

Next Generation Residential Retrofits: Vermont's "Zero Energy Now" Program ACEEE Market Transformation 2017 Conference



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Energy Futures Group Consulting

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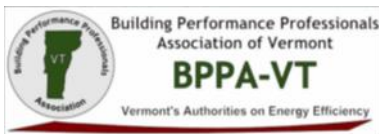
Areas of Expertise

- Program Design
- Policy Development
- Building Codes
- Evaluation
- Cost-Effectiveness

Range of Clients

- Government Agencies
- Advocates
- Regulators
- Utilities

Clients in more than 30 states/provinces plus regional, national and international organizations. Energy efficiency and renewables.



Presentation Agenda

1. Zero Energy Now

- ▣ Context: Why did it come about?
- ▣ What is it?
- ▣ Case Studies and Result
- ▣ What's the Future Hold?
- ▣ Considerations for Program Design

2. Zero Energy Now in context of Market Transformation



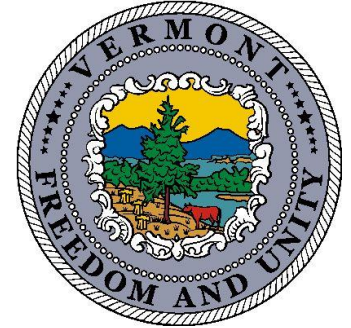
<https://vimeo.com/197440650>

Why?



Vermont context is critical:

- General Ethos
 - ▣ Local, Self-reliance, Sustainability, Pioneers
- Small size
 - ▣ Flexible, nimble, relatively small energy consumption
- Abundant natural resources, relatively clean electricity portfolio
- Lots of “firsts”... where to next?
 - ▣ Comprehensive Energy Plan: 90% by 2050
 - ▣ Renewable Energy Standard Tier Three
 - ▣ Strategic Electrification



Why?



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□ For Building Performance Professionals Association of Vermont (BPPA-VT):

- Comprehensive energy solution (EE + RE)
- Coordinated industry contractors
- Integrated utility programs



□ For the customer:

- Streamlined, coordinated – less work and confusion
- Move off of fossil fuels
- Secure your energy costs into the future
- Realize all available rebates
- Guaranteed Energy Savings and Quality Service



What is ?



Vermont's 2016 Zero Energy Now program

- Comprehensive, stream-lined home energy efficiency *and* renewables program
- Minimum program goals
 - Use 10% less energy
 - 50% reduction in fossil fuel use
 - 50% renewable energy
- One touch: one certified contractor guiding the process
- Utilized every available incentive and financing offer *and* added a bonus
- Energy savings guarantee
- Aiming for positive cashflow



What were **ZEROENERGYNOW** Incentives and Financing Options?

Home Performance with ENERGY STAR



- Up to \$2,500 for weatherization & high efficiency heating systems

Vermont Clean Energy Development Fund (RERC)

- Up to \$5,500 for eligible pellet heating systems

Federal Tax Credits

- Up to 30% for solar PV and geothermal

For Select Green Mountain Power Customers

- Up to \$5,000 more in incentives

Financing

- Local loans (0% to 4.99%, \$35k - \$40k, up to 15 years)



Photo courtesy www.investcroatia.hr

Richmond, Vermont

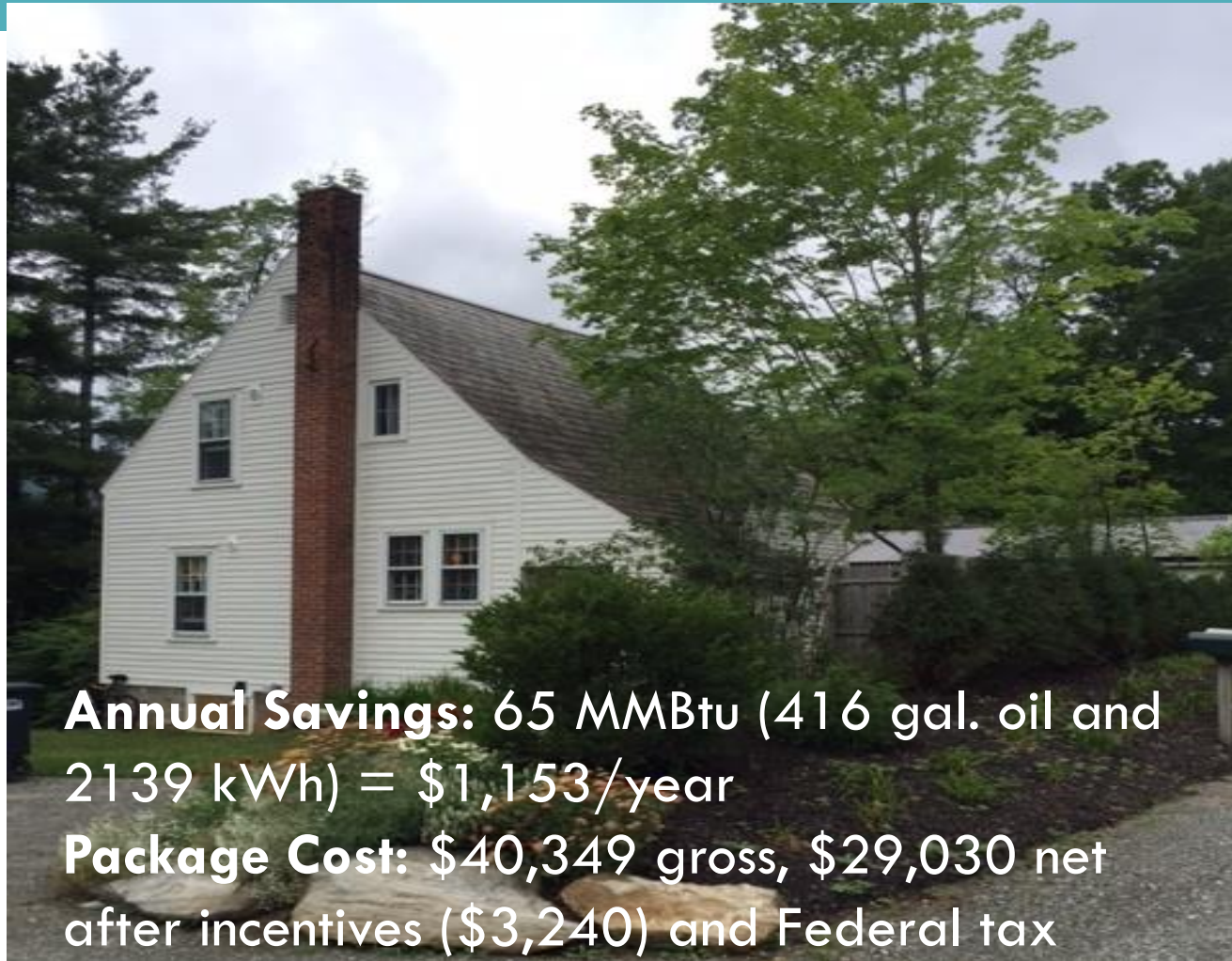
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Annual Savings: 97 MMBtu (650 gal. oil and 1952 kWh) = \$1,595/year
Package Cost: \$42,851 gross, \$35,568 net after incentives and Federal tax credits

Dorset, Vermont

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Annual Savings: 65 MMBtu (416 gal. oil and 2139 kWh) = \$1,153/year

Package Cost: \$40,349 gross, \$29,030 net after incentives (\$3,240) and Federal tax

E. St. Johnsbury, Vermont

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Customer Reviews

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- 87% of customers “Somewhat – Very” Satisfied
- 82% of customers would “definitely” recommend the program to a friend (and 18% would probably recommend)
- Customers highlighted how unique it was to have a comprehensive program
- Customers did mention that, even with the comprehensive, streamlined approach the complexity of this work can mean it takes time and patience
- Customers unable to state whether they were seeing their expected savings at time of survey – too soon after project completion

Results



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Average	Home Performance with ENERGY STAR (2013-2016)	Zero Energy Now (19 of the 22 projects; 6/2016 – 12/2016)
Savings (MMBtu / year)	~22	~90
Cost Savings (\$/year)	~\$860	\$3,583
Project Cost	\$7,850	\$41,209
Return on Investment	11%	9%

What's the future hold for ?

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- Transition to Efficiency Vermont
 - ▣ Adding a new “deep energy retrofit” tier to Home Performance with ENERGY STAR program
 - ▣ Continuation of incentive available for pellet heating system
 - ▣ Green Mountain Power funding layers PV onto this new tier
 - ▣ Up to \$1,000 of additional incentives (“Solar Adder”)
- Continuation of original 2016 “Zero Energy Now” comprehensive existing homes offering through select contractors

Considerations for Program Design

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Do you have the right ingredients?

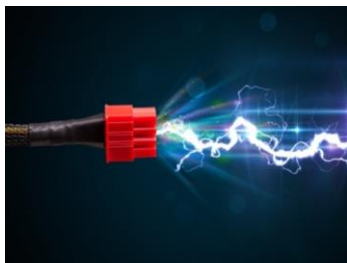
- ❑ Engaged contractors
- ❑ Interested customers, willing utilities
- ❑ Regulations
- ❑ Incentives and Financing
- ❑ Electricity portfolio dominated by renewables
- ❑ Integrated Program Tools with a customer cashflow perspective



ZEROENERGYNOW in context of Market Transformation

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- What do we mean by “Market Transformation”?
 - ▣ If end goal is carbon reduction then EE + RE
- Transitioning to Strategic Electrification
 - ▣ Blurring of lines: efficiency “and/both” renewables
 - ▣ Blurring of three energy sectors: thermal, transportation, electrical power
 - ▣ Blurring of lines: utilities and customers



Courtesy of Dunsky Energy Consulting



Challenges

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- ❑ Political
- ❑ Business upheaval
- ❑ Aesthetics
- ❑ Technical
- ❑ Human aversion to change (Many uncertainties and unknowns = risk)
- ❑ Regulatory structure
- ❑ Financial

Reasons to keep pushing

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- Economic development
 - ▣ New jobs
 - ▣ Keep money in the local economy
- Satisfied customers
- Healthier communities and planet
- Less waste in the energy sector
- Despite shift in federal government, states and cities will continue to lead this clean energy transition through creative, collaborative approaches

Q&A

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