

Vermont Climate Action Commission Building Energy Panel Discussion

Panelists

[Richard Faesy](#) - Principal and co-founder of Energy Futures Group in Hinesburg, Vermont.

[Paul Zabriskie](#) - Director of Weatherization and Energysmart of Vermont at Capstone Community Action.

Philip Bickel - Account Manager at Efficiency Vermont for commercial and industrial utility customers.

Daniel Edson – State Energy Program Manager at the Department of Buildings and General Services.

Current Situation

Energy is a substantial portion of home and business expenses. Vermonters spent about \$2.4 billion (in 2015) on energy. This total cost is split between electricity (35%), fuels for heat and industrial processes (25%), and fuels for transportation (40%). This total reflects today's relatively low oil and natural gas prices.¹

Heating Vermont buildings accounts for approximately 30% of Vermont's total site energy consumption. This energy is largely provided by burning fossil fuels with a smaller amount provided by biomass. The residential sector accounts for 60% of Vermont's thermal fuel consumption, commercial 29%, and industrial 11%. We pay over \$500 million to import and use fossil-based heating fuels, with most of this money leaving our economy.²

Paying for energy bills is the path of least resistance, which makes it challenging to get building owners' attention unless there is an immediate issue that needs to be addressed (e.g., comfort, drafts, broken heating system, etc.). For low-income Vermonters, energy can be a significant portion of their monthly expenses, they don't have the resources to invest in weatherizing older inefficient homes and the Weatherization Assistance Program waiting lists can be years long.

There is a strong network of building energy professions who typically achieve 15-30% energy savings through weatherization. Replacing older inefficient equipment can provide an additional 5-10% savings. In many cases weatherization, cold climate heat pumps and solar PV combined can deliver 50%-100% savings. These weatherization contractors and the subsidized Weatherization Assistance Program improve a fraction of the homes we need to improve annually to meet our goals.

Energy Efficiency Utility performance is measured by yearly Megawatt hours (MWh) and Million British thermal units (MMBtu) reduction by sector. In 2016 Efficiency Vermont reported meeting the performance requirements in the commercial, industrial, and institutional sector. Savings were 53,000 MWh and 46,600 MMBtus³. The challenge for the Commercial, Industrial and Institutional sector is that it can't be measured by percentage of buildings or reduction per building like the residential sector. We want businesses to grow which requires more energy input. Many businesses choose not to allocate dedicated resources to efficiency project implementation. The companies that have had the greatest success in energy reduction have had buy-in from leadership and dedicated staff resources to implementing energy efficiency measures.

Future Trends

- The current pace of weatherization is 850 - 2,000 homes/year while we need to be doing 12,000/year. (Efficiency Vermont reported an average of 850 homes and we will confirm the Weatherization Assistance Program numbers for you on Thursday).
- Heat pumps and PV will continue in homes without weatherization
- Delivered fuels will have limited support and focus if Energy Efficiency Utilities and the Distribution Utilities focus primarily on electrification and electrical savings
- New construction will follow codes and standards

¹ [2016 Vermont Comprehensive Energy Plan](#), p. 5

² [Ibid](#), p. 88.

³ [Efficiency Vermont Annual Report 2016](#), p. 22

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- Funding opportunities are available for commercial owners but existing building improvements must be driven by mandates.
- Evolving technology will ensure opportunities for further reductions in building energy
 - Ex. LEDs, advanced building automation controls, heat pumps
- Data acquisition (Advanced Metering Infrastructure, sub-metering, etc.) to better understand a facility's energy profile will continue to improve
- Net Metering Rule 5.100 will slow commercial and industrial utility customer adoption of solar without alternatives.

Opportunities

- Tier 3 (Act 56) has significant potential to impact meaningful energy savings. Collaboration between Energy Efficiency Utilities and Distribution Utilities to provide consistent messaging to Vermonters is paramount.
- Zero Energy Now pilot in 2016 showed >75% total energy savings in existing homes with weatherization, heat pumps and solar combined
- Leverage marketing expertise and interest in solar PV to promote and incentivize weatherization.
- Keep pushing heat pumps to displace fossil fuels, but pair with weatherization and PV
- Support and encourage fuel dealers to diversify and become “energy service companies”.
- Building energy labeling and support of energy information is important at the time of building sales to make energy visible and part of the home buying and selling process, in the MLS
- Continue the [HEAT Saver Loan](#).
- Stronger new construction codes could be implemented that will help drive towards net zero by 2025.
- Fund expanded weatherization efforts through additional fees on fuel
- It is clear that if Vermont is to make adequate progress on its thermal efficiency goals, a significant amount of both public and private investment will be needed to facilitate a significant increase in building energy efficiency. ⁴
- Expand successful commercial energy program models to the broader municipalities, universities, schools, and hospitals group.
- Evaluate additional cost beneficial programs that can utilize the Energy Efficiency Charge, e.g. [Recommendations regarding the establishment of a pilot self-administered, total energy program](#).
- Follow the recommendations in the 2016 Comprehensive Energy Plan for vetted and impactful initiatives.

⁴ Ibid, p. 95