Come a major exporter. Domestic production has increased so much that the U.S., which just a few years ago was importing much of the energy it needed, has become the world’s largest natural gas producer, and may become a major exporter.

But in our region of the country it’s a different story. When the governors of the six New England states met with the premiers of five eastern Canadian provinces in Breton Woods, New Hampshire, in early July, the volatility in electricity prices caused by an inadequate pipeline infrastructure carrying natural gas to New England was a point of major concern. The region is heavily dependent on natural gas both for heating and power production, yet when demand spikes in winter there is not enough fuel for both. Problems that this situation has caused for New England’s electric supply have become so severe that the governors asked the Canadian premiers to consider whether the states could purchase more electricity from their sources. (Besides Hydro-Quebec, there are large new hydroelectricity sources being developed in Labrador.)

We first noticed the problems in early January 2013, when prices for power skyrocketed from the usual market price of $45 per megawatt-hour to more than $200 per megawatt-hour (MWh). The price remained high for about five weeks. During that brief period, VEC experienced a negative budget variance of $1.4 million. This was primarily the result of paying for our “open” positions. For the past few years, VEC has made it a practice to secure 90 percent of our power supply through long-term contracts with reliable providers, with the remaining 10 percent purchased on the open market. This practice has saved members money because we’ve been able to take advantage of relatively low-cost opportunities on the market. In response to those 2013 losses, however, VEC closed up one-half of that open position for 2014, boosting our contracted supply to 95 percent of our projected energy needs and leaving only 5 percent to be bought on the market.

Unfortunately, 2014 proved to be even worse than the year before. In last winter’s cold weather, power prices skyrocketed again in January and this time they didn’t come down until April. With only 5 percent of VEC’s power supply purchased on the open market, we still incurred a budget variance of $1.1 million. Region-wide, New England ratepayers incurred $3.2 billion in additional costs, according to Connecticut Gov. Dannel Malloy at the Breton Woods conference.

The good news is that in 2013 we were able to work within our budget to offset much of the unexpected power costs we experienced, and we’re working toward the same end in 2014. However, the rest of New England has not been as fortunate. Region-wide, the added un-budgeted costs to utilities for obtaining power for their customers reached several billion dollars, and those losses will begin to show up on customers’ electric bills in Massachusetts and Connecticut this fall.

So what is going on? If America is truly awash in natural gas, this shouldn’t be happening.

The answer is that New England has moved much of its energy infrastructure to natural gas, yet no additional pipelines have been built to provide us this fuel, which comes to us from places like the Gulf of Mexico and the Marcellus shale region of Pennsylvania and West Virginia. In 2000, 15 percent of New England’s electricity was generated from natural gas; today more than 50 percent comes from gas. Some New England states have also implemented programs to switch residential and commercial customers from propane and home heating oil to natural gas, which further exacerbates these pipeline constraints. Natural gas used for residential and commercial heating gets a priority over electricity and the power plants bid against each other for what remains.

There is no question that this problem has reached crisis level.

“The challenges to grid reliability are not a question of if they will arise, but when. And when is now,” said Gordon van Weel, president and CEO of ISO New England, operator of the New England power grid, in ISO’s 2014 regional electricity outlook report. In a letter to the Federal Energy Regulatory Commis-

Continued on page 6
Hallquist’s remarks several members added their own compliments, one commending the line crews “for their professionalism, courtesy, and skill,” and another noting that she had called the Co-op “repeatedly” during the extended storm. “The employees couldn’t have done more to help me,” she said. “They were outstanding, absolutely outstanding.” These comments were met with warm applause. Destructive as the ice storm was, however, Hallquist’s message was that we – the Co-op and those who rely upon its – must prepare for worse.

“We lost 17 poles in this event,” Hallquist said. “I recently talked to a representative of a utility in South Dakota where they lost 7,000 poles.” He paused to let that sink in.

“We know we have not yet experienced ‘The Big One,’” Hallquist said. “We know over time that we are going to experience some of these storms, that we have to be prepared for that. But for nothing was Hallquist’s report titled ‘Are You Ready!’ Citing the deaths that had occurred, Hallquist encouraged members to check in on their neighbors during such emergencies, and displayed a screen image detailing the contents of a Basic Emergency Supply Kit. It included abundant water for drinking and sanitation, a minimum three-day supply of non-perishable food, flashlights and batteries, assured tools, and more. (Members can contact VEC for a copy of this checklist.)

To drive the point home, Hallquist asked a member to pull a name from a box, and awarded the winner, Charlotte Kenney, a well-stocked kit to take home.

Incumbents re-elected

One of the important functions of the VEC Annual Meeting is to finalize the voting for candidates for the Board of Directors, and to announce the results. The elections this year were confined to District 3, District 4, and District 5 – all for four-year terms. In District 4, six-year incumbent Mark Woodward, of Johnson, ran unopposed and received 334 votes to reclaim his seat.

In District 3, incumbent Carol Maroni, of Craftsbury, first elected to the Board in 2011, won re-election with 373 votes over challengers Chuck Farrick of Troy and John Klar of Irasburg. In District 5, Westford’s Michelle DaVia, who held the office of secretary on the Board, faced challenges from Andrew Doe of Essex Junction and Caleb Elder from Starkboro. DaVia was re-elected with 299 votes.

With no special items on the ballot, competitive races in only two districts, and no Directors content in four VEC districts, voting totals were lower this year: 1,536 ballots cast in 2014, as opposed to 3,931 a year ago.

Triumphs, in spite of it all!

Delivering the Treasurer’s Report, CFO Bursell pointed out that despite the ravages of the December ice storm, the financial toll on the Co-op could have been much worse: covering these one-time storm costs could have necessitated an immediate 10-Percent rate increase for VEC members.

But even as hundreds of line workers were struggling to rebuild lines and reconnect Co-op members, VEC’s executive team was conferring with Vermont Emergen-
Members Helping Members

VEC Community Fund

Members Helping Members

Vermont Electric Co-op members have a new opportunity to help their communities. The VEC Community Fund is a program recently adopted by our Board of Directors intended to strengthen the community by supporting non-profit organizations in VEC service territory that promote community development and economic security.

The concept underscores a basic cooperative principle of neighbor helping neighbor.

Members can contribute to the Community Fund in the following ways:

- Members can “round up” on their electric bill to the nearest dollar.
- Make a one-time donation.
- And former members can choose to donate their returned Patronage Capital dollars.

Participation in the program is voluntary. Funds collected will be allocated to worthy causes on a quarterly basis. For more information, or to enroll, contact member services at 1-800-VEC-COOP (832-2667).

VECs Co-op Community Solar

VECs Co-op Community Solar is a co-op-owned solar farm in development and its first phase is planned for completion in 2015. A portion is expected to be available for members to subscribe to through net metering; the remainder will be owned by VEC. The output from the entire project will add perhaps as much as 5 megawatts (MW) of locally produced, renewable energy to VECs power portfolio.

The Co-op is currently studying various sites to locate this solar project, which might be spread across multiple locations. While pricing and other details are still in development, VEC does expect to be able to offer the project to members at an attractive price. Stay tuned for more details as they become available.

Net Metering Update

In April of 2014, the Vermont Legislature raised the cap on net metering from 4 percent of a utilitys peak demand (being supplied by its net metering customers) to 15 percent, allowing VEC to reopen to the program and resume accepting net metering applications. VECs 15-percent cap is allocated as follows: 4 percent existing as of 2013; 4 percent to be set aside for members participating in VECs Co-op Community Solar project; the remaining 7 percent to be allocated (at 2.3 percent a year) among VEC members joining the net metering program in 2014, 2015, and 2016. Since the cap was raised, VEC has received around 140 new applications, which, if approved, will amount to 1 percent of VECs peak demand.

VEC Accepting Sealed Bids for Vehicles & Equipment

VEC has vehicles and equipment for sale, and we are accepting sealed bids for these items from interested members until 4 p.m., September 12, 2014. Seal all bids and indicate item number on the outside of the envelope.

Please submit bids to the attention of Laura Kinney, Purchasing Agent at Vermont Electric Coop, 42 Wescom Road, Johnson Vermont 05656.

All vehicles or equipment for sale have high mileage and may be in need of mechanical or body work.

Questions pertaining to the above vehicles and equipment located at the Johnson warehouse may be directed to Mark Bennett at 802-730-1220. All vehicles/equipment for sale have high mileage and may be in need of mechanical or body work.

VEC reserves the right to reject any or all bids that, in its sole judgment, are not acceptable. All vehicles/equipment are sold on an “AS IS” basis, with no warranty expressed or implied. Risk of using any of the vehicles is completely assumed by the purchaser.

Located at the Derby Warehouse:

Item #1: 2003 Ford F-250, (VIN #D41952), Four wheel drive, Mileage is 192,828+

Item #2: 2002 Ford F-250, (VIN #C27167), Four wheel drive, Mileage is 195,026+

Item #3: 2008 Ford Escape Hybrid, (VIN #B45457), AWD, Mileage is 207,926+

Located at the Johnson Warehouse:

Item #4: 2008 Ford Escape Hybrid, (VIN #B33204), AWD, Mileage is 168,995+

Item #5: 2003 Ford F-550, Bucket Truck (VIN #C47741), Four wheel drive, Mileage is 182,987+, VERSALIFT, VO-40 MHI Material Handling Boom (40’), Reading service body, 6.0L Diesel (Please note this unit has a reserve price)

What’s New at Vermont Electric Co-op?

At VEC, we are committed to delivering value to members by offering relevant and innovative services that anticipate and exceed member expectations. We are excited to announce the launch of two new member programs that support our goals of enhancing services to you, our member owners.

SmartHub

A New Tool for Vermont Electric Co-op members

In mid-June, VEC transitioned our online billing service to an enhanced account-management tool called SmartHub. If you were once an eBill user, you will use the same email and password you’ve always used to access your account, but instead of logging into eBill, you’ll log into SmartHub.

Available for your computer, smart phone, or tablet, SmartHub offers convenient access to everything you need to manage your VEC account. In addition to paying your bill, you are able to view your power-usage data, report an outage, and set up alerts to notify you when your power is out and when it has been restored.

Get started with SmartHub today at vermontelectric.smarthub.coop or scan the QR code to download the free SmartHub Mobile App for your device.

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Solar at VEC

Sunny weather is here to stay (at least for a few months), and more options than ever are available to Vermonters interested in harnessing the energy that the sun provides. Right now VEC members can install solar generating systems at their own homes or consider joining a community solar farm to receive the benefits of solar energy. VEC is working to make going solar easier and more affordable for all members.

VECs Co-op Community Solar

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The Facts on Lower-Cost Heating with Heat Pumps

By T.J. Holloway, Energy Consultant & Vermont Electric Co-Op Member

These days, a lot of my customers are asking me about air-source heat pumps. As you may know, heat pumps, installed in a well-insulated building, can keep homes warm at a fraction of the cost of running traditional heating systems. I'm a Senior Energy Consultant at Efficiency Vermont. I'm also a VEC member and I'm happy to provide fellow members with information that I share with my customers. Here are the questions that come my way most:

What is an air-source heat pump?
This is equipment that extracts heat from outdoor air (yes, even freezing winter air) and then pumps it into your house to keep you warm. In the summer, the heat pump system reverses direction to keep you cool by extracting and expelling heat from your house. The process is actually the same as the one in your refrigerator, which removes heat to create a cold space for your food. There are also air-source heat pumps for water heating.

How can a heat pump save money?
Heat pumps use less energy because they move, rather than generate, heat. Under the right circumstances, using a heat pump can reduce your annual heating costs by as much as 50 percent. It's important to note that heat pumps can supplement — but should not replace - your existing heating system (more on that below). Here's a glimpse of the kind of savings that can be realized by installing heat pumps and reducing the use of your primary heating system:

<table>
<thead>
<tr>
<th>CURRENT FULL TIME</th>
<th>Electric Resistance</th>
<th>Propane</th>
<th>Oil</th>
<th>Pellets</th>
<th>Coal/Wood</th>
</tr>
</thead>
<tbody>
<tr>
<td>COST OF FUEL</td>
<td>$0.57 / Wh</td>
<td>$2.95 / gallon</td>
<td>$3.75 / gallon</td>
<td>$2.47 / ton</td>
<td>$9.33 / cord</td>
</tr>
<tr>
<td>ANNUAL SAVINGS</td>
<td>$1,442</td>
<td>$1,268</td>
<td>$865</td>
<td>$68</td>
<td>$(325)</td>
</tr>
<tr>
<td>LIFETIME SAVINGS</td>
<td>$27,623</td>
<td>$19,027</td>
<td>$12,971</td>
<td>$(1,020)</td>
<td>$(4,882)</td>
</tr>
</tbody>
</table>

*Over 15-year lifetime. Note: your actual savings may vary.

Do they really keep a house warm in harsh Vermont winters?
In Vermont, you'll need to get a cold-climate heat pump, specifically designed for our kind of winters. I advise people to hold onto their existing heating system as backup for below-zero days. While cold-climate heat pumps work in sub-zero temperatures, their heat output goes down, and so their efficiency drops. That doesn't negate your savings; when you use a cold-climate heat pump for 80 percent of your heating needs, savings can be significant.

What does this system look like?
There are two connected pieces: one inside your living space and one outdoors. The inside unit, which is a little wider than a window air conditioner, is installed permanently in an outside wall of your living space. The outdoor equipment is a box that's a bit smaller than a central air conditioning outdoor unit. The outdoor box (compressor) collects and compresses outside air and then pumps it to the indoor unit (evaporator), which delivers the warm air to the house.

How are fumes expelled without ducts?
There are no exhaust fumes because nothing is burned; it runs on electricity.

If I'm interested, what would be my first steps?
First, take an honest look at your home's insulation. It's a waste to spend money on your heating equipment if your house can't hold onto the warmth. Furthermore, with a tight house you'll need a smaller heat pump system and you'll pay less in heating bills each month. I always recommend that folks talk to a certified Home Performance with ENERGY STAR® contractor to find and fix air leaks throughout the house. You can find out more about these contractors and about available rebates through Vermont's energy efficiency utility -- Efficiency Vermont at www.efficiencyvermont.com/homeperformance.

Once your house is buttoned up, ask a heating contractor for recommendations on the most efficient cold-climate heat pump for your home. You can find a list of cold-climate heating pump contractors at Efficiency Vermont's website.

Visit www.efficiencyvermont.com and click on “Find a contractor or retailer” at the top of the home page.

I hope that this information is helpful. One more piece of advice: If it turns out that heat pumps aren't the best fit for you, it's worth calling Efficiency Vermont with any other questions you have about lowering your energy costs at home and at work. Their toll-free number is 888-921-5990. Or, if the web is more your style, there's a lot of great information on the Efficiency Vermont website, www.efficiencyvermont.com.

Where is your electricity going?
Are you curious about the amount of electricity different devices in your home are using?

You can measure how much electricity your appliances use with the Watts Up electric meter. With this information, you'll be better able to identify the connection between your appliance use and the amount of your electric bills.

Efficiency Vermont offers these meters free of charge for a period of three weeks to Vermont electric utility ratepayers.

Examples of items that can be tested:
• Refrigerators
• Freezers
• Dehumidifiers
• Home entertainment systems
• Electric space heaters
• Air conditioners

To borrow a Watts Up Meter from Efficiency Vermont, call a Customer Service Specialist at 1-888-921-5990 or visit http://efficiencyvermont.com/MeterLoan.

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Electricity 101: The Last Mile

How Distribution Systems Get the Power to You, and Keep It Running

THIRD IN A FOUR-PART SERIES

Until the internet came along, the electricity infrastructure in developed countries like the U.S. may have been humanity’s most complex and far-reaching achievement. Certainly science has delved more deeply into the mysteries of existence in the 130 years since we harnessed and began disseminating electrical power, but in terms of creating an integrated network, for any purpose, that’s capable of reaching and continuously serving virtually everyone, the electric system was probably unequaled.

Physically, the distribution system appears smaller and supports (poles) are not as massive, and the cleared right-of-way needn’t be as wide; along roadways it’s barely even noticeable.

But the distribution system is surprisingly complex because there are “service drops” for every house and building along the way. It’s also complex because engineers have invented a variety of devices to maintain power quality along the lines so your lights will stay bright and your appliances run correctly, to limit the spread of outages, and even to mechanically prevent as many as 80 percent of potential outages from ever actually happening. These devices include fuses, voltage regulators, and reclosers. It would be pretty cool to provide your power with a simple distribution system that dispatched it without those safeguards, but you wouldn’t like it very much.

Networking

Vermont Electric Co-op is a distribution utility. It owns and operates 36 substations scattered across the whole northern part of the state, and about 2,500 miles of distribution lines – basically, the distance from Newport, Vermont, to Portland, Oregon. That gives you some idea of the responsibility faced by VEC’s line crews and engineers.

“A lot of our distribution system was built in the 1950s, ’60s, and ’70s,” says VEC’s Chief Operating Officer Jeff Wright, “but some dates back to the 1930s when most of our system was laid out. Most of the old poles have been replaced; they rotted or were blown over in a storm or were simply upgraded. But there’s still original wiring out there in some places. It’s surprisingly durable.”

Power arrives at the substations at 34.5 kilovolts (kV) or 46 kV, depending on its source, and is reduced by transformers in the substation to 12 kV before being sent out over the distribution lines. (“Transformers: Directing traffic on the electric highway,” page 5). Voltage is like pressure in a garden hose; it’s the electro-mechanical force that pushes the electricity that people end up using.

Substations generally have two or three main “feeders” going out in different directions into the territory that the substation serves. The feeders from a substation are comparable to state highways, like Route 2, Route 5, Route 7, and Route 100 – much more local, of course, with destinations described by a town or a ridge or a road – you’ll have an outage, but that’s preferable to the potential damage and danger of too-high voltage.

If you live “upstream” of the separated fuse, you’ll be fine. And that’s the whole point of fuses: they limit the effects and inconveniences of power outages to fewer VEC members. Plus, a blown fuse is easily spotted by a line worker (when the fuse material separates it causes a hinge on the mechanism to drop open) and quickly repaired.

Reclosers are larger than fuses – long, cylindrical devices mounted with brackets to the poles – and there are far fewer of them. But they are coordinated with fuses and provide a great service: they sense the surge that’s affecting fuses downstream from them and instantly “open up”, interrupting the flow of power. This relieves the heat on the fuse. The recloser “closes” again and the power flow resumes. If the problem still exists the recloser will open again, and this sequence can repeat several times within seconds (the frequency is set by the utility). If there’s a serious problem, like branch or trunk leaning against the line that needs to be removed, the recloser gives up and the fuse breaks. But a minor event – like a small branch brushing the power line as it falls to earth – that might otherwise cause an outage affecting scores of homes and families, will go unnoticed. Utility experts estimate that these systems aver 80 percent to 90 percent of the outages that rural electricity customers otherwise would experience.

Continued on page 7
Sending power to your home is a lot like driving to a neighboring state. Few of us would consider taking a two-lane road to travel to a city hundreds of miles away; instead, we would go to the nearest interstate so we could travel faster and reach our destination in less time.

Similarly, as we discussed in the second part of our series on electricity basics, electricity has an interstate that allows it to travel long distances very quickly. It also has a secondary system that winds along back roads and through neighborhoods to direct the power to its final destination, your home.

Transmission lines from a power plant to substations are the fast-moving interstate highways of the electric industry. Mostly, that high-voltage electricity is generated elsewhere and dispatched to Vermont by the independent System Operator—New England (ISO—NE), but even “bulk” power that is generated within the state, for example by Vermont’s larger solar and wind projects, is loaded onto the transmission system and then delivered to local homes and businesses. It’s like getting onto Interstate 89 at one entrance in Vermont, then traveling past several exits and getting off somewhere else in the state.

And just like a car that’s leaving the interstate to travel on local roads, the electricity on the transmission system has to slow down before it can enter VEC’s distribution lines. It’s the transformers in the substation that provide that braking system, lowering the voltage so the power can continue safely on its journey along these smaller, local roads.

So, how does it work?

High-voltage electricity passes through a system of coiled wires located in the substation transformer. The electricity enters a primary side of the transformer, where there are metal coil windings surrounding that side of the transformer, and then passes to a secondary side, which has fewer coil windings. This journey, from many windings to the reduced number of windings on the secondary side, lowers the voltage as the electricity then leaves the transformer and is sent upon its way along the distribution lines.

Your electric power has one more stop before making its way into your home. Just as you slow down your car as you pull up to your final destination, the voltage is lowered one more time. It takes a turn off the distribution line and into another transformer that’s located outside your home. This transformer may be a canister hanging on a pole, or a box in your yard if you have underground electric service. Like the substation transformer, the electricity passes through a primary side with more coil windings, to a secondary side with fewer coils. The voltage leaving the secondary side is generally 120 or 240 volts. Another important thing is that these transformers are protected by fuses that will disconnect them from the electric line if there is a fault caused by current surges or overloads.

After the electric current leaves the transformer, it makes its way through a service line into the meter base, and from there into your home. When you flip a switch — for lights, for your computer, of any other purpose — it’s at your disposal, just as if it had been there all along.

VEC’s Board Authorizes a Patronage Capital Distribution

In May of 2014, the VEC Board authorized the return of $500,000 in patronage capital funds to members during the years of 1997 and 2013 ($250,000 for each year).

Annually, the VEC Board of Directors analyzes the cooperative’s financial circumstances to determine how to use Patronage Capital funds. The Board may decide to use patronage capital funds to support upgrades to our electrical system, secure stable power-supply contracts, or make other beneficial investments.

Alternatively, the Board may decide to return portions of patronage capital funds to VEC members for a particular year or percentage of a year if VEC’s financial condition is sufficiently strong and an appropriate balance of patronage capital is maintained to meet Bylaw requirements. This amount represents a portion of the total patronage capital funds allocated to members who had VEC accounts during each of these years. Allocation amounts are based on how much electricity members were billed during each of those years and therefore refund amounts will vary from member to member. Active members, in good account standing, with patronage capital balances from these years, can expect to receive a credit on their bills this September.

VEC strives to build a healthy and strong Co-op by balancing service, reliability, and rates. As a result, VEC has achieved a stable financial position and it’s our members who benefit, both from improvements to their electric service and from their share in patronage capital dividends. For more information about patronage capital, visit our online frequently asked questions at www.vermontelectric.coop/patronage-capital or call 1-800-VEC-COOP.

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Angus King, an independent from Maine, called for a review of natural gas prices.

“Severe price increases like those we have seen in New England can hurt families and cripple businesses, especially manufacturers that rely on natural gas for power generation,” the senators wrote.

The problem will only get worse. By the end of the year Vermont Yankee will have ceased operation, and another 605 MW of replacement power will be needed. In 2017, the Brayton Point Power Station in Massachusetts, New England’s largest coal- and oil-fired electric plant, will shut down. That will remove another 1,530 MW.

It’s not certain that the region will be able to do much to improve its pipeline infrastructure. Just as Vermont Gas Systems is experiencing resistance to its plans to extend its pipelines farther south into the state, residents of Connecticut and Massachusetts are also pushing back and slow pipeline proposals. As part of a deal to get support for these new gas pipelines, Govs. Dan Malloy (CT) and Daniel Malloy (MA) are recommending that they purchase 3,600 MW of renewable power. Both governors are up for election this fall and this will be an important issue in those states.

The problem with this proposal is that they are looking to Hydro Quebec for the power. However, the transmission upgrades needed to transport it would cost billions of dollars. Vermont is a key corridor for those transmission lines. This will also drive up the cost of HQ’s power for Vermont, as a portion of the new contract between Hydro-Quebec and Vermont’s utilities, which takes effect in 2012 is market based. An additional concern is that supply may be limited at certain key times if HQ exercises its right under the contract to restrict exports, as was the case in January. When an earlier contract with HQ was negotiated in the early 1990s the parties agreed to a fixed price for the entire 20-year period.

The result of all of this is that electricity prices are surely to rise. VEC is fortunate that we have locked down most of our supply for the next few years. However, it’s likely to take many years beyond that to resolve the region’s energy-supply issues. The additional solar generation...
Plan Ahead: Build an emergency kit before disaster strikes!

Power outages are inevitable during major storms. At VEC, we work hard to restore power to members as quickly as possible. However, as we saw with the 2013 ice storm, large storms can cripple the electric system and leave members without power for days at a time.

Planning ahead for storms will help keep your family safe while we work to get your power back on. Keep a storm kit handy with essential items and stock up on food, water, and fuel when a storm is coming. These small steps can make a big difference!

Emergency Kit for Outages

- Flashlights
- Portable, battery-operated radio
- Extra batteries
- First aid kit
- Whistle
- Dust mask
- Duct tape
- Emergency food and water for 3 days
- Non-electric can opener
- Essential medicine
- Garbage bags & moist towelettes
- Personal hygiene items
- Local maps
- Solar or battery-operated cell phone charger
- Extra fuel for your generator
- Family documents
- Prescription medications and glasses
- Sleeping bags
- Seasonal clothing & sturdy shoes
- Bleach & container
- Matches in a waterproof container
- Extinguisher
- Mess kits, papers towels
- Books, toys and games

Safety

- Stay away from downed power wires and damaged electrical equipment. Touching energized wires can lead to injury or death.
- If you use a generator, never run it inside your home or garage. Carbon monoxide in the fumes can lead to fatal poisoning.
- Take care when cutting down damaged trees, especially when they are close to power lines. If you have any doubt, give us a call at 1-800-832-2667.

How to Report an Outage

Please call us at 1-800-832-2667.
Starting soon, you'll also have the option of reporting an outage through SmartHub on your computer or phone.

Where to Find Outage Information

Outage information can be found at www.vermontelectric.coop/outage
You can search by account number to find the outage affecting your property.

The Last Mile

Voltage regulators live up to their billing: they regulate, within limits, the voltage on distribution lines, which often cannot remain perfectly consistent over distances. Small events, as noted above, can cause the voltage to increase; and line loss, which is similar to friction as the power passes along the conductor, can decrease voltage so your machines might operate too slowly, or your lights would flicker or stay dim. Voltage regulators can raise or lower the voltage by about 10 percent, which is usually sufficient to maintain proper quality.

So there's a lot going on out there on the distribution system. In rural areas you might drive for miles without seeing any of this apparatus. But these devices are there, located where VEC's engineers have determined that they'll do the most members the most good.

Resiliency

There are a lot of challenges to designing an electric distribution system, and it's not getting easier. The introduction of VEC's advanced metering system (AMR) – what people think of as smart meters – has brought greater sophistication to the system and automated many of its functions. That's a help. But on the other hand, VEC's engineers are faced with integrating more and more 'distributed generation' projects right in the middle of the system, like farm methane digesters and small wind and solar sites, while maintaining power quality and protecting everyone's safety.

Then there's the increasing frequency and severity of storms. "We're building in resiliency, preparing for the worst storms," says COO Jeff Wright. "That means cutting more trees to widen the right-of-way, installing Class 2 poles in places instead of Class 3, because the Class 2 poles are stronger. And we're re-conductoring, using wires that are more capable of withstanding damage."

On the surface, the rural distribution system appears to be the simplest part of the electric infrastructure: no big power plants, no towering transmission pylons. But there's more there than meets the eye, and VEC's job is to plan, install, and maintain that system so seamlessly that, except in the worst of storms, you won't even notice it.

CEO update

that has been built in Vermont will not help much, because solar generation during winter – the period when the natural gas deficit is at its worst – is only one-third of what it is in the summer.

The good news is that the wind blows pretty hard in the winter, so our Sheffield and Kingdom Community Wind (KCW) contracts will prove to be good assets, in terms of price. We missed an opportunity to take full advantage of winter wind conditions with KCW in 2014 due to grid-integration problems, but it takes time to perfect new systems and it appears that the synchronous condenser that was put online in March should make that resource fully available next winter (although there are still technical problems to be overcome).

A Vermont response

What do these problems teach us?

I believe that Vermont, and VEC, need to generate as much power as we can within our own borders. Even though we are having growing pains with wind and solar, it's becoming clear that the regional market is going to become more and more expensive. Just like Vermont, other New England states want renewable power, but many of their residents don't want to see the generation. Consequently, not enough will be built, and due to the laws of supply and demand, prices will continue to increase. New England already has the highest electricity costs in the U.S. (Vermont has the fourth-highest residential costs of all the states. Only Connecticut, Hawaii, and Alaska are more expensive.) If we don't build our own generation, we will continue to be at a competitive disadvantage.

One practical and viable solution would be for Vermont to commit to building out of its natural gas infrastructure as well, so we could build highly efficient, distributed, base-load generation. This could be a transition strategy to improve our competitiveness until cost-effective energy-storage solutions are available.

I know many people are opposed to natural gas generation. I find that there is a pretty large opposition to just about every form of generation these days. There are no easy answers. However, saying “No” is an ineffective strategy that offers no solution. We have to begin to think about what “Yes” could look like in order to get us out of the mess we are in, and we should get started doing it now.
During the 2014 construction season, VEC crews rebuilt our Madonna Substation in Jeffersonville. This new substation has been designed to increase reliability for VEC members, improve safety conditions for employees, and reduce environmental impacts.