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VERMONT ELECTRIC CO-OP LIFE

CEO Update: Changes and Challenges Facing the Electric Grid in 2018 – and Beyond

By Christine Hallquist, CEO

With smart grid improvements and the increasing penetration of renewables, Vermont's electric grid continues to transform in exciting ways. Vermont Electric Cooperative (VEC), Vermont's largest not-for-profit, member-owned electric distribution utility, will continue to embrace these changes and challenges in the New Year. But before we look at 2018, let's take stock of some of 2017's highlights.

• **We kept electric rates flat.** When we started 2017, we were almost certain that we'd need to request a rate increase for January 2018. Over the year, however, employees looked for every opportunity within our power supply and transmission costs as well as other operating efficiencies to mitigate a rate increase. As a result, as we start 2018, we are happy to say we will not be asking regulators for a rate increase. VEC's rates have been flat since January 2014, and over the past nine years VEC has averaged annual rate increases of less than 0.8 percent per year. We are very proud of this accomplishment.

• **We received a distinguished safety award.** After a rigorous and detailed multi-year review, VEC received the prestigious Green Mountain Voluntary Protection Program Award. VEC is the only electric distribution utility in New England that has this designation.

• **We fed more clean and renewable energy onto the grid.** Two new major solar projects—arrays in Hinesburg and Grand Isle – began feeding more than six megawatts of solar electricity into the electric grid. Along with VEC's existing Alburgh project, which began providing power in 2016, these projects enable us to meet our renewable portfolio commitments through 2025 or later.

• **We exceeded our goal to help our members reduce fossil fuel consumption.** We also expect to exceed our first-year commitment to reduce fossil fuels usage in our service territory. In 2017, members bought plug-in electric vehicles, and moved to cleaner fuels for heating and running their businesses, for example.

Cars, Stoves, Batteries, and More

In 2018, VEC will continue the important work – guided by state goals – to move our energy sources away from fossil fuels and toward cleaner sources in a cost-effective manner. That means we'll be offering fresh incentives in the New Year to our members to purchase or lease electric cars, buy cold climate heat pumps to heat and cool homes and businesses, and even install wood pellet stoves.

Continued on page 7

Expanding Access to Energy Efficiency: Vermont's ZEM Program Provides a Better Option for Low-Cost Housing

There are enormous advantages for people who live in highly energy-efficient homes that are tightly constructed and well insulated to protect against Vermont winters. They minimize air infiltration from the outside and heat loss from the inside, and, when combined with mechanical air-exchange systems, they provide a healthier and more comfortable living space for the people inside. The warmth spreads evenly through the house, and there are no chilling drafts from ill-fitting windows and doors, around electric sockets, or from poorly built framing concealed behind the walls.

In these well-designed and well-constructed homes, the occupants save considerable money on their energy bills. Sadly, the opposite is true for homes that chronically leak their warmth to the outside, a defect often compounded by icicles that can cause damage to roofs and siding. What's doubly unfortunate – and perhaps even unfair – is that these homeowners frequently are the people least able to pay for those losses. The remedies cost money, but theirs is diverted instead to buying (and wasting) more heating fuel, while they struggle to keep up with other expenses.

Example of a ZEM home with a loft built by Vermod. Photo courtesy of Efficiency Vermont.

A nearly airtight home can comfortably be heated with cold-climate air-source heat pumps, which are powered by electricity rather than fossil fuels. When that building also has its own electric-generating system (usually solar panels) the house, at least financially, becomes a self-sustaining system, providing power, light, warmth, hot water, and other necessities to its occupants at virtually no cost.

However, those benefits require an upfront investment, which can shut out a great many middle- and lower-income Vermonters who don't have room in their budgets for solar panels, to convert their old sash windows into multi-paned thermal windows with insulating argon gas between the panes, or to beef up the insulation in their attics, basements, and exterior walls.

The lesson is: it takes money to save money. Or conversely, it's expensive to be a family of limited means.

Continued on page 4

VEC Earns Prestigious Safety and Health Certification

Vermont Electric Cooperative (VEC) has earned high-level health and safety recognition from the Vermont Department of Labor after a rigorous review of company operations and management.

The certification comes through the Green Mountain Voluntary Protection Program, which is administered by the Vermont Occupational Safety and Health Administration (VOSHA). The program is the state version of the federal Voluntary Protection Program (VPP).

VEC is the only power distribution utility in New England currently with the recognition, and joins just five other non-utility organizations across Vermont with the certification.

"That VEC has achieved this recognition is a visible demonstration of our commitment to safety, not just for our own employees but for our members and the public at large," said John Varney, Safety and Security Manager at VEC. "We are very proud."

VEC's preparation for VOSHA's on-site review took more than five years and addressed a total of 28 safety and health elements. During the on-site review, VOSHA compliance officers conducted an intensive inspection of VEC's four district facilities and dove deeply into VEC's safety programs. The review included 14 formal interviews and more than 25 informal interviews.

To be recognized, VEC had to demonstrate a strong history of management commitment to safety and employee involvement in safety programs. VEC also had to show strong processes for worksite analysis, hazard prevention and control, and employee safety and health training.

According to state officials, VEC's success in the designation shows an exceptionally deep level of commitment to safety.

"Attaining this recognition means VEC is committed to extraordinarily high safety standards," said Vermont Commissioner of Labor Lindsay Kurrle. "VEC is leading by example, and we hope other organizations across the state consider taking similar steps to support safety in their operations," she said.

Kurrle visited VEC during an all-employee meeting to recognize the VEC accomplishment.

Besides VEC, the other organizations in Vermont with the designation are: Ben & Jerrys in St. Albans, Curtis Lumber in Burlington, Energizer in Bennington, GE in Rutland, and GlobalFoundries in Essex Junction.

About the Voluntary Protection Program

According to the U.S. Department of Labor, the VPP promotes effective worksite-based safety and health. In the VPP, management, labor, and OSHA establish cooperative relationships at workplaces that have implemented a comprehensive safety and health management system. Approval into VPP is OSHA's official recognition of the outstanding efforts of employers and employees who have achieved exemplary occupational safety and health. In Vermont, VOSHA administers the VPP under the name Green Mountain Voluntary Protection Program.

VEC celebrates the VPP flag raising at VEC's headquarters in Johnson. From left to right VOSHA Safety and Health Compliance Officer Karl Hayden, VEC Lineworker Cody Hopkins, Vermont Commissioner of Labor Lindsay Kurrle, VEC CEO Christine Hallquist, VEC Field Technician Nate Perham, and VEC Safety Manager John Varney.

New Year, New Incentives!

VEC Offers Expanded Program to Help Members Transition off of Fossil Fuels

In 2018, Vermont Electric Co-op (VEC) is offering an expanded menu of financial incentives to VEC members for energy transformation technologies that help members move away from fossil fuels to electricity and advanced wood heating. This program includes bill credits for electric and plug-in hybrid cars as well as lower-carbon heating and cooling systems.

Like in 2017, VEC will continue to offer bill credits for **cold-climate heat pumps** ($150 per outdoor unit) and **plug-in hybrid electric vehicles**, like a Chevy Volt or Toyota Prius Prime, ($250 for purchase and $50/year for a lease).

VEC is boosting the bill credit for **all-electric vehicles**, like a Chevy Bolt or Nissan Leaf, to $500 for a purchase and $100/year for a lease.

New in 2018 are incentives for **wood pellet stoves** and **heat pump water heaters**, which are both eligible for a $150 bill credit.

These offerings are part of VEC's Energy Transformation Program, prompted by Vermont's Renewable Energy Standard, which was passed by Vermont lawmakers in 2015. Under the law, Vermont's electric utilities are required to implement programs to help their customers shift their energy sources from fossil fuels like gasoline or heating fuel, to electricity or other non-fossil fuel sources.

"We all know that buying a vehicle or upgrading a home heating system is a big commitment, even if doing so means saving pretty significant money down the road," said Christine Hallquist, VEC's CEO. "We hope these bill credits can help with these upfront costs."

For more information about these incentives, please call (802) 635-2331, email support@vermontelectric.coop, or visit www.vermontelectric.coop.

Cold climate heat pumps and heat pump water heaters may also be eligible for incentives from Efficiency Vermont. For information about their incentives, visit www.efficiencyvermont.org.

Large Outage Q & A

After the October 2017 wind storm, we received many questions from interested members on how VEC approaches large outages. Below are some of the most common questions and our answers.

How do we prioritize outages during a large outage event?

We prioritize based on public safety concerns as well as the size of the outage. We focus on the largest outages first so that we can restore more people in the community who are then able to help other people in the community who don't have power.

How do we determine estimated times of restoration (ETRs)?

It depends on the nature of the outage. If we have an outage that affects an entire substation, everyone affected by that outage, which could be hundreds or even thousands of homes, is given a single ETR. That is the ETR for the substation itself.

Once the substation is restored, we work our way out through the system and identify other damage on the lines. At that point, we're able to give more accurate ETRs as we assess damage and home in on individual circuits.

That's why, in a large outage event, ETRs often change as we get better information from the field. Every storm is unique, so we also are able to improve ETRs as we learn about the particular conditions the storm has created.

Why is it that I might be experiencing an outage but my neighbor isn't?

There are a number of possible reasons.

If you're fed off of a three-phase circuit, your neighbors can be fed off of a different phase than you. One phase might be out while another is still working.

Your neighbor may have service from a different electric utility, whose system is not currently experiencing an outage.

There may also be damage on the individual distribution line that connects your house to the system, or it could be another behind-the-meter issue like with your circuit panel.

Lineworker repairing a line during the December 2013 ice storm, which caused thousands of outages.

Why doesn't VEC bury power lines to avoid big outages?

We do selectively bury lines when that's the best option. The challenge with underground lines is that they're generally 4-6 times more expensive than overhead lines. Since we have almost 3,000 miles of line, it's not feasible to do it on a large scale.

Another factor is that, although outages occur less frequently on underground lines, they can last longer because they're harder to locate, access, and repair. That being said, we're always looking for opportunities to harden the system and reduce outage frequency and duration for members.

How can I minimize the impact of big outages on me and my family?

While VEC constantly takes proactive steps to prevent outages, they do happen. The best thing you can do is be prepared. Be sure that cell phones are charged and that you have flashlights/batteries, water, blankets, and plenty of warm clothing available in case the power goes out. See more details on the VEC website: www.vermontelectric.coop/storm-preparedness

SAVE THE DATE

VEC to hold 80th Annual Meeting of the Membership

When: Saturday, May 12, 2018 at 10:00 am

Where: Smugglers' Notch Resort

SMUGGLERS' NOTCH V·E·R·M·O·N·T® America's Family Resort™

Why: It's an opportunity for you to exercise your voice as a member-owner of the cooperative! Join us to hear about energy issues and share your thoughts with VEC's directors and staff. Keep an eye out for your official notice of annual meeting, which will be mailed in April. We hope to see you there!

SAVE THE DATE

ZEM from pg 1

Introducing ZEM

Certainly this isn't strictly a Vermont problem. The good news is that there is now a uniquely Vermont solution that might appeal to many people in this state.

It's the Zero Energy Modular (ZEM) Program, formed collaboratively by several organizations and agencies involved in housing, energy efficiency, and finance. Created in 2012, one of its first successes was to stimulate the development by a private company of a new, net-zero-energy modular home. The ZEM Program has not extended exclusive rights to Vermod, but thus far the Wilder, Vermont-based company, which provides 20 full-time jobs at its factory, has constructed all the units sold under the program.

What does "Zero Energy Modular" mean? A modular home is constructed off-site and delivered to the place where it will be situated. For the ZEM home, that might be on privately-owned land or a lot in a mobile home park. (The mobile home industry now refers to its products as "manufactured homes.") Manufactured homes have wheels and are towed to their destination. The ZEM home is transported on a flatbed truck, and a crane lowers it onto a foundation or a system of piers, both of which are specifically designed to provide solid support and a frost-protected crawlspace beneath the unit. Its undersides are further protected by a thick layer of insulation (R-40). Manufactured homes usually arrive with token insulation in the floors and are positioned with skirting around the base that does little to anchor the building or keep out cold air.

The term "zero energy" is usually used in reference to stick-built homes with advanced energy-conservation values and the capacity to produce energy on-site. On an annual basis (if not month by month) these homes achieve zero net energy consumption – meaning they provide as much power as the home uses, while consuming "zero" fossil fuels and contributing "zero" fossil fuel emissions to the atmosphere. What's revolutionary about structures like the ZEM home is that they achieve those net-zero characteristics in a modular home that can be delivered on the bed of an 18-wheeler.

For the ZEM Program, however, that's not enough. Every bit as important is making the homes affordable to low- and middle-income Vermonters and providing outreach, guidance, and counseling to help people navigate financing channels they might initially find perplexing. For people whose home-ownership experience has largely focused on mobile homes, there's something else to contemplate: while the upfront costs are greater for a ZEM home, it's a far-better investment. Besides making their energy bills all but go away starting on day one, their new home will retain its value and provide a good return if they eventually decide to sell. The value of a manufactured home, by contrast, declines immediately, as if it were an automobile being driven off the lot.

For prospective ZEM buyers, constructing a financing package and evaluating which options (model design, site placement) can be managed within their budgets can be daunting.

This is where Phoebe Howe comes in.

One-on-one assistance

"My position as a coordinator for the ZEM Program is to help people put the financial pieces together, so that it doesn't become an overwhelming process," says Howe, who is employed by Efficiency Vermont, which has functional leadership of the program. "We have various partners that participate, and they are crucial to the program's success, but that can also cause confusion. Because of our involvement, people aren't going into it blind. They have our assistance."

There are design alternatives for ZEM homes – a three-bedroom, one-bath floor plan; a two-bedroom, two-bath plan; a smaller one-bedroom, one-bath design; a recently added 490-square-foot "Cottage" with a loft –, and people can also stack units to create a two-story home or offset two units at ground level for a less boxy appearance. Typically, though, these are modest, rectangular dwellings of about 1,050 square-feet.

But although the coalition that launched ZEM (which was originally called the Mobile Home Replacement Program) exercised ingenuity to hold down the costs for a technologically-advanced modular building, a two-bedroom ZEM home, at about $115,000 after incentives, still costs significantly more than a typical mobile home. However, the costs even out if you compare each option's monthly mortgage and operating costs.

Example of a kitchen in a ZEM home. Photo courtesy of Efficiency Vermont.

Why should a buyer care, when the monthly differences are negligible? With a ZEM home, buyers are getting a much better product for their money. Benefits include comfort, a healthier indoor environment, stable operating costs that avoid the volatility of fuel prices, and a home that will retain its value. A benefit for all of us is that energy conservation and efficiency are critical as Vermont progresses toward our comprehensive energy goals for 2030 and beyond.

Nevertheless, for many families that upfront cost is a mountain to climb. Howe is available to guide prospective buyers as they consider and apply for various forms of assistance. Efficiency Vermont itself provides $8,500, which is taken off the purchase price to help keep construction costs affordable.

The other crucial partner in the financing structure is US Department of Agriculture (USDA) Rural Development, which provides a 30-year, fixed-rate mortgage (currently at 3.25 percent), with no down payment required. The USDA program is available to families with household incomes up to 80 percent of the area median.

> "My position as a coordinator for the ZEM Program is to help people put the financial pieces together, so that it doesn't become an overwhelming process."
>
> - Phoebe Howe, Efficiency Vermont

Example of a bedroom in a ZEM home.Photo courtesy of Efficiency Vermont.

"They're committed to making this work," Howe says, in praise. "The folks at USDA could not be more helpful."

Other avenues of assistance are sometimes available: a zero-interest $35,000 loan from the Champlain Housing Trust for income-qualified Vermonters, which needn't be repaid as long as the borrower retains ownership (this money, however, is available only intermittently, when the Vermont Legislature renews the funding); and modest contributions from VLITE (Vermont Low-Income Trust for Energy) that can defray costs associated with site preparation or installing solar panels.

"The first step I take with potential buyers is to connect them with homebuyer-education classes through organizations like the Champlain Housing Trust or Downstreet Housing & Community Development," Howe explains. "This way they're working one-on-one with homeownership counselors."

She also keeps in contact with potential buyers as they proceed through their USDA application, which determines their eligibility for the federal mortgage. "There's no real, solid number for that eligibility," Howe says. "People's situations are very different, and these factors are taken into consideration. In general, USDA can start working with a household income [that's at least] $25,000-$30,000."

Once the applicant has received provisional approval from USDA, Howe begins a process of guidance and counseling that she describes as "working backwards."

"We take the number that emerges from USDA pre-approval and determine where they stand as far as the options that are available. We might determine, 'Within this price and this budget you'll need to look at siting in a mobile home park instead of private land.' Or, if land is feasible, what's the maximum that they can afford? And can they go with a three-bedroom, two-bath design if that's what they prefer? We're helping people stay grounded throughout the process and sticking to what makes sense.

"This is what sets the ZEM process apart," she emphasizes. "If you went through a different process you might have people trying to sell you on granite countertops. We have no interest in setting someone up to fail. We're trying to work in a person's best interest."

It's a proactive approach that's particularly important for lower-income buyers. When it's successful, it helps mitigate the disparity between people

who can put themselves in a position to improve their housing and reduce their cost of living and those who are chained to an endless cycle of wasted money.

Irene's legacy

The mobile home clientele are not the only buyers the ZEM Program hopes to attract. The modest size, high quality, and super efficiency of the ZEM home – and someday, perhaps, other modular, net-zero products – could appeal to seniors wanting to downsize, and the 490-square-foot Cottage might draw "tiny house" enthusiasts.

But it was concern for mobile home inhabitants that inspired what eventually became the ZEM Program. Flooding caused by Tropical Storm Irene in 2011 damaged or destroyed manufactured homes far out of proportion to their presence in Vermont.

"Fifteen percent of the mobile homes in the state were made uninhabitable, yet they only accounted for seven percent of the housing stock," Peter Schneider, a senior consultant with Efficiency Vermont, reported.

One reason was siting. Many lay within the 100-year floodplain. Their poor, virtually nonexistent anchoring made them even more vulnerable. Plus, a high percentage of the mobile homes were – and are – in a deteriorated state, approaching or past their 30-year lifespan. But in truth, even new manufactured homes are inadequate for Vermont's climate, because they're designed to meet federal construction codes geared toward places like Virginia and Pennsylvania, where winters are milder and there is less need for their occupants to batten down the hatches and stay inside for months at a time.

In the same way that Vermont, post-Irene, decided to rebuild infrastructure and begin managing rivers with the reality of more frequent and destructive storm events in mind, a contingent of organizations, led by the High Meadows Fund and the Vermont Housing & Conservation Board, decided that Vermont could do better than replacing lost mobile homes with newer ones of the same ilk. Over the past five years the ZEM Program has helped create a market for the ZEM homes manufactured in Wilder and worked creatively with organizational partners, trying to bring homeownership of these units within reach of more and more working Vermonters.

It's not an easy task, but it's worth the effort. As of January 2018, there were 78 ZEM homes located in ten counties in Vermont. Cumulatively, those units had spared the atmosphere 1,034 metric tons of carbon dioxide emissions and saved the owners $516,309 in energy costs.

For information about the ZEM Program, including the locations of demonstration models, and to explore whether this housing option is for you, you can visit the website for Vermod Homes (vermodhomes.com) and/or call Phoebe Howe at Efficiency Vermont at 1-888-921-5990 x7855.

Sprucing up Evergreen Manor:

ZEM Homes Contribute to the Sense of Community at a Hardwick Mobile Home Park

When Jim Lovinsky became executive director of the Morrisville-based Lamoille Housing Partnership (LHP) six years ago, it immediately came to his attention that one of LHP's properties –- the Evergreen Manor mobile home park in Hardwick – was seriously in need of rehabilitation. The park at that time contained 24 mobile home lots and had eight vacancies (lots with no units on them). Several of the structures on the remaining lots were pre-1970 vintage, meaning they were more than a decade past the acknowledged 30-year useable lifespan of mobile (or "manufactured") homes. Many of the others were also in poor condition, and spirits were low among the park's residents.

Addressing this situation became a priority for Lovinsky.

"I wanted to do improvements, clean up the place, and increase usage," he recalls. "I was looking to fill the empty lots, and I didn't want any units in the park that were more than 20 years old."

As luck would have it, this was just about the time that the Vermont program then known as the Mobile Home Replacement Project was getting underway. Lovinsky was quick to recognize that Zero Energy Modular (ZEM) homes – constructed by Vermod Homes in Wilder, Vermont, designed to fit on mobile home park lots, and built to provide zero-net-energy comfort, convenience, cost-savings, and energy efficiency – could be part of the solution for Evergreen Manor.

The Vermont Housing & Conservation Board had launched a pilot program to introduce ZEM homes because in the previous year (2011), floods and winds caused by Tropical Storm Irene had wreaked particular devastation upon Vermont's mobile home housing stock. VHCB and other partners in the newly formed Mobile Home Replacement Project wanted to promote ZEM homes (and other products like them, should any become available) as a safer, more secure, and functionally affordable alternative to manufactured homes. These homes offered the additional benefit of reducing fossil fuel consumption and the associated CO2 emissions.

"I put one Vermod in the park under the VHCB program," Lovinsky says, "and then a second. Both were rental units." (The park contains a mixture of rentals and resident-owned homes, where the owner pays for the lot rental and services such as water and sewer, trash disposal and recycling, and plowing.)

LHP financed the purchases with conventional mortgages through Union Bank. (More commonly, the ZEM Program, as the project is now called, works with the United States Department of Agriculture (USDA) Rural Development to provide low-interest, fixed-rate mortgage loans to private purchasers.)

"We found tenants right away," says Lovinsky, "both single moms."

He and his staff were familiar with one of the women, because she had been renting an LHP-owned apartment in Hardwick. She had clearly been unhappy there, and they weren't sure if things would be any better at the mobile home park. Were they simply transferring her discontent to a new location?

It didn't take long to find out. "She's been like a different person," Lovinsky says. "She's got a clean house, she has her own space, she likes having neighbors, the home is brand new and affordable."

Kerrie Lohr, LHP's public relations manager adds, "She has a greater sense of stability."

LHP operates differently from a conventional for-profit landlord. Its goal is to provide affordable housing, whether it's through unit rental or lot rental. Nevertheless, Lovinsky was impressed by the outcome of the two-ZEM experiment and decided to pursue a more sweeping renovation and expansion of the park. Hardwick qualifies for certain forms of federal assistance, as the town lies within a designated Rural Economic Area Partnership Zone. Lovinsky and his staff saw this as an opportunity to apply for USDA funding, and in the fall of 2015 were awarded a $1.625-million "set-aside," basically, a 50-year loan at one-percent interest.

Lamoille Housing Partnership's Jim Lovinsky and Kerrie Lohr in front of a demonstration home at Evergreen Manor.

This was exciting, but Lovinsky says, "We wanted to do something different than just add more mobile homes."

Their answer was to pursue more ZEM homes, but for that they needed additional money. The project they envisioned added up to $2.4 million. So LHP successfully tapped into a half-dozen other funding sources – several of them, including VHCB and Efficiency Vermont, were participants in the ZEM Program – and filled that nearly $1-million gap.

"We broke ground in October 2016 and finished this fall (2017)," says Lovinsky.

It expanded the park to 32 lots. Evergreen Manor's 11 empty lots were all filled with ZEM homes, bringing the park's total to 13 and demonstrating LHP's belief in ZEM.

Notably, all 13 units are equipped with rooftop solar panels. Those are a recommended option because they interact well with the ZEM home's energy systems and advance the program's commitment to renewable energy as well as financial sustainability. Ninety-three percent of buyers have chosen the solar package.

"We usually pay half of [other tenants'] electric bill," says Lovinsky. But the ZEM tenants, he says, have virtually no power bills except during the first few months of winter. "Their energy costs are about $300 a year. There's no gas, no oil, no propane, no wood."

The renovations, which also included landscaping and other improvements, have had the desired outcome, and more.

"The net result is that people are upping their game," Lovinsky has observed. "Everyone's following the rules of the park and has a sense that things are improved. They're seeing the difference and feeling the difference, and they're saying so, which is nice.

"I still have three empty lots," he adds. "If I can figure out how to pay for them, I'll do more ZEM homes."

Efficiency Vermont

A homeowner's buying guide to insulation

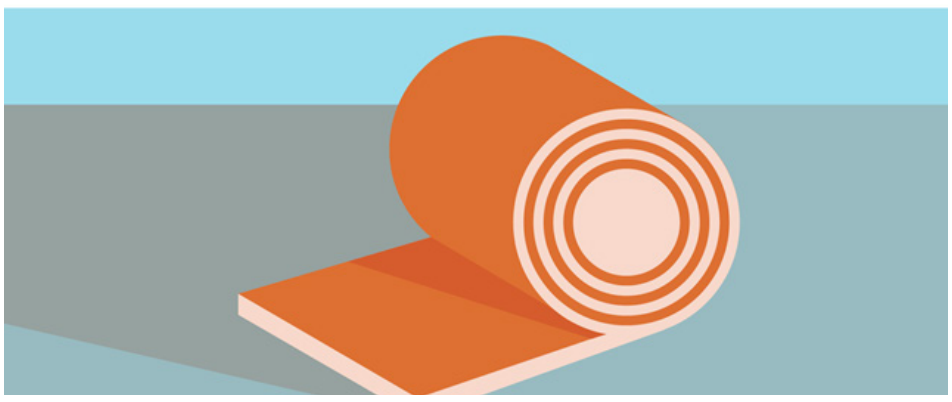
Get the facts on the basic types of home insulation, where they are used, and why

Want to stay warmer in winter, keep cooler in summer, and reduce your energy bills year round? Combined with proper air sealing, adding insulation is one of the easiest and most affordable ways to do it. Your home will be quieter, more comfortable, and may even fetch a higher resale value. As part of your home's thermal envelope, insulation can help to reduce ice dams on roofs and eaves, making your home more durable.

Choosing the right kind of insulation depends on where you're adding it, the desired R-value, and your budget. In the simplest terms, a higher R-value indicates greater insulation properties. The R-value you need is determined by where you live and what part of the house you're insulating.

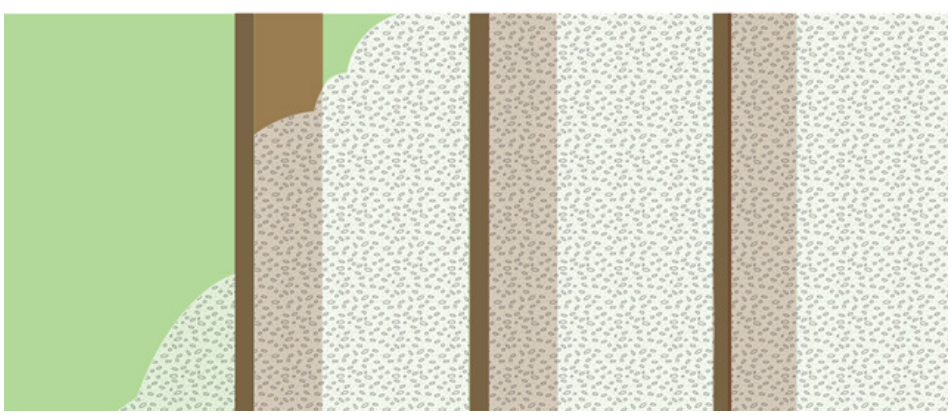
The four basic types of insulation

1 Rolls and Batts



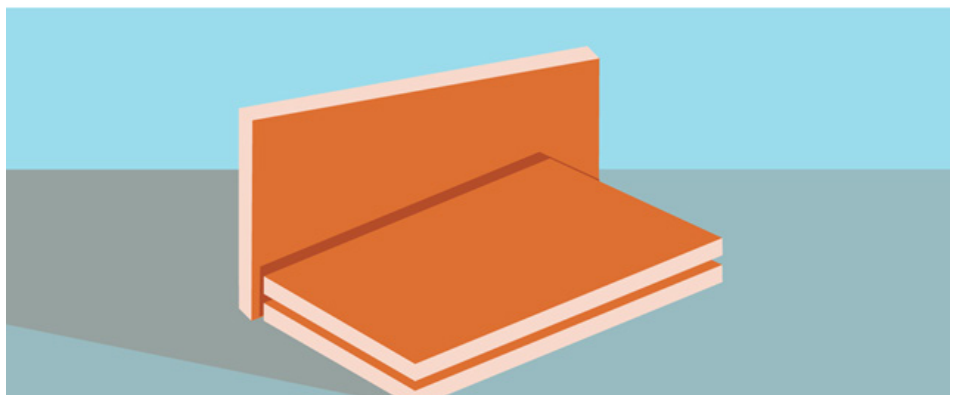
Good to know: Many people think of the classic pink fiberglass batting, which is used in walls, floor joists, flat attics, and other locations. However, it also comes in mineral wool variety.
Pros: It can be easily installed by the homeowner and it is relatively inexpensive.
Cons: Fiberglass batts must be measured and cut carefully when installing to avoid moisture problems.

2 Cellulose



Good to know: Cellulose is made of recycled newspaper and comes in loose-fill, wet-spray (used in new construction or gut rehab), and dense-pack varieties.
Pros: Dense-pack cellulose can be used everywhere except in flat attics, loose-fill cellulose is better than fiberglass at getting around wiring and joists (ideal for open attic spaces).
Cons: Requires special equipment and careful installation, so this one should be left to a professional installer.

3 Rigid Foam



Good to know: Rigid panels of insulation can be used to insulate nearly any part of your home.
Pros: Rigid insulation is a practical solution for sloped attic ceilings, foundations, commercial exteriors, and flat roofs. It can offer an extra layer of continuous insulation, plus air sealing and vapor control. It is easy to install without special equipment.
Con: Can be challenging to install in spaces with pipes or other obstacles.

4 Polyurethane Spray

Good to know: "Foam-in-place" insulation can be blown into walls, on attic surfaces, or under floors.
Pros: It insulates and reduces air leakage. Good for adding insulation to existing finished areas, irregularly shaped areas, and around obstructions.
Con: Requires special equipment and careful installation, so this one should be left to a professional installer.

Where to add insulation

Due to the chimney or "stack" effect, hot air rises and escapes through the top of any building structure. So if you're doing your own insulation, attic roofs and ceilings are the first place to look. Second, consider your foundation, basement walls, rim joists, and crawlspaces. If your home has uninsulated exterior walls, hire a professional to add dense-pack cellulose or pourable foam.

And remember to address any air leaks in those walls first (it's often the most cost-effective measure).

To hire... or not to hire?

Yes, you can install every type of insulation yourself, except wet-spray, dense-pack, and spray foam—these require special equipment and careful installation. But even if you can DIY the job, going to a professional is the safer way to go. When you tighten up a building, it can turn previously unknown issues with fuel-burning appliances into a deadly problem. A professional understands this and knows how to address it. See our guide on hiring a contractor.

We recommend that you consult a professional installer even when you plan to do the work yourself. And if you DIY, remember to work safely: Follow the manufacturer's recommendations, and always wear a mask and safety glasses, gloves, long pants, and a long-sleeve shirt

We Want You!

Three Positions on VEC's Board of Directors Open in 2018

Vermont Electric Cooperative will host its 80th Annual Meeting of the Membership on May 12 at Smugglers' Notch Resort. VEC's annual meeting and election are great opportunities for members to exercise their voice. Since VEC is a cooperative, members elect local representatives to serve on the board of directors, which sets VEC policy.

VEC is seeking petitions from eligible candidates for three positions on the board of directors that will open in May of 2018. Directors will be elected to serve four-year terms.

Below is a list of the seats that are open in 2018 and the towns they represent:

District 3

Albany, Craftsbury, Glover, Greensboro, Irasburg, Jay, Lowell, Newport Town, Troy, Westfield

District 4

Bakersfield, Belvidere, Cambridge, Eden, Fairfax, Fairfield, Fletcher, Hyde Park, Johnson, Morristown, Stowe, Waterville

District 5

Bolton, Essex, Hinesburg, Huntington, Jericho, Milton, Richmond, Shelburne, Starksboro, St. George, Underhill, Westford, Williston

In order to run for the board, a candidate must be a VEC member with a principal residence in the district they are running to represent. VEC employees are not eligible to run.

VEC is seeking candidates who have the ability and time to fulfill the responsibilities of the board, which include participating in monthly board meetings and committee activities. The board generally 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 energy issues and the cooperative model.

Completed applications, including a petition signed by VEC members, are due by 4:30 p.m. on Thursday, March 22. The election will take place from April 17 through May 11 by mail and online as well as in person at VEC's annual meeting on Saturday, May 12. Please call 802-730-1172 to request application materials.

CEO Update from pg 1

Electricity storage will also be front and center in 2018 and beyond. VEC has a pilot storage project underway with a commercial account to test both the grid and member benefits, and we expect our first utility-scale storage project to be online next summer. VEC is also working on two pilot projects, with the help of U.S. Department of Energy Grants, to test platforms that would enable technologies like residential storage to integrate with our control center. This initiative, combined with our planned technology upgrades, will enable VEC to take greater advantage of distributed renewable energy sources as well as peak management strategies.

The work that VEC is doing will enable Vermont to meet the goals of having 90 percent of the state's energy come from renewables by 2050. This will require a radical transformation of how we generate and use electricity. It will require appliances that are in continuous communication with the grid, distributed storage and ubiquitous solar. VEC will carry out these goals and use the best engineering and financial expertise available in the industry. Our goal is to optimize all of our physical and human assets to carry this out in the most economic and efficient way as possible.

We know that member expectations continue to rise – as they should. That's why every day, we at VEC are learning and improving in everything we do, always striving to deliver greater value.

Important Annual Notice Regarding Herbicide Use in the Maintenance of Electric Utility Rights-of-Way

The Vermont Public Utility Commission has set forth rules under PUC 3.600 pertaining to the use of herbicides in the maintenance of electric utility rights-of-way. Each spring, herbicide applications may begin on or after April 1st. These rules afford you important rights and duties. Vermont electric utilities maintain electric line rights-of-way with several methods, including the selective use of herbicides on trees and brush. They also encourage low-growing shrubs and trees which will crowd tall-growing species and, thus, minimize the use of herbicides. Methods of herbicide applications may include stump, stem Injection, basal, soil, and foliar. **Only electric utility rights-of-way that have tall-growing tree species with the potential of threatening the electric utility system are treated.**

If you reside on or own property in Vermont within 1000' of an electric utility right-of-way:

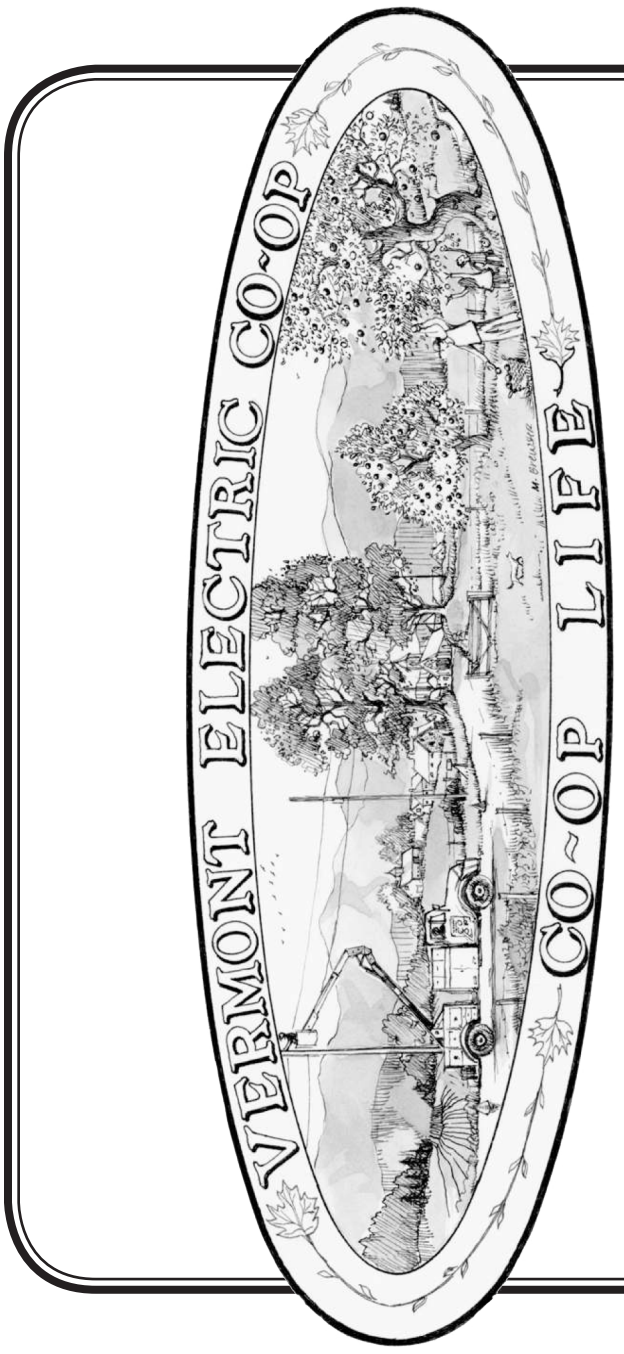
1. **Sign up to receive written notification** from your local electric utility of plans to apply herbicide on any ROW within 1000' of your property or the property where you reside. Check nearby poles for tags identifying the utility and/or pole number, complete the form below and submit it to your local electric utility by mail before February 15th, 2018 to be added to the notification list. If determined to be qualified, you will receive notification from the utility at least 30 days prior to scheduled herbicide application.
2. **You are responsible to make your local electric utility aware** of the location of any potentially affected water supply, and of any other environmentally sensitive area where herbicide application ought to be avoided.
3. **Watch and listen for public service announcements** in newspapers and radio ads noting upcoming herbicide applications.
4. **Check with your local electric utility** regarding the vegetation management cycle near your particular line.
5. **You have the right** to request, in writing, that the utility refrain from applying herbicides in the process of clearing the right-of-way, and the utility may offer alternatives such as herbicide stump treatment or herbicide stem injections.
6. **You have the right** to refuse, in writing, the use of herbicides whatsoever at no cost to you if the type of lines in the right-of-way are **distribution lines**, bringing electric service directly to individual customers.
7. **You have the right** to refuse, in writing, the use of herbicides whatsoever by paying a $30 administration fee if the type of lines in the right-of-way are **transmission lines** or **sub-transmission lines**, bringing electricity to or between substations.

For more details, or to ask additional questions, please contact your local electric utility, or one of the following:

Vermont Electric Cooperative **Sara Packer, Manager of Forestry** **42 Wescom Rd., Johnson, VT 05656** **1-800-832-2667**	**Agency of Agriculture** **Cary Giguere, Plant Industry Section** **116 State St., Montpelier, VT 05602** **1-802-828-6531**	**Department of Public Service** **Consumer Affairs & Public Information** **112 State St., Montpelier, VT 05620** **1-800-622-4496**

Based on the information above, if you believe you qualify to be notified in advance of pending herbicide applications in the rights-of-way, mail the request below to your local electric company before February 15th, 2018.

Resident/Property Owner Request to be Added to Herbicide Treatment Notification Mailing List	
Name	Town/City of Affected Property
Street Address	Home Phone Number
Town	Work Phone Number
State Zip Code	O.K. to use work number? Yes No (circle one)
Electric Utility Account Number	Best time to contact you
Affected Property: Year-Round Residence Summer Residence Commercial Property Water Supply Organic Farm Land Other (Circle all that apply)	
Line/Pole Identification: Utility Initials Pole Numbers	
Please fill out this request completely to help us determine if you qualify for herbicide treatment notification. **MAIL THIS REQUEST TO YOUR LOCAL ELECTRIC UTILITY AT THE ADDRESS LISTED ABOVE BEFORE FEBRUARY 15TH, 2018**	



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Zero Energy Modular (ZEM) homes offer a lower-cost, high-quality housing option for Vermonters. This home was constructed by Vermod, located in Wilder Vermont, and is built to be extremely energy efficient. Learn more inside this issue. Photo courtesy of Efficiency Vermont.

VERMONT ELECTRIC CO-OP INC

Vermont Electric Cooperative Inc.
42 Wescom Rd.
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District 4	Mark Woodward 802-635-7166 110 Woodward Rd, Johnson, VT 05656 district4@vermontelectric.coop
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