrubber room, where the methane entering the plant is treated and cleaned before being piped into the engine room. The engine room, where the four Caterpillar engines were in full operation, came next, and was the loudest part of the tour. The last stop was the switch gear room, with control panels, spare parts for the machinery

and Wilson’s coffee maker (an important if less-sophisticated piece of equipment).

WEC plans to repeat the Open House sometime in the fall. While the June event was held on a weekend, the next one may happen on a weekday in order to attract a different audience – school classes, for example, or industry professionals who may have been reluctant to give up a weekend.

“We receive regular requests to see the plant,” said Patt. “Sometimes it’s from Co-op members who want to actually see this thing that we’ve been talking about so much. Sometimes it’s from professional people. I attend a lot of meetings with utility industry folks, [Operations Director] Dan Weston goes to meetings, [Products & Services Director] Bill Powell goes to meetings. People seem to be very interested.”

The same goes for local folks in the Northeast Kingdom. For them, it may be just a short drive over to Coventry and a couple hours out of their day to see one of the most celebrated alternative energy plants in the state.

And, Patt pointed out humorously, there’s always another contingent: Vermonters who like being in rooms with big, loud engines. They’ll have another chance for that in the fall. 

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## ROW Workers

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in accordance with OSHA rules. They also must renew their CPR and First Aid credentials annually. And they have to be familiar with the Co-op's electric system, knowing the voltage of various lines by sight because there are minimum distances permitted for working close to lines of different voltages.

Mike Myers is Washington Electric's ROW coordinator. Myers determines the priorities for where maintenance needs to be done, assigns work to the contractors, checks on their work, and handles the billing for ROW maintenance.

"There are three main components to their job," he says. "First is flat cutting – cutting all the tall or potentially tall species growing under or close to the power lines. Second is side trimming – removing branches that are growing toward the power lines from trees that are left standing. Third is "danger tree" removal – felling trees on the edge of the ROW, or even outside of it, that are weakened or dead and could fall into the lines."

The contract crews are paid per-foot of power line ROW cleared, which is an incentive to work efficiently and do the job well. They are conscientious and have high standards, but they also know that in the end poor work only causes delays.

"Any one of these crews can work for us for a year and never cause an outage," says Myers, "and that's impressive because there is no margin for error for them, working close to power lines. It requires a level of expertise that your average logger doesn't have or need to have."

## Still climbing in Co-op country

WEC members in Duxbury this summer may have seen Ron Rich, Bobby Sholar, and Nick LeBlanc of M & J Tree Service clearing right-of-way in the Crossett Hill area.

"That area hasn't been cut in quite a while," says Rich, who has tended ROW for electric utilities in Vermont and New Hampshire since 1979. "The main lines are mostly in good shape, but the side taps need attention. We'll be on this job all summer."

In the winter much of the work consists of removing danger trees. Operations staff working in the field notify Myers where they have spotted trees likely to cause an outage if they're not removed, and Ed Schunk – WEC's Transmission & Distribution Technician – patrols the transmission lines and main feeders at least once a year and after major weather events, looking for structural damage as well as danger trees. Mike also patrols on his own. When danger trees are discovered an ROW crew is usually given the task of removing them.

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Matt Foster Logging & Tree Service. From left, Bill Hackett, Mark Foster, and Matt Foster.



Shatney's Tree Service. From left, Carl Baker, Ray Shatney, and Doug Lapierre.



WEC's crew from M & J Tree Service. Left, Ron Rich; right, Bobby Sholar; not pictured, Nick LeBlanc

In any assignment, Bobby Sholar says, "the main thing is you've got to be really careful of the wires." It's also important to do a neat, clean job, he adds, particularly when working near people's houses. Residents may be unhappy when projects require them to cut limbs off a red maple, say, or a majestic willow.

"As much as we can, we trim so they'll look good," says Rich. They'll top an apple tree to keep it from growing into the lines, but Co-op policy is to avoid serious cuts or removal of fruit trees when it's practical to do so, because they can often be maintained at a lower height

And speaking of height, WEC's tree trimmers still need to climb, using ropes

and other gear. As business owners, Ray Shatney and Matt Foster have invested in costly bucket-lift trucks (as well as wood chippers and other equipment), but Shatney says, "a lot of Washington Electric's system is still cross-county," where trucks can't go.

Shatney is a weathered, veteran line-clearance worker who has been in the trade since 1991, though his business is only four years old. He wakes up at 3 a.m., picks up his crew, and is often at work by 5:30. But on top of that he carries the responsibilities of any small business owner, chiefly regarding insurance and accounting – practically a full-time job in itself, though Ray has

arranged for much-needed help with these duties.

Shatney hired Doug Lapierre in 2004, after Doug had graduated from Hazen Union's forestry program. Carl Baker is a new employee, and not certified to climb, so he tends to the ground work, often piling brush in windrows along the edges of the right-of-way.

Ray's experience gives him a perspective on WEC's overall line-maintenance program. In the past, working for other utilities in Vermont and New Hampshire, it wasn't uncommon for him to find "neutral" lines – the power line that runs from pole to pole four feet beneath the main conductors – lying on the ground, where they had obviously been for a long time. In more than a decade of cutting for WEC he has found a downed neutral just once, and linemen restored it as soon as he reported the problem.

"WEC has the best-maintained lines that I've seen," says Shatney. It's partly due to his efforts.

## Sweet as balsam

Matt and Mark Foster, and Bill Pickett, the third member of Matt Foster's ROW team, have all worked for Ray Shatney. Matt started his business a year and a half ago. The Fosters are farm boys – their dad still runs a dairy farm in Hardwick – and all three love working outdoors.

"If you can't have fun working at something, then what's the point of doing it?" asks Mark. This summer you may have seen them in the Middlesex area.

They enjoy great camaraderie, but say they work for hours with hardly a word spoken. Hand signals and body language convey all that's necessary. Above all, they know their job can be dangerous, and they take precautions.

"The main point is making sure where the power line is," says Mark. "If you're not following careful work practices they can be deadly."

"You look up to the tops of the trees more than you do when you're logging," says Bill, and Mark adds, "If there's any question where that tree is going to go when you drop it, put a rope on it." Matt says, "You get familiar with everything that can make a difference – not just the different kinds of trees but the weather, the wind, the moisture, all the conditions that can change how a tree needs to be cut."

It's hard work, but it has its rewards.

"I like the smell of the woods," says Bill with a smile. "You cut a day's worth of balsam and it smells better than any air freshener."

On the whole, Washington Electric Co-op has the most rural service territory of any Vermont utility. WEC began building its system in the 1930s, '40s and '50s to serve country people, and strung the lines "crosslots" to get electricity to them the most direct way possible. But Vermont is a fertile land, and what WEC cuts to safeguard its power lines grows back with a vengeance.

So the Co-op needs Ron Rich, Ray Shatney, the Foster brothers, and their partners. They're friendly fellows, too. If you drive by them, it wouldn't hurt to wave. Your lights, your TV, your computer and your refrigerator are staying on largely because of their efforts.

