Celebrating 75 years: A look back and a view to the future

As we begin our 75th year of electric operations for you, VEC’s member-owners, the board of directors and all employees wish you a safe and happy new year! As we look to our next 75 years, VEC is on track to provide continued improvements in electric service, while remaining focused on keeping electric rates as economical as possible, despite rising transmission costs and financial pressures caused by the unpredictable fossil fuel market.

Our cooperative’s history is marked by ups and downs that have ultimately led us to the strong position we hold today. During the first 40 years of the electric utility industry, starting in the latter part of the 19th century, electricity was provided primarily to the larger villages and cities throughout the nation where population densities could support the capital investment necessary to build an electric system. It was no different in Vermont. By the 1930s, the federal government recognized that rural areas were falling behind because electric power was not available to most of the residents and farms in these outer reaches. A federal program established under the Rural Electrification Act changed this by making loans available to chartered members to build rural electric systems across the US.

In the beginning
In 1938, the Vermont Electric Cooperative was formed in northern Vermont, and we began an aggressive program to bring electricity to the villages and rural areas un-served by the for-profit utilities. Over the next two and one half decades, VEC membership grew to almost 10,000 farms and families, who could for the first time enjoy modern conveniences like electric lighting, refrigeration, and hot water. Steady growth persisted over the following two decades as VEC’s membership population grew along with the use of more and different electric appliances.

VEC’s business was steady and predictable until the 1970s, when oil from the Middle East became very expensive and many of the nuclear plants under construction in the U.S. could not be completed or suffered severe cost over-runs. Those were tough times for many electric utilities and their customers, as electric rates increased sharply due to the increased cost for wholesale power.

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President’s Message

By Tom Bailey, President
VEC Board of Directors

Co-op Life

Volume 70 Number 1 Winter 2013

CEO Update: Learning from experience, VEC recommends a pause on additional renewable mandates

By David Hallquist, CEO

On December 27, 2011, Vermont Electric Cooperative’s Board of Directors passed a resolution recommending that the Vermont Legislature impose a moratorium, for a period of up to two years, on further renewable power supply mandates. Discussing concerns about impacts on costs and reliability, the VEC board expressed a need to address grid instability along with human health impacts as Vermont moves to adopt higher levels of such resources.

VEC further recommended that a statewide panel be formed, bringing all stakeholders, including utility customers, into the discussion. The panel would participate in developing a renewable energy transition plan to address these issues. This resolution summarizes the two years of discussions that have been taking place at the VEC board level. It reflects the sentiment of VEC members who are concerned about finding balance between rising electric rates and the pace at which we adopt a greener power portfolio.

It should be noted that VEC has taken a different position from some other groups and organizations that are calling for a wind moratorium. As leaders in the adoption of renewable energy, we have learned through experience that intermittent renewable power generation behaves differently from traditional generation, and we believe this issue should be explored more fully before Vermont’s utilities are required to adopt additional renewable power. VEC remains in support of, and will work, all existing requirements.

As recently noted by VELCO, the state’s transmission authority, the electric grid in northern Vermont is reaching its limits in terms of the number of generation projects being installed. The Independent System Operator of New England (ISO-NE) controls our regional grid. ISO-NE determines which power-generation sources will be allowed to run, and when, by adhering to complex operating procedures that are designed to ensure the day-to-day, reliable operation of New England’s bulk power generation and transmission system.

Studies like the ISO-NE-sponsored New England Wind Integration Study and the Electric Power Research Institute’s 2011 Impacts of Wind Integration point to the difficulty and cost of integrating higher levels of intermittent renewable power while maintaining stability of the electric grid. These studies note that intermittent renewables are inherently variable, and it is difficult to accurately predict how much power they will produce at any given time. This means the grid must be able to respond rapidly to fluctuations in generation, because for it to remain stable the amount of power being generated must match the amount of power in demand.

Just as wind or solar power may not be sufficient at certain times to meet continued on page 7
Seeking Director Candidates in 2013: Three VEC Director Positions Open

Vermont Electric Cooperative will host its 75th Annual Meeting of the Membership on May 18, 2012, at Smugglers Notch Resort. An important component of the annual meeting is to give members an opportunity to exercise their voice as member-owners, which is demonstrated in the election of new directors for expiring positions on our Board of Directors. As a cooperative, members democratically elect local representatives to serve on the board. These directors participate in setting policies and making decisions, and are expected to represent the interests of these members.

VEC is seeking applications from qualifying candidates for three positions on the Board of Directors that will become open in May of 2013. Each position will be for a four-year term.

Below is a list of the seats that are up for election and the towns they represent:

**District 2:** Coventry, Derby, and Newport City

**East Zone II:** Albany, Averill, Aversy Gore, Barton, Bloomfield, Brighton, Brownnington, Brunswick, Canaan, Charleston, Coventry, Craftsbury, Derby, Ferdinand, Glover, Greensboro, Guildhall, Holland, Irasburg, Jay, Lenington, Lewis, Lowell, Lyndon, Maidstone, Morgan, Newark, Newport City, Newport Town, Norton, Sheffield, Sutton, Troy, Wanners Grant, Warren Gore, Westfield, Wesmore, Wheelock

**West Zone III:** Alburgh, Bakersfield, Belvidere, Berkshire, Bolton, Camridge, Eden, Essex, Fairfax, Fairfield, Fletcher, Franklin, Georgia, Grand Isle, Highgste, Hinesburg, Huntington, Hyde Park, Isle LaMotte, Jericho, Johnson, Milton, Montgomery, Morrisstown, North Hero, Richford, Richmond, Sheldon, Shelburne, South Hero, Starksboro, Stowe, St. Albans Town, St. George, Swanton, Underhill, Watervile, Westfield, Williston

Persons seeking these board positions must be VEC members, may not be employed by the Cooperative, and may not in any way be employed by or have financial interests in a business selling electric energy or supplies to the Cooperative. Candidates must have a principal residence within VEC territory and in the district or zone in which they are running for election.

VEC is seeking candidates who have the ability and time to fulfill the responsibilities of the board, which include participating in all monthly board meetings and committee activities. The Board of Directors meets in the afternoon on the last Tuesday of each month at VEC’s main office in Johnson. Directors receive a stipend and mileage reimbursement for attending meetings, and have training opportunities to learn more about today’s energy issues and the cooperative model.

For contact the administrative office at 802-730-1172 to request director candidate materials. Completed materials, including a petition signed by VEC members, are due by 4:30 p.m. on April 2, 2013. The election will take place from April 23 through May 17 online and by mail and then in person at VEC’s annual meeting on Saturday, May 18, 2013.

Operations Update:
System improvements yield reliability improvements while holding steady on rates

By Jeff Wright,
Chief Operations Officer

By keeping the Lights On is a core value at the Vermont Electric Cooperative. Providing safe and reliable electric service to all of our members is a daily focus at VEC, literally. Each day at the Co-op begins with our 7:00 a.m. Operations Call, which focuses on safety, schedules, and a discussion of outages from the previous day. More than half of the company’s employees are engaged in the discussions, which often result in follow-up visits to trouble areas to ensure future reliability. VEC maintains more than 2,500 miles of electric lines that deliver energy to approximately 32,000 members, and with only 15 members per mile on average the job seems Herculean at times, but is one that all VEC employees are proud to be a part of.

If we turn the clock back five or six years, VEC was faced with mounting reliability concerns, frequent complaints of poor service, and the daunting task of correcting years of deferred maintenance. The effort seemed simple to this Co-op employee until we started to develop cost estimates for the voluminous strategies being discussed. Faced with a historic economic downturn and rising Vermont and New England transmission costs, it was critical that VEC worked smart and limited the rate impact to its members. Working in our favor were lower power supply costs; this was a critical factor that contributed positive variances to annual operating budgets and somewhat eased the pressures on members’ household budgets through very difficult times. VEC’s employees also helped by agreeing to a one-year pay freeze. With momentum in our favor, VEC began to see improvements in its reliability measures, and every year since 2006 VEC has beat its goals. Not surprisingly, right of way maintenance was one of the most important initiatives that needed focus. A fresh look at ROW management policies, the addition of some key expertise, and increased funding have led to a vegetation-management program that we are all proud of. VEC is working toward a prescribed maintenance interval for both its transmission and distribution systems. At a rate of more than 200 miles per year, there are some areas we have not visited yet, but priorities are set, routines are adjusted, and the plan seems to be working. In addition to improving reliability, the clear rights of way allow line workers to identify and access problems more easily, which has led to improved outage-restoration times and made our jobs easier during storms. Other O&M (Operations & Maintenance) initiatives include pole testing and treating, inspections and corrective maintenance, all of which play an important role in our list of strategies.

Capital projects are also playing a critical role in improving reliability, reducing O&M needs, and most importantly, improving the safety of our facilities. VEC has set a goal of maintaining flat capital budget and has done so, with some small variances, which has helped limit rate impacts. A strategy that is proving successful is leveraging our approved capital funds by forming partnerships with others such as Green Mountain Power, the U.S. Department of Energy (DOE), and the U.S. Economic Development Agency (EDA). These partnerships resulted in external contributions to our efforts which were already etched into our long-range plans. DOE has helped VEC complete its automated meter goals, GMP contributed to some badly needed transmission upgrades in the Jay and Lowell area, and the EDA is helping to fund a new power line that will connect the Canaan and Norton areas to Vermont’s electric grid. VEC has leveraged these partnerships in a way that maximizes the benefits for VEC’s members.

The world is becoming a different place – a place where people have much higher expectations of their power grids than ever before. VEC is up to that challenge.

VEC to hold 75th Annual Meeting of the Membership

**When:** Saturday, May 18, 2013 @ 10:00 a.m.

**Where:** Smugglers Notch Resort, Jeffersonville, VT

**Why:** It’s an opportunity for you to exercise your voice as a member-owner of this cooperative!

Join us and hear about today’s energy issues or share your thoughts with one of VEC’s directors or staff. Keep an eye out for your official Notice of Annual Meeting and voting ballot, which will be mailed on April 23. Hope to see you there!
Closed-Loop Systems

Geothermal energy, for home heating, and also cooling, and sometimes for heating domestic hot water, is a form of renewable energy that’s been around for some 70 years. In this part of the country, it hasn’t had a great track record. Over the past five or six years, however, the technology has improved to the point that this form of home heating, long identified with the South and warmer climates, has gained traction in Vermont.

And rightly so. There are a number of graphics from various sources on the Internet—bar graphs, line graphs, charts—that compare geothermal heat to the more standard forms of home heating in Vermont, and they are strikingly consistent in their conclusions. For instance, operating these is the most costly for home heating, followed, in declining order of cost (meaning, the following fuels are the most expensive), is electricity. It takes electric power to pump the fluid from the ground into the house, but the largest draw for this compressor that increases the heat. It’s not an inconsequential amount. Still, that’s a tradeoff, and an interesting one for Vermonters concerned about their carbon footprint.

Your fuel bill will go down but your electric bill will go up,” says Evslin. “But the net effect is that you save a lot of money, and you’re displacing oil (the most common heating fuel in Vermont), which is a pollutant, with electricity that comes, in this state, from a hydro source, a renewable source [solar or wind], or nuclear. So you’re helping to reduce emissions and our dependency on foreign oil.

And you’re saving money, almost everywhere in Vermont. A few towns have electric rates that discourage electric power, but anywhere in Green Mountain Power territory or the former CVPS territory or Vermont Electric Co-op, it’s a very good idea.”

Types of geothermal

However, it is still not a simple one. “There’s more brain power in putting in geothermal than typical oil or gas. That’s what makes it interesting,” says Claude Chevalier, president of Chevalier Drilling Company in High Springs. He has been involved with geothermal since the mid-1970s, when the company put in an open loop ground system to heat its shop and office in response to the first oil embargo, when fuel prices skyrocketed. People got used to that price volatility, however, and there was little popular interest in geothermal.

That changed, Chevalier says, in 2008, when oil prices spiked again. Fortunately, by then the industry had matured and was more ready to provide reliable, cost-effective systems. His company recently completed what Chevalier believes may be the largest closed loop field in Vermont, for St. Michael’s College in Colchester.

So—finally—what about “closed loop” and “open loop” systems? These are the two types of ground source geothermal heating systems.

• Open loop. Open loop systems draw their water from a well (the bottom of a pond can also be used, but that’s rare in Vermont) and pump it to the heat exchanger in the house. The water, then slightly cooler, is returned to the outside and discharged, perhaps into the same or a different well into or into a pond. It’s “open” because it allows for that discharge.

• Closed loop. Closed loop systems keep their fluid within the circulating system, with no discharge. Like open loop systems, these are ground-source applications, and require drilling. But the goal is not necessarily to hit water, so they are usually called “bore holes” rather than wells; the earth’s warmth, without water, will do just fine. The tube is inserted, and the hole around it is backfilled with a grout to enhance the conductivity of the ground warmth to the plastic piping. Just as with the open loop, the fluid is circulated to the heat exchanger, then back outside, but in this case it stays in the pipes and continues to circulate.

Why is it called fluid, rather than water? It may not even be water; it may be glycol (a type of antifreeze), or a solution of glycol and water.

To add just a bit of complication, there are different kinds of closed loop systems, mainly “determinate” and “indeterminate” or “closed loop.” The former is used in closed loop systems, which are more likely to be so-called “closed loop” systems, since they operate at 300 percent to 400 percent efficiency.

That’s another thing to wrap your mind around. Mark Yureck, whose company, Radiantworks Heating & Solar, installed Evslin’s system in Stowe (Evslin gained experience by assisting in the earlier installation in South Hero), says people commonly ask, “How can something be more than 100-percent efficient? When I start describing the technology they their eyes glaze over.”

But it’s not that hard. Jacob Marin, an energy consultant at Efficiency Vermont, explains, “For every unit of energy you put in, in these systems, you get three units of heat energy out.”

But wait! There’s no combustion, so what energy are you putting in? Electricity. It takes electric power to pump the fluid from the ground into the house, but the largest draw for this compressor that increases the heat. It’s not an inconsequential amount. Still, that’s a tradeoff, and an interesting one for Vermonters concerned about their carbon footprint.

“Your fuel bill will go down but your electric bill will go up,” says Evslin. “But the net effect is that you save a lot of money, and you’re displacing oil (the most common heating fuel in Vermont), which is a pollutant, with electricity that comes, in this state, from a hydro source, a renewable source [solar or wind], or nuclear. So you’re helping to reduce emissions and our dependency on foreign oil.

And you’re saving money, almost everywhere in Vermont. A few towns have electric rates that discourage electric power, but anywhere in Green Mountain Power territory or the former CVPS territory or Vermont Electric Co-op, it’s a very good idea.”

Financial, environmental benefits

In fairness, there is a lot to wrap your head around, although it’s not that these systems are enormously complex. Once installed, in a retrofit (changing the system in an existing home), they can be attached to the heating system already there, such as forced air, baseboard hot water, or radiant floor heating. The same goes for new construction. The duct work in Mansfield’s spec house in Morrisville, which uses a hot air system for heating and cooling, is basic and familiar. What’s hard for people, initially, to grasp is that there is nothing burning—it’s from the elements around them: the ground, and in some cases, the air.

Tom Evslin, a VEC member with a home in South Hero heated by an open loop geothermal system (remember that Mansfield’s spec house is closed loop), likes to say that with geothermal you’re “mining” heat.

“The science behind it is that you’re not creating heat, as you would with any other heat source,” says Evslin, who is well known as a blogger on energy matters, the founder of NG Advantage (a natural gas delivery company), and a member of the Stowe Select board. “You’re extracting heat, in my situation from well water. And that’s different.”

The common analogy for the way geothermal heat systems operate is the good old, farm reference to refrigeration. The refrigerator has a compressor motor that “squeezes” the heat out of the air within the unit so that the temperature drops; that’s why the coils on a refrigerator are always warm. Geothermal heating systems do the same thing, but in reverse. At Evslin’s South Hero home, and at his main home in Stowe, which he has also retrofitted with an open loop geothermal heating system, the source of the heat that’s compressed, or “concentrated,” is ground water.

Ground water is not hot, but it’s not cold, either. If you go deeper than the frost line, usually five or six feet deep, the earth’s temperature is consistent, year ’round, at about 50 degrees Fahrenheit, even in Vermont. It’s actually solar heat (solar energy) absorbed from the sun by the ground, and stored in the mass of the earth.

“You manage to extract some of that heat out of the water,” says Evslin, “so the water comes in at 50 degrees and leaves at 45. The compressor then jacks up that heat from 120 degrees to heat the floorboards.” (Evslin’s home uses radiant floor heating.)

So now you’ve heated your home, and you’ve done it without combusting fuel. But the icing on the cake for geothermal enthusiasts is that if they are well-installed these systems operate at 300 percent to 400 percent efficiency.
VEC Engineers: Protecting The System Today, Preparing It For Tomorrow

An electric utility’s service territory has boundaries, but it is not a static thing. Inside those boundaries changes are happening to the electric system all the time, some small and mundane, others larger and very significant. It’s the job of the engineering department at Vermont Electric Co-op to make sure that those constant internal changes don’t affect the service VEC provides to the rest of its members. Reliability and power quality – the assurance that the power will be there when it’s needed, at the proper voltage for members to operate their electrical equipment safely – is the first order of business.

At the same time, however, the engineering staff has a duty to respond to people’s requests for new or altered energy services. They pose challenges, like these, each day to the engineering staff:

• Here’s someone building a new house in our VEC service territory. What will be involved in getting power to it?
• Over there a business is expanding. What kind of electrical equipment will it use? How much power will that require, and is our system in that area prepared to deliver that power? Will we need to change the conductors (power lines), transformers, and other equipment to meet that need?
• This VEC member has called requesting our engineering services, and we’ll walk him through the process so things fall into place and he’ll come away satisfied. But that member a few towns away really needed our services a month ago to get ready to open her new business, only she didn’t realize it and didn’t contact us in time. It’s going to require more than just a simple connection. How can we work with her to resolve this dilemma?
• We’ve got aging poles and wires along a certain roadway and need to rebuild the Co-op’s system there. You need to engineer it before you can build it, so let’s get started.

Then, in the midst of all this there’s suddenly a storm that blows down trees and power lines. That changes things quickly for the engineers. They’ve got to go “bird dogging” for the line crews – scouting damages so the crews can keep their focus on repairs.

“We’re an operating company,” Bart Bacon, a veteran engineer (and a former lineman himself), points out. “We’ve got our planning work to do, but this company is operating a power system 365 days a year, 24 hours a day, and that always comes first.”

VEC’s engineers face these challenges every day, and others of even greater magnitude, like designing the power-supply system for an expanding resort, or (a different challenge entirely) working with the developers of a large renewable-energy project to support it.

VEC’s systems engineers have to take the long view. They are responsible for In- termediate Resource Planning, an exercise required periodically by state regulators. It involves projecting how much power VEC will have to obtain to provide for its members’ future needs, analyzing the system’s capacity, and planning the technological changes that will be necessary to meet that demand.

Meanwhile, plenty of changes are already here for rural electric systems. There’s net metering, in which grid-connected members who generate power for their own use sell their excess power to their utilities. And now there’s group net metering, a more complex version of the concept. Additionally, we are entering the age of “distributed generation” – local generating facilities that add their power to the VEC’s wholesale electricity purchases. They are encouraged by state programs that promote renewable energy, particularly SPEED – the Sustainably Priced Energy Development Program, which guarantees the developers of projects up to 2.2 megawatts an attractive return.

From an engineering standpoint these are a very mixed bag.

“They can be cow power, solar, or wind,” Denis explains. “We start with a systems impact study to determine what the requirements will be for them to safely interconnect with us. The field engineers will then give them an estimate of the costs, and they’ll take all that information to the Public Service Board to apply for a CPG,” a certificate of public good, a regulatory requirement.

Isaac Gillen, a field engineer, adds an important point: “The owner of the generating system pays for the requirements coming out of the system impact study,” he says. “Those costs aren’t subsidized by the Co-op’s membership.”

VEC is involved with several SPEED projects, including farm methane generation in Coventry, Troy, and Berkshire, and hydro in West Charlestown, among others.

From net metering to advanced metering to SPEED, the veteran engineers have seen a lot of changes in the utility industry over the years. One can only imagine what Mike Beaulieu, fresh out of college with his Electrical Engineering degree, will see and learn about over the course of his career.
When used properly and safely, electric blankets and other heating devices can help keep you toasty during cold winter months. Here are a few safety tips for electric blankets and heating pads to keep in mind:

- Purchase items only if they have been approved by an independent testing facility, such as Underwriters Laboratories (UL).
- Inspect all cords and connections for cracks and frayed edges, which are a huge fire and injury hazard. Replace blankets or heating pads with faulty cords.
- Discard your blanket or heating pad if you see dark or charred spots on the surface.
- Do not put another cover on top of an electric blanket unless the safety instructions included in the packaging specifically state it's safe to do so. Some newer models protect against overheating.
- Once your electric blanket or heating pad is switched on, keep it laid flat—a folded device can cause a fire, as can a blanket that's been tucked in (which can bend wires).
- Never use heated bedding while asleep—look for a model with a timer that switches off automatically.

Space heaters

If you choose to use a space heater to supplement your home's heating system, some of the same rules of thumb apply, including purchasing a safety-certified model and reading the included safety instructions. More tips for space heaters:

- Keep units 3 ft. away from combustible materials—such as bedding, drapes, clothes, and rugs. Space heaters also have parts that can spark, so avoid using them in areas where you store flammable liquids like kerosene and gasoline.
- In general, plugging space heaters directly into a wall outlet is best. If you must use an extension cord, make sure it's the correct type and boasts the right gauge wire size for your particular space heater. Otherwise, use a wall socket that can handle the load.
- Check safety instructions before using a space heater around water—some models are not intended for use in bathrooms.
- Be sure children are supervised around space heaters. Curious exploration can lead to electrical shock and burns.
- Finally, unplug and store the space heater in a safe place when you're not using it.

Which electric space heater is the most energy efficient?

Q. Our house is pretty drafty and we're looking at electric space heaters to help keep us warm this winter. Can you recommend an energy-efficient model that isn't too expensive?

A. I wish I could give you a simple answer but the truth is electric portable heaters are all pretty much the same, efficiency-wise, and none of them are energy efficient. Any claim of energy savings made on these heaters is based on the assumption that you’ll be turning off your central heating system, but it doesn’t sound like that’s what you’re looking for here (and it’s rarely a good idea, anyway).

You mention drafts, and that leads me to wonder if your home is as well-sealed or insulated as it could be. Have you considered doing some weatherization work? If it were my home, I would have a certified contractor conduct an energy audit and then do the work necessary. That’s the best way to address drafts—the way that will save you the most money in heating costs and keep you the most comfortable. If you’re more of a do-it-yourself type, we offer services to help you through that process as well.

Other, simpler ways to address drafts or a lack of heat in your home include: changing your furnace filter, applying weather stripping to doors and windows, and vacuuming or dusting heating vents so that heat can circulate. Also, if you have a fireplace then make sure the vent is closed when you’re not using it.

And, finally, if you think you might qualify as low-income then contact your local weatherization agency, or visit www.dcf.vermont.gov and see if they can offer you any assistance. If you’re still not sure what to do, contact us and we can help you identify next steps. Good luck and thanks for a great question.

- Bob for Ask The Home Team

**PUBLIC NOTICE**

HERBICIDE USE NOTIFICATION

Vermont utilities maintain electric line rights-of-way with several methods, including the selective use of herbicides on trees and brush. They also encourage live-growing shrubs and trees which will crowd tall-growing species and thus minimize the use of herbicides. The application of herbicides may start as early as April 1. Requests to utilities for notice by mail, however, must be made by February 15.

The Public Service Board requires Vermont utilities to carry out vegetation management techniques which allow maintenance of electrical systems in a cost-efficient manner.

The types of herbicide treatment used to maintain vegetation on utility rights-of-way include the following applications: stump, injection, basal, soil, and foliar. These are the commonly used methods; your local utility may use other methods. Landowners have the option of requesting a utility to apply herbicide treatment on cut stumps only or that a utility refrain from applying herbicides. In the latter case, the landowner has to pay the utility an administrative fee. Only electric utility rights-of-way that have tall-growing tree species with the potential of threatening the electric utility system are treated.

Utilities advertise by mail and newspaper prior to herbicide applications on all lines. Utilities typically treat rights-of-way once every four-to-six years, depending on the utility's specific vegetation management cycle. Please check with your utility regarding the vegetation management cycle of particular lines.

Some utilities identify their poles with metal letters and numbers, e.g., J E C (Vermont Electric Co-operative) or V E L C O (Vermont Electric Power Company). These markings are not found on every utility pole. However, by checking for several poles in a line, you should be able to find a marked pole and determine which utility owns it.

Persons owning or occupying land within 1,000 feet of a utility right-of-way may request in writing that the utility refrain from applying herbicide. In the latter case, the landowner has to pay the utility an administrative fee. Only electric utility rights-of-way that have tall-growing tree species with the potential of threatening the electric utility system are treated.

Persons owning or occupying land within 1,000 feet of a utility right-of-way may request in writing that the utility notify them individually by mail anytime, but at least 30 days prior to treatment of the line with herbicide. The landowner or resident is responsible for notifying the utility, in writing, to request placement on the mailing list. The utility should be provided with sufficient information to allow the placement of the residence and land. A list of each landowner or resident to make the utility aware of the location of any potentially affected water supply, and any environmentally sensitive areas where herbicide application ought to be avoided.

CONTACT YOUR ELECTRIC UTILITY WITH QUESTIONS OR SUBMIT THE COUPON PROVIDED

**LANDOWNER REQUEST TO BE ADDED TO HERBICIDE TREATMENT NOTIFICATION MAILING LIST**

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We need all of this information in order to determine if you qualify for personal notification. If information is incomplete, please state why. Use an extra sheet of paper if you need more space.

RETURN TO YOUR LOCAL UTILITY

**PUBLIC NOTICE**

Visit wattWATCHERS at www.vermontelectric.coop to view your hourly and daily usage data.
with other electric system improvements, has cut the number and duration of outages for VEC members significantly. In 2007, members on average were experiencing 3.2 outages per year; today the average is less than half of that. While there are still a small number of locations that have not received new equipment, we continue to move to utilize technology that has headed us in the right direction by improving service for all VEC members.

VEC today

Today, VEC is focused on maintaining the lowest electric rates possible while improving electric service reliability. Since nearly 80 percent of our day-to-day operating costs are driven by the price of wholesale power, along with transmission costs to deliver this power to our service territory, we have focused on a rational plan that has kept rate increases to a minimum. Internal workers refer to this as “hitting singles,” rather than taking chances trying to hit “home runs.” This has proven to be a very practical and responsible approach in today’s power market.

The path to future success

As we look to our immediate future we are on track to continue improving our electric service and we will focus on keeping members as capital intensive as possible. In 2013 we will mark a new chapter in VEC’s history when we issue patronage capital to members for the first time. Our Co-op has done increasingly well over the past five years, and now, with an equity balance that exceeds 40 percent, your board of directors is working closely with VEC’s management to establish a plan to begin paying our patronage capital dollars to you, our member-owners. We have designed a plan that complies with our bylaws and conforms to IRS regulations, is fair to all members, and will be sustainable in future years. We look forward to making our first distribution in the fall of 2013. It’s a way for the VEC organization to share success and equity with the people we serve, and who actually own their electric utility.

The future holds challenges. We are faced with sharply increasing regional transmission costs and an unpredictable fossil fuel market. On the positive side, the future also holds opportunities. For example, our cooperative is conducting a consumer study for the U.S. Department of Energy that will put us on a course to roll our optimal incentive rates; these are differentiated rates for peak and off-peak power, and will enable consumers to save money by timing their use of major appliances for off-peak hours.

Earlier in my career in the electric utility industry, our chairman was famous for saying, “a company must do well before it can do good.” This same rule is applicable to VEC now, with our plans to initiate patronage refunds and provide our members with advanced electric services that will enable them to save money and experience the benefits of technology.

How to Clean Up a Broken Compact Fluorescent Lightbulb (CFL)

1. Ventilate the room, then wait 5 to 10 minutes.
2. Scoop up powder and glass fragments using stiff paper or cardboard.
3. Use duct tape to pick up any fragments or powder.
4. Immediately place all materials used to clean up and the plastic bag in an outdoor trash container. Remember to wash your hands.
5. Not all recycling centers accept broken CFLs. Check with your local and/or state waste authority for disposal requirements, or visit Earth911.com.

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Celebrating 75 Years: A Look Back

The doers

“I’d say we have the majority of the contact with the membership,” says engineering coordinator Denise Durivage, explaining one of the differences between the field engineers and their systems counterparts.

“We’re the first point of contact,” Isaac Gillen says.

They handle the day-in/day-out projects, which are often the most immediate and important ones in the daily lives of Co-op members.

A common example is a new connection. The best way for people to start this process is by calling the Co-op, where they will be forwarded to Durivage. She answers their questions and walks them through the application on VEC’s website, and links them up with one of the engineers. Even with this seemingly simple project there are decisions for the new member to make, such as whether to get an overhead or underground service to the house. The field engineers provide the information to help them decide.

It gets a little more complex when the customer is not a resident, but a business. The engineers confer with the owner or supervisor to determine the size (amperage) of the service they’ll need as well as the transformer. That can be pretty straightforward if it’s a new business going in and the owner is sticking to the plan. It’s more challenging if it’s an existing business or commercial enterprise that has added new electric equipment. It’s unfortunately true that many of us (residents included) are not aware that there can come a time when we’ve added more than our electric service can handle.

VEC’s field engineers can be a resource to prevent such problems, and prevention is always better than remediation.

A word about sugarhouses!

No story about VEC’s engineering team would be complete without mentioning one of their greatest concerns: the growth and development of the maple sugar industry.

Sugarhouses have become destination spots for tourists, and Vermonters out for an old-fashioned treat. But sugarhouses aren’t always old-fashioned anymore.

“Back in the day a 100 amp service was more than plenty for a sugarhouse,” says Bacon. “Now we’ll have 800 to 1,000 amps, and even in a small sugarhouse they’ll have a reverse-osmosis setup.”

Basically, they’re not firing with wood anymore,” Gillen interjects. “It changes the transformers, the conductors… everything they need."

The worst experience, for the operator, is when his sugarhouse blows a transformer because he has added sophisticated equipment without realizing he should have notified the Co-op to make sure his electrical service can handle it. At its best, the work of the engineers is to help people plan for their power usage ahead of time so they’ll have suitable equipment and service. The dreamers do this on the macro scale, and the doers do precisely the same thing on the more intimate, daily scale. Both jobs are critical, and they work together to provide safe and reliable delivery of electricity to every VEC member, everywhere in the territory.
The Geothermal Alternative

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A newly installed Geothermal Heat Exchanger

like Claude Chevalier – not Claude Chevalier the well driller, but Claude Chevalier the homeo- nist. In 2008 he had a second ground source system installed at his home, since he was happy with the one at his office from the 1970s. He metered his electric consumption separately and kept track of the energy savings compared to what he would have spent on fuel oil at his dealer's budget prices.

That first year I saved $5,000," he says. “I loaded up the whole family, and from the money I'd saved I took everyone to the Grand Canyon."

Some say the drawback of air source heat pump systems in Vermont is that they become less efficient functional as the temperature drops; there's not as much heat in the outdoor air to harvest. Mark Yureck isn't so sure.

"The heat pump only works to about 30 or 32 degrees outside, so you need a backup system," he agrees. "But our temperatures are most of the time, especially in the shoulder seasons. In Vermont, when we design heating systems it's for the worst-case scenario — 30 below zero with a 20-mile-hour wind. That’s 2 percent of the heating season. So generally our systems are sized. It brings the cost down to go to a heat pump and have an efficient furnace that will kick in when it gets colder. You’ve minimized your cost and you're saving energy, up until December, anyway."

Caution still in order

Geothermal heat pump technologies have come a long way since the 1940s. Pope Meadow developer Scott Mansfield says he's seen older systems that were so large and inefficient that their owners simply abandoned them. Even more recently there have been so-called "reboots," like in the case of the Kingman residences in 2012.

Some of these issues have also been noted elsewhere, as more renewable energy projects have come online. For example, in the Pacific Northwest, and Texas have experienced difficulty integrating wind projects because their intermittent nature can lead to grid instability. Germany's Der Spiegel magazine reports that, “Sudden fluctuations in Germany’s power grid are causing damage to a num- ber of industrial companies. With over 300 megawatts of wind power currently out of commission in some areas, businesses have been hit by a sudden drop in power availability. The problem arises because the wind power cannot be transmitted by the power grid. Instead, it must be sold at a very low price, often below the cost of production. This has led to a significant financial loss for many companies that have invested in wind power projects." In other regions, homeowners should ascertain their provider’s experience with geo- thermal and heat pump technology. It’s more prevalent in Vermont than it used to be, but the calculations and mechanical installations aren’t in everyone’s wheelhouse.

That said, there are signs that today’s homeowners may end up with a system that’s better in every way. A vital component is the installation partner. In many cases, the homeowner may end up with a system that’s better in every way. A vital component is the installation partner. In many cases, the homeowner may end up with a system that’s better in every way. A vital component is the installation partner. In many cases, the homeowner may end up with a system that’s better in every way. A vital component is the installation partner.
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