

Efficiency Vermont

Embedding energy efficiency into low-income programs and services



By developing new ways to address common barriers to reducing energy use in low-income communities, Efficiency Vermont has been able to reach nearly one-half of the state's low-income population. An estimated one-fifth of all Vermonters spend more than 10 percent of their monthly income on home energy bills,¹ compared with the national average of less than three percent.² The low-income programs of Efficiency Vermont, the nation's first public energy efficiency utility,³ work to reduce this high energy burden, freeing up money that can be spent on food, housing, and other necessities. Its low-income programs have saved enough electricity to power nearly 8,000 Vermont households for a year,⁴ which equates to avoiding close to 26,000 metric tons of carbon dioxide.⁵

Efficiency Vermont builds relationships with a variety of public and private organizations that offer social and economic services to the low-income community. This approach allows the utility to embed its programs into community organizations' existing services, take advantage of targeted distribution channels, and offer multiple points of entry for the state's low-income residents by meeting them where they live, shop, and obtain social services.

All of the utility's low-income programs offer solutions that eliminate or reduce up-front costs for residents, a typical barrier to improving energy efficiency in low-income households. Its multifamily energy efficiency program helps renters as well as building owners save energy, addressing the "split incentive" barrier in which owners have little reason to invest in efficiency measures that benefit tenants who pay their own energy bills.

Fast Facts

Program scope: Collaborations with multiple partner organizations to provide a diverse portfolio of services to low-income households.

Budget: Total spending on all residential services in 2015 was \$20.6 million, of which \$3.6 million was for low-income programs.

Staff: Equivalent of two full-time employees (low-income programs only).

Communities served: Vermont households earning 80 percent or less of the state median income.

Key partners: Social service providers, state weatherization agencies, affordable housing funders, and nonprofit developers.

Promising practices: Partner with trusted organizations, eliminate or reduce up-front costs, address split incentives.



Making it Happen

The Vermont Public Service Board (PSB) established Efficiency Vermont in 1999 as an innovative solution to a problem faced by many states: each of Vermont's 22 electric utilities had developed its own independent set of efficiency programs, with little coordination among them. The PSB, utilities, and stakeholders saw a need to create Efficiency Vermont to be an independent energy efficiency utility that could provide a consistent set of efficiency services and incentives throughout the state, funded by a surcharge on electricity bills. The PSB chose the Vermont Energy Investment Corporation, a nonprofit organization dedicated to reducing the economic and environmental costs of energy use, to be the administrator and implementer of Efficiency Vermont's programs and services.

To help low-income Vermonters, Efficiency Vermont has worked since its inception with a variety of organizations in the state's affordable housing⁶ and social services communities to augment the services that the organizations provide with opportunities for energy efficiency. Efficiency Vermont reaches its target audience by accessing residents who receive services from the state's five weatherization assistance programs (WAPs); the Vermont Foodbank; the Women, Infants & Children (WIC) nutrition program; and nonprofit affordable housing organizations, among others. The utility tailors the services and products it offers to support and complement the missions of these and other partners, creating a suite of programs that offer multiple opportunities for low-income participants to save energy. The diversity of its programs allows the utility to increase its reach within Vermont's low-income communities.

Bringing the benefits of energy efficiency to the state's low-income residents has been a priority for Efficiency Vermont from the start. Its suite of low-income programs can be grouped into three broad activities: 1) distributing energy-efficient products, 2) reducing energy costs in single-family homes, and 3) improving energy efficiency in new and existing multifamily housing.

Distributing Energy-Efficient Products

Efficiency Vermont uses a variety of distribution channels to provide free energy-efficient products to low-income households statewide.

Distributing Efficient Lighting

In 2009, with a steep decline in the economy, Efficiency Vermont and the Vermont Foodbank teamed up to distribute free energy-efficient lighting to low-income Vermonters. The program has attained a broad reach by leveraging the Vermont Foodbank's established distribution



system: its central warehouses allow it to move items efficiently to the 280 partner food pantries across the state, prioritizing product delivery where demand and need are highest. The Foodbank's locations have shelves set up much like a small retail store, allowing customers to choose their own items and select efficient bulbs as easily as they do food. Efficiency Vermont has distributed more than 500,000 light bulbs through the Vermont Foodbank to date, and in recent years it has expanded its distribution network to include other organizations that serve low-income Vermonters.

Replacing Inefficient Refrigerators

In partnership with the state's WIC nutrition program, Efficiency Vermont ran a pilot program to reduce the energy burden of financially vulnerable families with young children by replacing old refrigerators, with new, more efficient units free of charge. WIC was a natural partner since it has an income verification system and existing relationships with the target beneficiaries.

WIC screened households in its database for income eligibility and then contacted those that were eligible to inform them about the program. It referred interested applicants to an Efficiency Vermont call center to confirm eligibility of their existing refrigerator (the unit must have been manufactured before 2001 and be the household's primary refrigerator), and arrange for a replacement. Call center employees also informed households about additional lighting and water conservation measures available through the Vermont Foodbank and other partners.

Efficiency Vermont paid for the new refrigerators as well as the costs of delivering to the home, installing the new fridge, and removing and recycling the old one. An Efficiency Vermont contractor installed the new refrigerators, hauled away the old ones, and recycled them in accordance with EPA's Responsible Appliance Disposal (RAD) program,⁷ which ensures the recovery of ozone-depleting blowing agents from foam insulation as well as refrigerants.

The pilot program was straightforward for WIC to administer, resulted in immediate energy savings for households, and helped ensure young mothers could afford to give their children a healthy diet. The program also cultivated a positive relationship between Efficiency Vermont and WIC, and as a result the two organizations are currently exploring ways to leverage their partnership and collaborate on other low-income energy efficiency projects.



Reducing Energy Costs in Single-Family Homes

Efficiency Vermont's initiatives for single-family homes include a program serving the often-overlooked manufactured home market and an expanding range of supplemental improvements to households receiving weatherization assistance.

Replacing Manufactured Homes

Through a unique partnership, Efficiency Vermont promotes solar-powered manufactured homes as an affordable alternative to conventional manufactured homes (commonly referred to as trailers or mobile homes). Low-income families live in the majority of the manufactured homes in the state. The homes typically are not properly insulated, expensive to heat, have poor indoor air quality, and are not built to last. Owners of manufactured homes in Vermont spend 66 percent more of their income on energy than do owners of conventional homes.⁸

Vermont was already facing a shortage of affordable housing for low-income renters and homeowners⁹ when Tropical Storm Irene destroyed nearly 130 manufactured homes in the state in 2011. That loss drove Efficiency Vermont to collaborate with a private manufactured home builder (VerMod) and nonprofit partners to design and offer a sturdy, highly energy-efficient, made-in-Vermont, alternative to standard manufactured homes. The new homes use advanced energy efficiency technologies such as ENERGY STAR[®] appliances and lights, triple-glazed windows, an airtight envelope, and an on-demand ventilation system that helps reduce harmful indoor pollutants such as volatile organic compounds. The homes, which are heated with high-efficiency electric heat pumps, typically include a 7 kW solar photovoltaic system on the roof, allowing them to be "grid-neutral," producing at least as much electricity each year as they consume. The homes sell any excess electricity they generate back to the grid through net metering agreements with utilities. As a result, owners of these homes have no net electricity or heating costs when averaged over the course of a year, compared with the typical utility costs of around \$3,800/year for conventional manufactured homes in Vermont.⁸

Efficiency Vermont partners with financial institutions, the U.S. Department of Agriculture Rural Development Agency, and nonprofit organizations to make these homes available to low-income households through flexible financing, including low-interest mortgages and low down-payment requirements. It provides workshops, tours, and open houses around the state to introduce low-income households to the homes and connect them to the program partners. Affordable housing nonprofits in Vermont, such as the Addison County Community Trust, have sponsored developments of the homes in former trailer parks, making the units available to low-income homeowners and renters.



Increasing Electrical Energy Savings for Low-Income Homeowners

Through its Low-Income Electrical Efficiency Program, Efficiency Vermont partners with the state's five Weatherization Assistance Programs (WAPs) to supplement standard weatherization services. By joining forces, Efficiency Vermont can build on the WAPs' extensive on-the-ground experience and longstanding relationships with the families they serve to deliver supplemental energy improvements to more low-income customers, while the customers only have to interact with one program.

Efficiency Vermont covers the costs of additional measures beyond those provided through weatherization, including a variety of ENERGY STAR-certified products such as refrigerators and clothes washers, lighting, and ventilation fans. It continually seeks opportunities to expand its range of supplemental improvements, adding energy-efficient mini-split heat pumps and ENERGY STAR-certified dehumidifiers and heat pump water heaters in 2015. Efficiency Vermont also offers technical direction to the WAPs to ensure the additional measures are installed properly.

Saving Energy in Multifamily Homes

Efficiency Vermont's programs for multifamily homes focus on providing individualized support to building owners and developers, offering a tiered financial incentive approach, and helping owners reduce energy costs for their tenants.

Improving Multifamily Building Performance for New Construction and Major Rehabilitation

Efficiency Vermont provides one-on-one technical support and financial incentives to owners and developers of all newly constructed multifamily housing (including low-income) as well as significantly renovated low-income multifamily housing. It strives to ensure that implemented measures meet or exceed both Vermont's Residential Building Energy Standards and ENERGY STAR specifications. For all new multifamily housing (including low-income), the utility assigns an energy consultant to work with the developer or owner from start to finish to make the process more convenient. This includes project design assistance, recommendations of efficient appliances and HVAC systems, and provision of three tiers of financial incentives ranging from \$500 to \$2,500 per apartment. The utility also offers third-party verification and certification for buildings that meet or exceed High Performance, ENERGY STAR, LEED, and Net Zero standards of excellence. This approach of providing personalized services allows Efficiency Vermont to help a broad segment of the state's multifamily developers to save energy.



To help renters save energy and money, the utility offers rebates to rental property owners with low-income tenants for measures implemented in tenant units such as efficient appliances and ventilation equipment. To apply for the rebate, owners submit a form with details on the equipment and the apartment in which it was installed. Owners can also use the form to request free energy-efficient light bulbs, showerheads, and faucet aerators for tenant units.

Key Partners

To reach the maximum number of low-income households, Efficiency Vermont builds partnerships with organizations in all sectors that provide services to Vermont's low-income population (e.g., affordable housing, health and food assistance, weatherization services). The partnerships benefit both parties, contributing to the missions and expanding the offerings of low-income service organizations while allowing Efficiency Vermont to tap into its partners' expertise, networks, and unique perspective. Key partners in each of Efficiency Vermont's low-income programs are mentioned in the sections above.

Funding Sources

Efficiency Vermont's work to help customers save electricity is funded through a 4.5 percent energy efficiency charge on the electric bills of all customers of the state's utility companies. The utility's services to help Vermonters reduce energy used for heating (e.g., propane) are funded from proceeds from the Regional Greenhouse Gas Initiative and from selling energy efficiency savings to the region's Forward Capacity Market.¹⁰ In 2015, the utility spent a total of \$20.6 million on residential services, of which \$3.6 million was for low-income programs.

Achievements

Efficiency Vermont's approach of providing a diverse suite of energy efficiency services and products has resulted in lower energy bills for thousands of low-income Vermont families. Recent accomplishments include:

- Efficiency Vermont served more than 48,500 low-income households (not including the Vermont Food Bank light bulb program) across the state between 2000 and 2015, nearly 50% of total low-income households.¹¹
- Its low-income programs have reduced 52.4 million kWh of electricity, enough to power nearly 8,000 Vermont households for a year.⁴ This equates to avoiding close to 26,000 metric tons of carbon dioxide.⁵



- The utility saved 74 billion Btus of fuel since 2000, equivalent to more than half a million gallons of heating oil.¹²
- Efficiency Vermont has provided more than 500,000 ENERGY STAR light bulbs to low-income Vermonters since 2009,¹³ resulting in a potential total cost savings of more than \$30 million over the bulbs' lifetimes.¹⁴
- In 2014, more than 70 WIC households in Vermont received a free energy-efficient replacement refrigerator, saving each household the up-front purchase cost while reducing energy costs for the life of the appliance.¹⁵
- The multifamily building energy programs resulted in improvements benefitting more than 2,800 apartment units between 2012 and the end of 2014.¹⁶
- Efficiency Vermont assisted with the placement of over 50 affordable grid-neutral (see “Replacing Manufactured Homes” section for definition) manufactured homes throughout the state between 2013 and the end of 2016.⁸

Keys to Success

Efficiency Vermont has identified the following attributes as especially important in reaching the state's low-income community:

- **Selecting partners strategically.** Efficiency Vermont chooses its partners based on their ability to serve specific target populations and the extent to which energy efficiency services would complement and contribute to its partners' missions. For example, partnering with Vermont's five weatherization agencies for its low-income direct install effort allows Efficiency Vermont to help reduce the utility bills of a large number of low-income homeowners.
- **Relying on existing product distribution channels.** Efficiency Vermont collaborates with organizations such as the Vermont Foodbank that already distribute products to low-income Vermonters and are trusted organizations within the low-income community. This allows the utility to better help its low-income customers save money by offering energy-efficient products where low-income families shop.
- **Offering measures that meet a variety of needs.** Efficiency Vermont provides a variety of energy efficiency opportunities (e.g., appliances, lighting, insulation, building



systems design) for Vermont’s low-income residents. The utility is able to save more energy by delivering an array of services that allow it to reach more low-income households, be flexible, and test new approaches, while pushing its partnering contractors, utilities, and others toward higher levels of efficiency.

Replication and Sustainability Tips

Efficiency Vermont staff noted that other organizations could focus on the following approaches to create, implement, and sustain similar programs within their particular contexts:

- **Use a portfolio approach to encourage broad participation.** The low-income sector is diverse and requires a range of targeted approaches to effectively realize savings. Instead of a one-size-fits-all approach, Efficiency Vermont offers a suite of directed services that reaches the broadest possible range of low-income Vermonters to ensure they have multiple opportunities to learn about and implement efficiency measures.
- **Make individual and community engagement a priority.** Efficiency Vermont’s low-income energy services depend on personal and continuous interactions with low-income residents through its partner organizations. Over time, this engagement engenders trust and motivation to undertake energy savings measures. The one-on-one technical assistance Efficiency Vermont provides to owners of multifamily housing is a good example of this approach.
- **Include education as part of the program.** Educating customers and partner organizations about the benefits of energy efficiency increases demand for efficiency products and services and builds momentum toward more far-reaching behavior change. For example, Efficiency Vermont ran a pilot in 2014 to test customers’ response to periodic home energy reports that compare their homes’ energy use to that of other customers. It sent reports to 100,000 randomly chosen households (including low-income households) and established a control group of 20,000 homes that received no reports. The homes receiving the reports saved 3.5 million more kilowatt-hours than the control group during the first six months of the pilot, resulting in more than \$500,000 in energy cost savings.¹⁷



For More Information

- [Efficiency Vermont website](#)
- [EPA Informational Resources on Energy Efficiency and Renewable Energy in Low-Income Communities](#)

¹ Vermont Law School, 2014. [Energy Costs and Burdens in Vermont: Burdensome for Whom?](#)

² U.S. [Energy Information Administration](#).

³ An energy efficiency utility delivers energy efficiency services rather than electricity or fuel. Examples of other energy efficiency utilities include Wisconsin's Focus on Energy, the Oregon Energy Trust, Delaware's Sustainable Energy Utility, and the Washington DC Sustainable Energy Utility.

⁴ Data on energy savings provided by Efficiency Vermont. Equivalent number of households based on [data on annual household electricity use in Vermont from EIA](#).

⁵ Calculated using [eGRID's regional non-baseload emissions rate](#) for the New England region.

⁶ "Affordable housing" is not necessarily low-income housing. Affordable housing initiatives in Vermont focus mainly on the state's low and moderate-income residents, people with disabilities, the homeless, older adults, and families with children.

⁷ EPA's [Responsible Appliance Disposal program](#).

⁸ VEIC, 2016. [Zero Energy Modular Homes Offer Comfort, Affordability to All](#). Data on conventional manufactured home energy use from the VerMod Homes [2015 pricing sheet](#).

⁹ Bowen National Research, 2015. [Statewide Housing Needs Assessment](#).

¹⁰ New England's Forward Capacity Market is designed to promote economic investment in the region's electricity supply and demand resources. The market holds auctions each year to purchase enough power generation or demand reduction resources (e.g., energy efficiency improvements) to satisfy the region's future needs.

¹¹ Data provided by Efficiency Vermont, 2016.

¹² The 74 billion Btus is a combined total from all space heating fuels; the heating oil equivalency is provided to illustrate the magnitude of savings. One gallon of heating oil contains [138,690 Btus](#) of energy.

¹³ Efficiency Vermont, 2016. [2016 ENERGY STAR Low-Income Lighting Initiative: Request for Proposals](#).

¹⁴ ENERGY STAR® [Light Bulb Savings Calculator](#).

¹⁵ Kuhn, Nikki, 2015. [Meeting Customers Where They Are: Efficiency Vermont's Partnership with WIC](#). Presentation at National Energy and Utility Affordability Conference.

¹⁶ Efficiency Vermont. [2014 Annual Report](#). 2015.

¹⁷ Efficiency Vermont, 2015. [Home Energy Reports: Bringing Low-cost Savings to More Vermonters](#).