



Building Performance Professionals
Association of Vermont
BPPA-VT
Vermont's Authorities on Energy Efficiency

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Zero Energy Now

Program Plan

for

Green Mountain Power's

Community Energy & Efficiency Development Fund (CEED Fund)

June 21, 2016



BPPA's Zero Energy Now Program Plan

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1. Executive Summary

Zero Energy Now is a program designed, developed and implemented by the Building Performance Professionals Association of Vermont (BPPA-VT). With several years of experience providing homeowners with predominantly efficiency services, members of the BPPA-VT Board determined that many Vermonters were seeking greater reductions in energy use through a more comprehensive offering of efficiency and renewables. The Zero Energy Now program strives to provide this comprehensive approach to customers through one, single contractor who is responsible for overseeing all retrofit work. This provides not only a comprehensive service but also an easier, simpler experience for the customer.

For the 2016 calendar year, Zero Energy Now has received funding and incentive support through Green Mountain Power's (GMP) Community Energy and Efficiency Development Fund (CEED) to complete fifty Zero Energy Now building retrofits. To achieve this goal, the program is leveraging several existing Vermont markets and structures by:

- (1) bringing together select Efficiency Vermont (EVT) Home Performance with ENERGY STAR (HPwES) Efficiency Excellence Network (EEN) participating contractors with REV's solar and biomass heating installers;
- (2) utilizing existing home performance and renewable federal and state incentives and augmenting these incentives through CEED funds;
- (3) developing and refining the EUSAVE energy modeling tool that combines weatherization savings with renewable generation estimates;
- (4) developing and providing an energy usage and work quality guarantee to solidify customer's confidence to increase participation;
- (5) piloting the development and implementation of a Home Energy Labeling program in partnership with Vermont Energy Investment Corporation (VEIC);
- (6) executing targeted marketing and outreach to drive customer interest;
- (7) completing ongoing "plan-do-act-check" with market service providers (weatherization contractors, renewable installers, utilities) and program implementers to identify areas for program modification to continually improve program delivery, customer satisfaction and energy savings.

It is the BPPA-VT Board's hope that this initial 2016 program will evolve into a statewide offering that achieves savings in energy use and costs, and also provides a mechanism for Vermont utilities to meet energy requirements as defined in Tier Three (the Energy Transformation Tier) of Vermont's Renewable Energy Standard, to be in effect January 1, 2017.

2. Overview

2.1 About the Community Energy and Efficiency Development Fund

The Community Energy and Efficiency Development (CEED) Fund was created as part of the merger between Central Vermont Power Supply (CVPS) and GMP. Under the CEED Fund, which was part of a Vermont Public Service Board (PSB or Board) approved Memorandum of Understanding (MOU) with the Vermont Public Service Department (PSD or Department), GMP invests in projects

intended to result in positive net benefits for customers within the former CVPS service territory. The MOU with the Department guides GMP's selection decision with regard to proposals that are submitted through an open, transparent and competitive stakeholder process. Eligible projects may include those that:

- Serve customers through new and existing efficiency programs (including thermal efficiency programs), as well as renewable and clean energy programs;
- Use new and innovative technologies to deliver benefits to customers.

The CEED Fund's required investment was \$20.9 million as of December 31, 2011, thereafter adjusted for inflation on the uninvested amount. GMP invested \$6 million in Vermont's Weatherization Program in November 2012 and invested an additional \$4 million by December 31, 2011 consistent with the PSD MOU. Weatherization services were provided by State of Vermont community action programs. By December 31, 2017, GMP will deliver additional investments of \$2 million in thermal efficiency improvements and roughly \$8.9 million in mixed investments for the benefit of customers. The remaining investment obligations escalate by the rate of inflation for electrical efficiency over a five-year period.

2.2 The Case for the Comprehensive Approach to Fossil Fuel Reduction in Vermont Existing Homes

Vermont has frequently been a state to tackle big issues and lead the nation into necessary but--at times--unchartered territory. As a state, we have set some significant energy goals. The state comprehensive energy goal of 90% renewable by 2050 is a notable energy goal and one that appears to be gaining acceptance by Vermonters, those that are active in the energy field and the general public alike. What does not seem to be coming into focus is the path by which we can achieve this requisite reduction in fossil fuel to meet the 90% renewables goal. The present state programs, after much investment of public funds has just barely scratched the surface of achieving a notable reduction of the gas and oil we use for heating our buildings. If we are to reach the stated goals of 90% renewables we will need to convert over 200,000 residential homes to 90% renewable energy by 2050. That is an average of more than 6,000 homes a year. We are presently only achieving a 25% reduction in less than 2,000 homes a year. The first step in achieving the stated comprehensive energy goal is to recognize that what we are presently doing is not working well enough. At the moment, homeowners are bombarded by the many options to reduce energy in a fragmented, piecemeal way. Energy efficiency, heat pumps, solar PV and biomass are all choices facing homeowners in a mix of disconnected bits of information that often confuse the homeowner, presented by contractors that are selling a particular product or service. The result is an uncoordinated mix of energy projects that will not get us to the finish line of 90% renewables by 2050. BPPA-VT's Zero Energy Now program is a strategic, coordinated initiative to improve the status quo in weatherization and renewable offerings in Vermont.

2.3 About BPPA's Zero Energy Now Program

The BPPA-VT's Zero Energy Now program involves developing and implementing an improved marketing, sales and service delivery platform for upgrading Vermont's existing homes and small businesses that will result in at least 50% fossil fuel savings per customer. This will be achieved through a comprehensive approach that provides customers with an analysis and the contracting services to install a complete package of weatherization, photovoltaic, heat pump, and biomass systems.

This comprehensive program includes the following elements:

- Coordination with existing Home Performance with ENERGY STAR™ program providers and renewable system installers to provide much deeper savings for participants;
- Selection, training and support of service delivery participants in order to deliver 50 completed projects in 2016;
- Development of an energy modeling tool that incorporates efficiency and renewable generation measures and savings estimations;
- Implementation of a Home Energy Labeling pilot program; and
- Implementation of a residential energy usage and quality guarantee.

The Vermont Public Service Board (PSB) approved GMP's 2016 CEED Plan on February 16, 2016. As a result, BPPA-VT is the recipient of \$698,000 in CEED funds during the 2016 calendar year.

2.4 About this Program Plan

The purpose of this Program Plan is to have one document provide an overall summary of the Zero Energy Now program including detailed information and specific descriptions of unique program. As Zero Energy Now is a new program developed in a short timeframe, this plan will be updated on a regular, on-going basis as program elements are developed or modified.

3. Program Participants and Stakeholders

There are multiple organizations, businesses and individuals involved in the implementation of Zero Energy Now. Below are

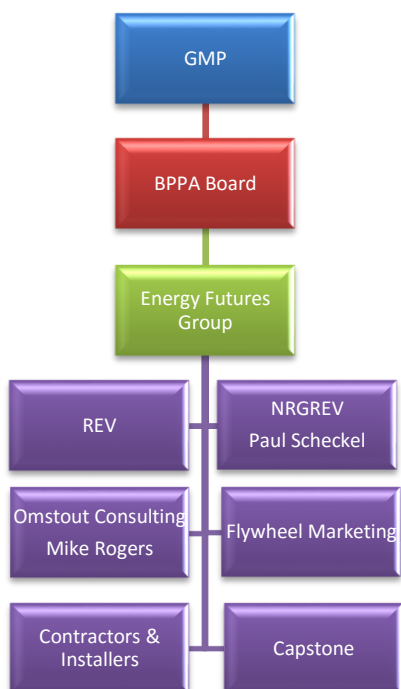
A Unique Approach

*For the first time, customers will be able to obtain energy savings and renewable energy information and services for their home or small business from a single source that provides a comprehensive analysis considering all of the demand- **and** supply-side options. With the benefits of currently-available low interest/long term financing options, we have now entered an era in which contractors can deliver positive cash-flow opportunities for packages that can save up from 50- to 100% of a customer's energy usage.*

the primary businesses and individuals involved in the design, development and coordination of Zero Energy Now.

3.1 Organizational Chart for Zero Energy Now Program Management

The following chart shows the flow of command for the program for participants receiving, making payments and signing contracts. This chart does not show partnering entities with whom no payments or contracts are required.



3.2 Organizations, Roles and Contact Names for Program Management

The following table shows all prime contacts for Zero Energy Now implementation.

Table 1. Zero Energy Now Roles and Responsibilities

Zero Energy Now Program Role	Business	Name
Provides Program Oversight & Recipient of Incremental Savings	Green Mountain Power (GMP)	Kirk Shields, Shawn Enterline
Responsible for Project Results, Project Applicants, Fund Recipient	BPPA-VT Board (BPPA-VT)*; Executive Director	Malcolm Gray*, Chuck Reiss*, Allan Bullis*, Tom Perry*, Bruce Landry*, John Unger Murphy*, Richard Faesy*, Walter Scott*, Paul Zabriskie*, Phil Cecchini*, Steve Spatz*, Jonathan Dancing
Provides Project Management and Primary Contact for GMP/EVT/Vermont Gas and all subcontractors	Energy Futures Group (EFG)	Richard Faesy*; Gabrielle Stebbins

Primary Contact for Customer and Provides Program Implementation Support	Capstone	Paul Zabriskie*, Phil Cecchini*
Develops EUSAVE Tool and Model	NRGREV	Paul Scheckel
Trains Contractors in Sales	Omstout Consulting	Mike Rogers
Reviews Renewable Energy (RE) Components to Program Design; Acts as Liaison With RE Installers	Renewable Energy Vermont (REV)	Ansley Bloomer
Provides Coordination with existing Home Performance with ENERGY STAR (HPwES) program	Efficiency Vermont (EVT)	Perry Vasta; Carol Weston; Jennifer Norz
Provides Coordination with Existing Vermont Gas programs	Vermont Gas Systems	Jeremy King
Provides Support in Energy Labelling	Vermont Energy Investment Corporation (VEIC)	Emily Levin; Leslie Badger
Develops and Implements Marketing Plan	FlyWheel Marketing	Michael Levine, with support from Marketing Committee
Provides Targeted Marketing and Coordination with Various Community Groups and Partners	Various Zero Energy Now contractors	Marketing Committee: Chuck Reiss*, Bob Walker, Malcolm Gray*, Gabrielle Stebbins, Paul Zabriskie*, Steve LaRose

3.3 Decision-Making

GMP is ultimately responsible for the CEED programs under the PSB and have oversight over Zero Energy Now. GMP will be engaged and consulted as program designs and decisions evolve. The BPPA-VT Board of Directors is ultimately responsible for delivery of Zero Energy Now. They have contracted with Energy Futures Group (EFG) for program development and oversight, and with Capstone for day-to-day program implementation.

3.4 Other Partnering Entities

Other partnering entities, specifically those that may help to spread the word in-kind about Zero Energy Now and are not listed above, may include but are not limited to:

- AIA
- Energy Action Network
- 350-VT
- GBC, Vermont Building Entities
- Interfaith Power and Light
- Vermont Sierra Club
- Vermont Energy and Community Action Network (VECAN) (through VT Natural Resources Council)
- VPIRG
- Various media outlets: Bob the Green Guy, 7 Days, Green Energy Times, Green Living Journal, etc.

3.5 Zero Energy Now Contractors

Many state and utility energy programs that provide efficiency services or renewable installations are structured so that these energy services are provided to customers under separate “silos”. In contrast, our approach to Zero Energy Now projects is unique. Typically, contractors offering efficiency work and contractors offering renewables work do not frequently coordinate and collaborate across business lines. The Zero Energy Now program actively engages with both trade associations, the Building Performance Professional Association of Vermont (BPPA-VT) and Renewable Energy Vermont (REV). We provided an opportunity for all members of BPPA-VT and REV to participate by submitting an Application Form to the Zero Energy Now program and requiring attendance at Zero Energy Now trainings.

There are 16 general contractors who are responsible for overseeing all aspects of the Zero Energy Now program for their customers and 8 “In Network Partners” who provide various specific work tasks such as the installation of solar PV or a biomass pellet system. These include:

- General Contractors:
 - 5 Star Energy Tech, Bruce E. Landry, 479-3575, Barre
 - Build Basic Green LLC, Bruce Merritt, 436-2200, Hartland
 - Building Energy, Brent Mellen, 359-7550, White River Junction; and Nik Ponzio and Russ Flanigan, 859-3384, Williston
 - Caleb Contracting, Jim Bradley, 644-8756, Cambridge
 - Common Sense Energy, Allan Bullis, 846-7592, Burlington
 - Energy Co-op of Vermont, Paul Fleckenstein, 860-4090, Colchester
 - Energy Wright, Phil Mulligan, 685-7784, Chelsea
 - HEAT Squad, Melanie Paskevich, 797-8610, West Rutland
 - Integrated Solar Applications, Andy Cay, 257-7493, Brattleboro
 - Montpelier Construction, Malcolm Gray, 479-5882, Barre
 - Murphy’s Zero Energy Building, John Unger Murphy, 748-5800, St. Johnsbury
 - New Frameworks Natural Design, Jacob Deva Racusin, 782-7783, Burlington
 - New Leaf Design, LLC, Thomas S Perry, 482-5323, Hinesburg
 - Peachtree Builders, Richard Nelson, 674-6005, Windsor
 - Reiss Building and Renovation, Chuck Reiss, 482-3295, Hinesburg
 - Weatherization Works/Solar Works, William Morrissey, 268-0028, Pawlet
- “In Network Partners”:
 - DC Energy Innovations, Ben Gordesky, 372-9514, North Hero
 - Farnum Insulators, Chad Farnum, 387-5005, Dummerston
 - Gary MacArthur, Gary MacArthur, 257-7026, Brattleboro
 - Grassroots Solar, Bill Laberge, 325-2281, Dorset
 - Integrity Energy, Amos Post, 763-7023, Bethel
 - Pelligery, Andy Boutin, 371-0098, Montpelier
 - Same Sun of Vermont, Michael Elliott, 775-7900, Rutland
 - Solaflect Energy, Cody Berwick, 649-3700
 - SunCommon, James Moore, 882-8144, Waterbury Center
 - Sunwood Biomass, David Frank, 496-6666, Waitsfield
 - USA Solar Store, David Bonta, 226-7194, Proctorsville

All businesses and individuals receiving payment or incentives through CEED for their work will be required to sign confidentiality agreements (if applicable) and contracts with agreed-upon Scopes of Work. All contractors will be asked to sign a Memorandum of Understanding (MOU) with BPPA-VT highlighting the goals of the program, the estimated number of projects to be completed, customer turn-around time frames and agreement to abide by a quality guarantee.

4. Key Program Elements

There are a few key, program elements that differentiate Zero Energy Now from other customer-facing efficiency and renewables offerings. These are further discussed below.

4.1 EUSAVE Modeling Tool

The EUSAVE modeling tool was developed by Paul Scheckel¹ of Calais, Vermont as a tool for contractors taking a comprehensive approach to analyzing buildings and presenting those results to customers. The tool has been used to model building energy usage, savings and recommendations. Multiple tool modifications have been incorporated to ensure compatibility with the Zero Energy Now program standards and reporting requirements. These include:

- Ensuring tool capabilities accurately model efficiency, mechanicals (including heat pumps), renewables, lights, appliances, thermal gains, etc. for a complete building energy picture
- Ensuring EUSAVE integrates easily into GMP's net societal benefit (NSB) calculation tool allowing for efficient and accurate monthly reporting
- Incorporating various features such as the ability to identify CEED-territory (CVPS legacy territory), financing models, a project and user management filing system, the ability to share projects
- Developing a simplified customer report with recommendations that presents energy efficiency, heat pump and renewables options including cash flow scenarios using available financing options
- Ensuring that EUSAVE can serve effectively as a compliment to EVT's tool ("HERO")
- Clearly differentiating and reporting out EVT claimed savings from all other (CEED-claimed) savings for ease of reporting
- Supporting contractor training with presentations on EUSAVE
- Providing monthly service support and enhancements
- Providing five years of a group user license with limited support

A more detailed list of additional changes required to modify EUSAVE to meet the purposes of Zero Energy Now is available through EFG by reviewing Paul Scheckel's Scope of Work. For more detailed information about the EUSAVE tool, see Appendix 5.

¹ <http://www.nrgrev.com/>

4.2 Home Energy Labeling

A critical challenge to increasing customer uptake in weatherization is that the efficiency work is, essentially, “invisible” unless quantified and labeled, thereby helping to financially quantify the customers’ investment and enhance their home’s future resale value. Scoring these highly-efficient homes and small buildings will provide yet more value to homeowners as they consider participating.

In Quarter 2 of 2016, Efficiency Vermont will be rolling out a pilot utilizing Department of Energy funds through their Home Energy Labeling program. Part of this roll out involves trainings for contractors to become DOE Home Energy Score Advisors. Zero Energy Now contractors will be made aware of this opportunity but will not be required to offer this to their customers during this initial Zero Energy Now program roll out.

4.3 Usage and Quality Guarantee

The comprehensive projects are backed by energy usage and quality guarantees. Extensive research both in Vermont and nationally has shown that confidence in projected energy savings is a significant barrier to energy efficiency adoption. Survey results of Vermont residents have shown that 76% would rank “confidence that estimated energy savings would be realized” as an important factor in moving forward with home performance projects, higher than any other option (including greater rebates).² Similar research nationally has indicated that 92% of residential customers cite the lack of an energy and cost reduction guarantee as one of their top three barriers to energy efficiency program participation.³

At the same time, guarantee programs have been shown to be highly effective and financially viable. A survey of 33 residential guarantee programs found a claims rate against guarantees of under 1%.⁴ A previous program in Vermont found a similar experience, with approximately 80 guarantees provided and only one single claim that was settled for \$60. At the same time, guarantees were found to be very valuable from a marketing perspective in helping move customers toward “yes” when contemplating an energy efficiency project.

Building on this research, as well as a series of findings from four stakeholder groups around Vermont and a series of stakeholder convenings over the past several years, a guarantee feature is incorporated into Zero Energy Now projects to help overcome the confidence barrier and motivate customers to move forward. The guarantee includes aspects of both total energy usage and quality

² GDS, “Vermont Single Family Retrofit Market Research,” prepared for the High Meadows Fund, February 15, 2013, p. 2-9,

<http://static1.squarespace.com/static/51b0ce25e4b0e8d244de368b/t/51ffb096e4b0af1f5ce8d79a/1375711382183/Market+Research+-+Vermont+Single+Family+Energy+Efficiency+Retrofit+Market.pdf>.

³ KSV, Energy Wire, October 16, 2014, <http://www.ksvc.com/energywire/2014/10/16/your-customers-dont-trust-your-ee-financial-messaging>.

⁴ E Source, “Assessment of Residential Comfort and Energy Bill Guarantee Programs,” September 28, 1995, p. 6.

assurance, to ensure that customers can be confident in energy usage projections while also seeing the tangible benefits of energy efficiency projects. The feature is designed to be financially viable for the program, placing reasonable limits on the potential need to cover any energy usage above projections.

4.3.1 Features

The guarantee features two core aspects: a one-year “usage guarantee” backed by the \$50,000 of GMP CEED funds (limited to a maximum of \$1,000 per customer and paid out on a first-come, first-served basis as necessary), and a “quality guarantee” backed by participating contractors. The usage guarantee covers the building’s total energy usage, as projected by the EUSAVE energy modeling software. In other words, if the EUSAVE software projects that total energy usage will be a certain amount, the usage guarantee would be triggered if actual usage exceeded that amount.⁵

In order to make a claim against the usage guarantee, customers must follow these steps: 1) the customer should compare all combined energy bills to the projections in EUSAVE to determine whether actual total energy usage exceeded projected usage; 2) if actual usage exceeded projections, the customer may file a claims form, which should include all energy bills for one year following the completion of the retrofit; 3) the claim will trigger an inspection by the Zero Energy Now program to verify the claim and identify the source of the usage exceeding projections; 4) after the inspection, the claim is calculated according to the terms of the guarantee as stated on the Zero Energy Now program website and any claim amount is paid to the customer within 60 days of the claim filing.

Customers may also choose to make a claim against the quality guarantee. In the case of a quality guarantee claim, the steps in the claims process is as follows: 1) the claim automatically triggers an inspection by the Zero Energy Now program; 2) the participating contractor must fix the deficiency, and 3) the problem will only be deemed “fixed” and the contractor released from any further obligation to fix deficiencies once the customer signs off that they are satisfied via written or electronic communication to the Zero Energy Now program. Contractors who fail to fix a deficiency or receive a customer sign-off may be subject to removal from the program, at the discretion of Zero Energy Now program staff.

4.3.2 Eligibility

All customers and contractors eligible to participate in the Zero Energy Now program are also eligible for the guarantee feature. Measure eligibility is the same as that of the Zero Energy Now program.

⁵ When presented to the customer, total energy usage may be projected as a dollar amount, with language clarifying that the projection will be adjusted according to certain terms and limitations of the guarantee, including adjustments for changes in energy prices, weather, and building occupancy. Other terms and restrictions will also apply. The full terms of the guarantee will be posted on the *Zero Energy Now* program website.

4.3.3 Length of Guarantee

Usage guarantees may be made any time within a 90-day period following one year after the completion of the retrofit, as defined by the date of the blower-door test-out procedure conducted to determine air tightness following the retrofit.

Quality guarantee claims may be made anytime following the completion of the retrofit up to the deadline for filing a usage guarantee claim.

4.3.4 Guarantee Pool

Individual usage guarantee claims for any property participating in the Zero Energy Now program is limited to \$1,000. Total claims against the usage guarantee collectively for all Zero Energy Now program participants is limited to \$50,000, paid on a first-come, first-served basis as determined by the date of the claim filing. This limitation will be made explicit in guarantee language posted on the Zero Energy Now program website.

4.3.5 Adjustments and Restrictions

Projections would be adjusted based on changes in energy prices, weather, and building occupancy. In order for the usage guarantee claim to be valid, customers would be required to adhere to certain restrictions posted in the guarantee language on the Zero Energy Now program website. These would include not altering the conditioned square footage of the building or changing building usage. Additional “owner responsibilities” would be posted in the guarantee language but not strictly enforced, such as replacing all filters according to manufacturers’ instructions, maintaining windows and doors and keeping them closed during heating system operation except for normal usage, and maintaining thermostat settings within predefined limits.

4.4 Incentives and Financing

4.4.1 Incentives

Zero Energy Now incentives build upon existing efficiency and renewables incentives offered through a variety of state and federal resources. These incentives are focused, typically, on discrete technology measures but do not necessarily guide a customer and contractor towards comprehensive retrofits. Hence, Zero Energy Now provides additional incentives to drive comprehensiveness.

Table 2. Available Incentives as of February 2016

Measure	Incentive & Claimed Savings						Notes
	GMP CEED	EVT- Residential	EVT- Commercial	CEDF/RERC	VGS	Other	
Building Shell Measures (insulation, air-sealing, windows, doors)		Up to \$2000 for Home Performance	Up to \$5000 for Building Performance		Custom basis		Different caps for Home Performance and Building Performance
Boilers and Furnaces (fossil fuels)		\$500 rebate	\$500 rebate		Up to \$800		Rebate form required by EVT
Circulator Pumps		\$50 rebate upstream	Upstream rebate				
Water Heaters		\$400 heat pump			Up to \$500		
Ductless Heat Pump		\$300-400 upstream buydown	\$300-400 upstream buydown				
Central Wood Pellet Heating System		\$2000 rebate; form required	\$2000 rebate; form required	\$2500 rebate with prior notification; \$500 adder for thermal efficiency; \$500 adder for pellet storage upgrade. Can receive incentives for two systems (total \$5,000). Max incentive is \$6,000.			No double-dipping in CEED territory; only EVT or GMP/CEED can claim savings, not both
Mechanical Ventilation		None	Commercial rebates available				
Photovoltaic System						30% Federal Tax Credits	
Solar Hot Water System				Residential: \$0.40/kWh/yr up to \$3,000 maximum; Commercial: \$0.40/kWh/yr up to \$16,500 maximum; Special Category: \$0.80/kWh/yr up to \$45,000		30% Federal Tax Credits	
Fuel-switching from fossil fuel to electric or wood	\$50/MMBtu saved up to \$5000						

4.5 Eligibility Standards for Additional Incentives through ZEN! Program

Any homes or small commercial buildings eligible for Efficiency Vermont's Home Performance with ENERGY STAR or Building Performance programs are eligible for the Zero Energy Now Program incentives, provided they are located in former CVPS service territory.

In order to be eligible for incentives for the Zero Energy Now program, participants must achieve the following "10-50-50" minimum standards:

- Test 1: At least a 10% reduction in envelope heat loss;
- Test 2: At least a 50% reduction in combined fossil fuel and grid electricity;
- Test 3: At least 50% customer's total energy load is derived from renewable electric, biomass, or other recognized renewable sources.

Commentary on these standards is provided below:

- All consumption and reductions shall be measured in MMBtu/year.
- Test 1 - 10% Envelope Heat Loss Reduction
 - This standard is to ensure at least some building shell weatherization is achieved.
 - This is set at 10% to allow recently-constructed buildings to participate, when there may not be a lot of opportunity if they were built relatively efficiently.
 - Typically, this can be achieved through comprehensive air leakage reduction in an existing building.
- Test 2 - 50% Fossil Fuel and Grid Electricity Reduction
 - All existing fossil fuel and grid electricity is converted to MMBtu and compared in the modeling software pre- and post-retrofit to determine whether 50% savings is achieved.
 - For example, a 150 MMBtu/year consumption house would need to end up at 75 or less, or a 100 MMBtu/year house would need to end up at 50 MMBtu/year or less;
 - This test does not include in the calculations any existing renewable energy usage, such as wood stoves, solar hot water systems or solar photovoltaic systems.
- Test 3 – 50% Renewable Energy
 - As opposed to looking at just the envelope (Test 1) or just the fossil and grid electric energy usage (Test 2), Test 3 examines the total energy load of the building (in MMBtu) pre-retrofit, and the renewable contribution post-retrofit to determine whether at least 50% of the total usage will be met with renewables.
 - Total energy load includes heating, cooling, hot water, lights and appliances.
 - Wood:
 - If wood usage (chunk or pellet) is used in the pre-retrofit condition and the occupants plan to keep using it, it should be included in both pre- and post-retrofit calculations in the same quantity as has been used historically.
 - Since wood is "renewable" it should receive credit towards the renewable contribution.

- If customers plan to install a new wood system (chunk or pellet stove or central boiler that meets Renewable Energy Resource Center standards), a reasonable and realistic estimate of its future use can be included and credited towards the renewable contribution.
 - For biomass heating systems, a homeowner who has an existing indoor wood heating system of any type can count the system as a form of renewable heat within the 10-50-50 Zero Energy Now program standards, counting historical wood use at the same rate in the improved building. However, to receive credit towards the Zero Energy Now program 50% savings and renewables standards and incentive dollars for a new wood heating system, it must meet minimum efficiency standards and must not exceed specific emission standards. These are provided in Appendix
- Photovoltaics:
 - Only PV systems with Renewable Energy Credits (RECs) that are “retired” and not sold outside of Vermont will be credited.
 - Either on-site or Vermont-based community solar systems count.
- The trigger point for when a project is past the point of being able to be accepted into Zero Energy Now is whether you have submitted a final HERO report to Efficiency Vermont. If an audit was done, but no work – feel free to keep going after that customer!
- Projects that have participated in other energy programs in the past are eligible for Zero Energy Now, provided that they can meet the 10-50-50 standards starting from the building in its current condition. (Note that the incentives cannot be provided to work already completed in the past).

This section attempts to clarify Zero Energy Now program eligibility to ensure consistency and uniformity for potential projects.

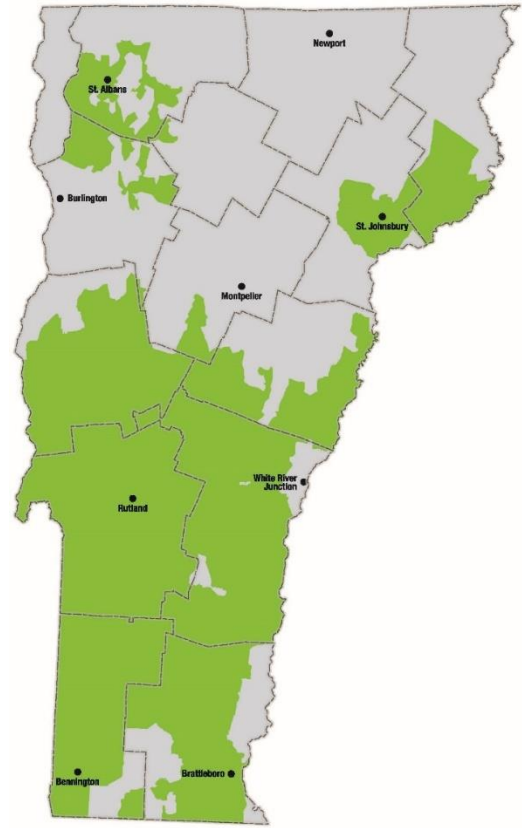
1. Building Types and Location

- a. Any building in Vermont can participate in the Zero Energy Now Program, including residential or commercial structures.
- b. Zero Energy Now General Contractors can offer the Program anywhere in Vermont to any customer.
- c. However, there may be different incentives available to different customers.

2. Incentives for Former CVPS Customers

- a. Incentives are available for Zero Energy Now participants in the former Central Vermont Public Service (CVPS) territory.

Figure 1. Former CVPS Territory represented in Green



- i. Financial incentives for 2016 are \$50/MMBtu of fossil fuel and grid-electricity saved.
- ii. The energy use guarantee offered in the CEED program is only available in the former CVPS service territory at this time.
- iii. The quality guarantee may be offered by Zero Energy Now General Contractors if they choose to provide this guarantee for any projects throughout Vermont, but are required to be offered to projects in the former CVPS territory.
- b. In order to receive CEED Fund incentives, buildings must have been previously served by CVPS, have had a CVPS meter and paid CVPS for electricity.
- c. All qualifying buildings are listed in the “CEED_CVPS_CUSTOMERS_sorted.xlsx” Excel spreadsheet file.
- d. Newly constructed buildings and buildings that have previously been off the grid in former CVPS territory are not eligible.

3. Improvements Timing and Sequencing

- a. In order to be eligible for Zero Energy Now program incentives and to count towards program savings, only energy improvements completed on or after 1/1/2016 count.
 - b. The condition of the building and its systems (e.g., building envelope, PV, heating system, hot water system) as of 1/1/2016 should be considered as the “base case” for the existing condition and used to determine program savings and eligibility.
 - c. Projects that have participated in other energy programs in the past are eligible for Zero Energy Now, provided that they can meet the 10-50-50 standards starting from the building in its condition as of 1/1/2016.
 - d. Incentives cannot be provided for work completed before 2016.
- A Zero Energy Now General Contractor must be the primary point of contact on projects. The sequence of work (e.g., renewables, heat pumps or weatherization first) is not important, but eligibility review and approval by the contractor is. It is up to the Zero Energy Now General Contractor to determine--and be responsible for--eligibility of

the project. Engagement with the customer before any work starts in order to provide an analysis of energy options is strongly encouraged, but not required.

4. Zero Energy Now 10-50-50 Criteria

a. In order to be eligible for incentives for the Zero Energy Now program, participants must achieve the following “10-50-50” minimum standards:

- i. Test 1: At least a 10% reduction in envelope heat loss;
- ii. Test 2: At least a 50% reduction in combined fossil fuel and grid electricity;
- iii. Test 3: At least 50% customer's total energy load is derived from renewable electric, biomass, or other recognized renewable sources.
- iv. All consumption and reductions shall be measured in MMBtu/year.

b. Test 1 - 10% Envelope Heat Loss Reduction

- i. This standard is to ensure at least some building shell weatherization is achieved.
- ii. Typically, this can be achieved through comprehensive air leakage reduction in an existing building.
- iii. Test 1 is based on “post-efficiency MMBtus”, i.e., after accounting for system efficiencies. Only by including the efficiency of the heating equipment can the envelope load of the building be properly determined for these tests.
- iv. This is set at 10% to allow recently-constructed buildings to participate, where there may not be a lot of opportunity if they were built relatively efficiently. If a home cannot meet this 10% threshold, there are alternative path to compliance; see section 7 below.

c. Test 2 - 50% Fossil Fuel and Grid Electricity Reduction

- i. All existing fossil fuel and grid electricity is converted to MMBtu and compared in the modeling software pre- and post-retrofit to determine whether 50% savings is achieved.
- ii. For example, a 150 MMBtu/year consumption house would need to end up at 75 or less, or a 100 MMBtu/year house would need to end up at 50 MMBtu/year or less;
- iii. This test does not include in the calculations any existing renewable energy usage, such as wood stoves, solar hot water systems or solar photovoltaic systems.
- iv. Test 2 is based on “pre-efficiency MMBtus”, i.e., the amount of MMBtus in the fuel itself (before applying any system efficiencies). This allows improved fossil fuel equipment efficiencies to be used to help reduce the amount of fuel that is burned (and fossil fuel MMBtus consumed) and allows credit for more efficient equipment in Test 2.

v. This Test 2 is the basis for all claimed savings and paid incentives.

d. Test 3 – 50% Renewable Energy

- i. As opposed to looking at just the envelope (Test 1) or just the fossil and grid electric energy usage (Test 2), Test 3 examines the total energy load of the building (in MMBtu), to determine whether at least 50% of the total post retrofit usage will be met with renewables. Both existing and new renewable components – biomass, solar hot water, or renewable electric systems (PV, wind, or micro hydro) can be included in the post-retrofit renewable contribution.
- ii. Total energy load includes heating, cooling, hot water, lights and appliances.
- iii. Test 3, like Test 1, is based on “post-efficiency MMBtus”, i.e., after accounting for system efficiencies. Only by including the efficiency of the heating equipment can the envelope load of the building be properly determined for these tests. Not to include equipment efficiencies in Test 3 gives an inappropriate advantage to inefficient biomass equipment, as a larger percentage of “renewable” fuel is consumed.
- iv. Test 3 is based on the renewables contribution as a fraction of the total gross energy use (energy use calculated before considering the contribution of renewables).

5. Additional Clarification on Wood

- a. If wood usage (chunk or pellet) is used in the pre-retrofit condition and the occupants plan to keep using it, it should be included in both pre- and post-retrofit calculations in the same quantity as has been used historically.
- b. Since wood is “renewable” it should receive credit towards the renewable contribution.
- c. If customers plan to install a new wood system (chunk or pellet stove or central boiler that meets Renewable Energy Resource Center standards), a reasonable and realistic estimate of its future use can be included and credited towards the renewable contribution.
- d. For biomass heating systems, a homeowner who has an existing indoor wood heating system of any type can count the system as a form of renewable heat within the 10-50-50 Zero Energy Now program standards, counting historical wood use at the same rate in the improved building. However, to receive credit towards the Zero Energy Now program 50% savings and renewables standards and incentive dollars for a new wood heating system, it must meet minimum efficiency standards and must not exceed specific emission standards. These are provided in Appendix (attached).

6. Additional Clarification on Photovoltaics

- a. Only PV systems with Renewable Energy Credits (RECs) that are “retired” and not sold outside of Vermont will be credited. This can be confirmed by examining the Certificate of Public Good (CPG) which is filed with each PV system.
- b. Either on-site or Vermont-based community solar systems count.
- c. For Test 2 (50% reduction in combined fossil fuel and grid electricity), only the “purchased energy” is counted in determining whether this goal is met, as determined by reviewing the customers’ electric bills. If PV is already installed for a building and offsets a portion of the electricity use, only the remaining net “purchased” electricity plus other fossil fuels is considered as the basis for calculating whether this test is met. A building that saves at least 50% of this purchased energy would meet Test 2.
 - i. For example, in a house that uses 100 MMBtu total annual energy, with a PV system that displaces 20 MMBtu of this, the basis for determining Test 2 compliance would be 80 MMBtu (100-20). Therefore, the Zero Energy Now project would need to save at least 40 MMBtu (50% of 80).
- d. PV systems already in place at the time of the Zero Energy Now project count towards the 50% renewables contribution (Test 3);
 - i. It will be difficult to meet Test 3 with PV systems installed before 2016.

7. 10% Heat Load Reduction Alternative Paths

- a. If a building has no additional cost-effective building shell energy improvement measures and therefore cannot meet the 10% heat load reduction standard, it can still participate if it meets one of the following standards, after first completing a BPI energy audit (including a blower door test), which is required for every project:

(1)	30 kBtu/ft ²	Maximum Energy Intensity. Calculated using the average fuel consumption over the previous two (2) years for space heating and the intentionally conditioned square footage of the building.
(2)	Home Performance with ENERGY STAR Program Participation & 20% air leakage	The building has completed a Home Performance with ENERGY STAR (or Building Performance) Program project and also achieved at least a 20% air leakage reduction level.
(3)	RBES or CBES Certificate	The building has achieved a 2011 Residential Building Energy Standards (2011 RBES) (or Commercial Building Energy Standard, 2011 CBES) or later certificate.
(4)	HERS Index of 76 or less	The building has scored a Home Energy Rating System (HERS) Index of 76 or less by a certified Energy Rater. A score of 76 represents the HERS compliance number required in the 2011 RBES.



(5)	ACH50 < 4	The building has a maximum measured Air Changes per Hour or less than 4 at 50 Pascals (ACH ₅₀), following BPI standards.
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Wood Heating Standards and Requirements

3.a. Estimated Seasonal Average Efficiency for Existing Wood Heat Systems

(To Be Used When Establishing Existing Building Performance)

Appliance	Fuel	Age	Estimated <u>seasonal average</u> efficiency
Boiler	Pellets	new	82%
	Pellets	1-10 years old	80%
	Pellets	10+ years	75%
	Cordwood	New (with thermal storage)	78%
	Cordwood	1-10 years old	65%
	Cordwood	10+ years	55%
Furnace	Pellets	new	78%
	Pellets	1-10 years old	75%
	Pellets	10+ years	65%
	Cordwood	new	76%
	Cordwood	1-10 years old	63%
	Cordwood	10+ years	52%
Stove	Pellets	new	75%
	Pellets	1-10 years old	70%
	Pellets	10+ years	70%
	Cordwood	new	70%
	Cordwood	1-10 years old	65%
	Cordwood	10+ years	60%

3.b. Required Efficiency and Emissions Standards for New Wood Heat Systems

(To Be Used to Determine Which Systems May Receive a ZEN! Incentive for Wood Heating)

Appliance Type	Recommended Minimum Peak Efficiency Rating on HHV Basis	Recommended PM 2.5 Emissions Limit
Pellet Boiler	85%	0.08 lbs/MMBtu
Pellet Furnace	85%	0.08 lbs/MMBtu
Pellet Stove	78%	2.0 grams per hour
Cordwood Boiler (with <u>required</u> thermal storage)	75%	0.15 lbs/MMBtu
Cordwood Furnace	75%	0.15 lbs/MMBtu
Cordwood stove	75%	2.0 grams per hour

4.6 Zero Energy Now Incentives

If the above 10-50-50 is met, then Zero Energy Now customers will receive \$50 per annual MMBtu reduction from the existing condition, up to a maximum of \$5,000 cap, on top of any other available incentives.

As a reference point, the following table shows how such an incentive could be applied, based on depth of savings:

Table 3. Sample of Available Savings Compared to Energy Savings

\$/MMBtu Payment:		\$50	\$5000 cap									
Fuel oil use		\$/mmbtu payment to contractor for savings										
gallons	mmbtu	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
500	70	\$ 350	\$ 700	\$ 1,050	\$ 1,400	\$ 1,750	\$ 2,100	\$ 2,450	\$ 2,800	\$ 3,150	\$ 3,500	
700	98	\$ 490	\$ 980	\$ 1,470	\$ 1,960	\$ 2,450	\$ 2,940	\$ 3,430	\$ 3,920	\$ 4,410	\$ 4,900	
900	126	\$ 630	\$ 1,260	\$ 1,890	\$ 2,520	\$ 3,150	\$ 3,780	\$ 4,410	\$ 5,040	\$ 5,670	\$ 6,300	
1100	154	\$ 770	\$ 1,540	\$ 2,310	\$ 3,080	\$ 3,850	\$ 4,620	\$ 5,390	\$ 6,160	\$ 6,930	\$ 7,700	
1300	182	\$ 910	\$ 1,820	\$ 2,730	\$ 3,640	\$ 4,550	\$ 5,460	\$ 6,370	\$ 7,280	\$ 8,190	\$ 9,100	
1500	210	\$ 1,050	\$ 2,100	\$ 3,150	\$ 4,200	\$ 5,250	\$ 6,300	\$ 7,350	\$ 8,400	\$ 9,450	\$ 10,500	

The MMBtu reduction includes total home energy use (heating, cooling, hot water, lights and appliances) which can be covered in any PV array.

4.7 Tom Perry Tool: Initial Review of 10-50-50 Standards

A new tool⁶ has been developed to allow contractors to determine whether a project meets the 10-50-50 criteria through a quick, “rough cut” analysis. A sample of this tool is provided below.

Figure 1. Tom Perry Tool

BPPA ZEN Project Pre-Qualification Tool

Copyright 2016, New Leaf Design, LLC
10600 Vermont Rte 116, Suite 1A, Hinesburg, VT 05461, (802) 482-5323, newleafdesign@gmail.net
Use without permission is a copyright infringement.

Contractor: _____
Project Name: _____
Project Address: _____
Date: _____

Box 1 Existing Envelope & Fuel Load Mix (enter fuel usage in appropriate cells)										Box 2 Envelope Improvement ZEN Test #1		Box 3 Improved Envelope & Fuel Load Mix (enter new fuel values - see instructions)									
Fuel Type/Load	Effcy	Heat	DHW	Appliances Fossil	Appliances Electric	Lighting & Plug	Total Mmbtus by Fuel	Envelope Load Reduction	Envelope Load Reduction	Fuel Type/Load	Effcy	Heat (Electric w/ COP)	DHW (Electric w/ COP)	Appliances Fossil	Appliances Electric	Lighting & Plug	Total Mmbtus by Fuel				
Electricity kWh	100%						0.00	0.00	#DIV/0!	Electricity kWh	100%						0.00				
Kerosene gals	80%						0.00	0.00	#DIV/0!	Kerosene gals	80%						0.00				
#2 Fuel Oil gals	80%						0.00	0.00	#DIV/0!	#2 Fuel Oil gals	80%						0.00				
LP Gas gals	80%						0.00	0.00	#DIV/0!	LP Gas gals	80%						0.00				
Natural Gas ccu ft	80%						0.00	0.00	#DIV/0!	Natural Gas ccu ft	80%						0.00				
Wd Pellets tons	80%						0.00	0.00	#DIV/0!	Wd Pellets tons	80%						0.00				
Cord Wood cords	60%						0.00	0.00	#DIV/0!	Cord Wood cords	60%						0.00				
Total Mmbtus by Load		0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!	Total Mmbtus by Load		0.00	0.00	0.00	0.00	0.00	#DIV/0!				

⁶ Thanks to Paul Scheckel for the first draft, and Tom Perry of New Leaf Design for refining the tool further.



Box 4

Breakdown of Existing Fuels -- Post Efficiency MMBTUs

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electric	0.00	0.00	0.00	0.00	0.00	0.00
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Totals	0.00	0.00	0.00	0.00	0.00	0.00

Box 5

Breakdown of Improved Fuels -- Post Efficiency MMBTUs

Fuel Type/Load	Heat w CCHP	DHW w HPWH	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electric	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Totals	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!

Box 6

Existing Envelope & Fuel Load Mix -- Consumption MMBTUs

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electricity kWh	0.00	0.00	0.00	0.00	0.00	0.00
Kerosene gals	0.00	0.00	0.00	0.00	0.00	0.00
#2 Fuel Oil gals	0.00	0.00	0.00	0.00	0.00	0.00
LP Gas gals	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas ccu ft	0.00	0.00	0.00	0.00	0.00	0.00
Wd Pellets tons	0.00	0.00	0.00	0.00	0.00	0.00
Cord Wood cords	0.00	0.00	0.00	0.00	0.00	0.00
Total Mmbtus by Load	0.00	0.00	0.00	0.00	0.00	0.00

Box 7

Improved Envelope & Fuel Load Mix -- Consumption MMBTUs

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electricity kWh	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!
Kerosene gals	0.00	0.00	0.00	0.00	0.00	0.00
#2 Fuel Oil gals	0.00	0.00	0.00	0.00	0.00	0.00
LP Gas gals	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas ccu ft	0.00	0.00	0.00	0.00	0.00	0.00
Wd Pellets tons	0.00	0.00	0.00	0.00	0.00	0.00
Cord Wood cords	0.00	0.00	0.00	0.00	0.00	0.00
Total Mmbtus by Load	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!

Box 8

Breakdown of Existing Fuels -- Consumption MMBTUs

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electric	0.00	0.00	0.00	0.00	0.00	0.00
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Totals	0.00	0.00	0.00	0.00	0.00	0.00

Box 9

Breakdown of Improved Fuels -- Consumption MMBTUs

Fuel Type/Load	Heat w CCHP	DHW w HPWH	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Electric	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Totals	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!

Box 10

Data for Zen Test #2 -- Existing Loads (in Consumption MMBTUs)

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Total Electric Load	0.00	0.00	0.00	0.00	0.00	0.00
Electric Grid	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00
Electric Renewable	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00
Total Fossil Plus Grid Mmbtus	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00

Box 11

Data for Zen Test #2 -- Improved Loads (in Consumption MMBTUs)

Fuel Type/Load	Heat	DHW	Appliances Fossil	Appliances s Electric	Lighting & Plug	Total Mmbtus by Fuel
Fossil	0.00	0.00	0.00	0.00	0.00	0.00
Total Electric Load	#DIV/0!	0.00	0.00	0.00	0.00	#DIV/0!
Electric Grid	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Electric Renewable	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00
Total Fossil Plus Grid Mmbtus	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Box 12

Data for Zen Test #3 -- Existing Loads (in Post-Efficiency MMBTUs)

	Total Energy
Existing Electric Renewable Input (kWh)	0.00
Total Renewable Component	0.00

Box 13

Data for Zen Test #3 -- Improved Loads (in Post-Efficiency MMBTUs)

	Total Energy
Improved Total Electric Renewable Input (kWh)	#DIV/0!
Total Renewable	0.00

Box 14

Vermont Fuel Price Report Default

Efficiencies & MMBTU Conversions

Fuel Type	Units	Effcy	MMBTUs/ Unit	Units	MMBTU
Electricity	kWh	100%	0.003412	kWh	293.08324
Kerosene	gals	80%	0.1366	gals	7.3206442
#2 Fuel Oil	gals	80%	0.1382	gals	7.23589
LP Gas	gals	80%	0.916	gals	10.0917031
Natural Gas	ccu ft	80%	0.1	ccu ft	10
Wd Pellets	tons	80%	16.4	tons	0.0069756
Cord Wood	cords	60%	22	cords	0.0454545

Box 15

ZEN Requirements

	Required	Achieved	Meets Zen
Envelope Load Reduction	10%	#DIV/0!	#DIV/0!
Fossil & Grid Energy Reduction	50%	#DIV/0!	#DIV/0!
Renewable Energy Component	50%	#DIV/0!	#DIV/0!
Incentive payout at	\$50.00 per MMBTU		#DIV/0!

4.8 Financing

In addition to incentives, there are multiple financing packages available to potential Zero Energy Now customers. These include but is not limited to:

- Heatsaver Loan (VSECU and Opportunities Credit Union) – up to \$35,000 for weatherization, heat pump, solar domestic hot water and fossil heating systems. More information available here: <http://heatsaverloan.vermont.gov/>
- NeighborWorks loan products (has a \$300 application fee): <http://www.nwwwvt.org/energy-loan/>
- VSECU V-Green offers a variety of products including:
 - Energy Improvement Loan
 - Fixed Rate Energy Improvement Balloon Loan

- Discounted Energy Improvement Home Equity Loan
- Longer Term Energy Improvement Home Equity Loan
- Energy Improvement Mortgage
- Off Grid Mortgage
- Heat Saver Loan Program
- Green Vehicle Loan

More information on VSECU loans is available here: <https://www.vsecu.com/energy-savings>

- Various financing packages for solar PV (dependent on solar PV business that participates in the specific ZEN! project)

4.9 Marketing

To achieve the two primary goals for Zero Energy Now, BPPA-VT went through a competitive Request-for-Proposal process to identify and select a marketing firm. Flywheel Communications was selected to develop, in coordination with the Zero Energy Now marketing committee, a strategic targeted marketing plan to advance the two primary goals for Zero Energy Now, provided below:

1. Achieving 50 comprehensive existing home retrofits by December 31, 2016;
2. Advancing a comprehensive approach to energy retrofits to move homes and small commercial businesses closer to net zero energy.

Additional goals include:

- (a) clarifying the messaging and intent of the Zero Energy Now program so all future marketing and communications materials are based on a solid framework for years to come,
- (b) educating consumers that these deep energy savings projects are viable,
- (c) promoting the comprehensive offering,
- (d) developing “earned media” stories of successful projects,
- (e) promoting participating businesses, and
- (f) creating a “buzz”.

4.9.1 Key Marketing Tasks

Flywheel Communications is responsible for the following key tasks:

1. Developing a marketing plan to ensure at least 500 customers express interest in comprehensive energy retrofits to ensure that 50 projects move forward and are completed by December 31, 2016. This may include the following:

- Reviewing other polls and surveys as to what moves customers to complete an energy retrofit
 - Identifying audience and developing message
 - i. Developing a profile of typical customer segmentations
 - ii. Identifying the media they consume, groups they belong to, social media used etc., to determine how best to reach them
 - iii. Developing a message for each group
 - Developing an implementation plan for getting the message out and prioritizing the most cost-effective approach to different marketing options including but not limited to:
 - i. Earned Media
 - ii. Paid Media
 - iii. In Person Energy Events offered by BPPA Members
 - iv. Social Media
 - v. Videos, Testimonials, Case Studies
 - vi. Leveraging Partnerships and Newsletters
2. Developing a logo and tagline to promote Zero Energy Now
3. Determining which additional materials are critical for the initial Zero Energy Now marketing effort and designing those materials that are selected. For example:
- b. Brochures
 - c. Postcards
 - d. Mail Inserts
 - e. Powerpoint Presentation(s)
 - f. Display for Events
 - g. Poster
3. Reviewing and modifying website design as needed
4. Implementing other relevant components of the marketing plan, utilizing BPPA Marketing Committee support when possible:
- a. Utilizing a Plan-Do-Act-Check approach
 - b. Working with BPPA Marketing Committee
 - c. Balancing Budget and Timeline with Program Goals

Table 4. Sampling of Outreach Initiatives as of May 2016

What	When	Where	Who
Presentation for Thetford Energy Committee	March 9	Thetford	Bob Walker & Malcolm Gray
Radio Interview	March 10	Royalton	Malcolm Gray
E-Mail Announcement to All Town Energy Committees	March 22	Throughout Vermont	Bob Walker & VECAN
Waterbury Local Energy Action Partnership Fair	April 9	Waterbury	Bruce Landry
Vermont Home and Garden Show	April 16 & 17	Essex	Multiple Contractors
Presentation for Dorset Energy Committee	April 27	Dorset	Richard Faesy
Local Presentation	May 14	Middlebury	Tom Perry, Chuck Reiss
Local Presentation	May 16	Brattleboro	Bob Walker

More detail is available in the Marketing Plan provided in the Appendices.

4.10 Trainings for Contractors and Installers

Both the EUSAVE tool and “closing a comprehensive retrofit” sale will be relatively new to the majority of contractors providing these services. Therefore, two full-day trainings have been developed and presented to all participating contractors during the first Quarter of 2016, with additional follow up as the tool and program evolves throughout the year. The all-day EUSAVE Tool training was coordinated by EFG and led by Paul Scheckel. The all-day sales training was coordinated by EFG and led by Mike Rogers of Omstout Consulting.

5. Implementation

5.1 Implementation Overview

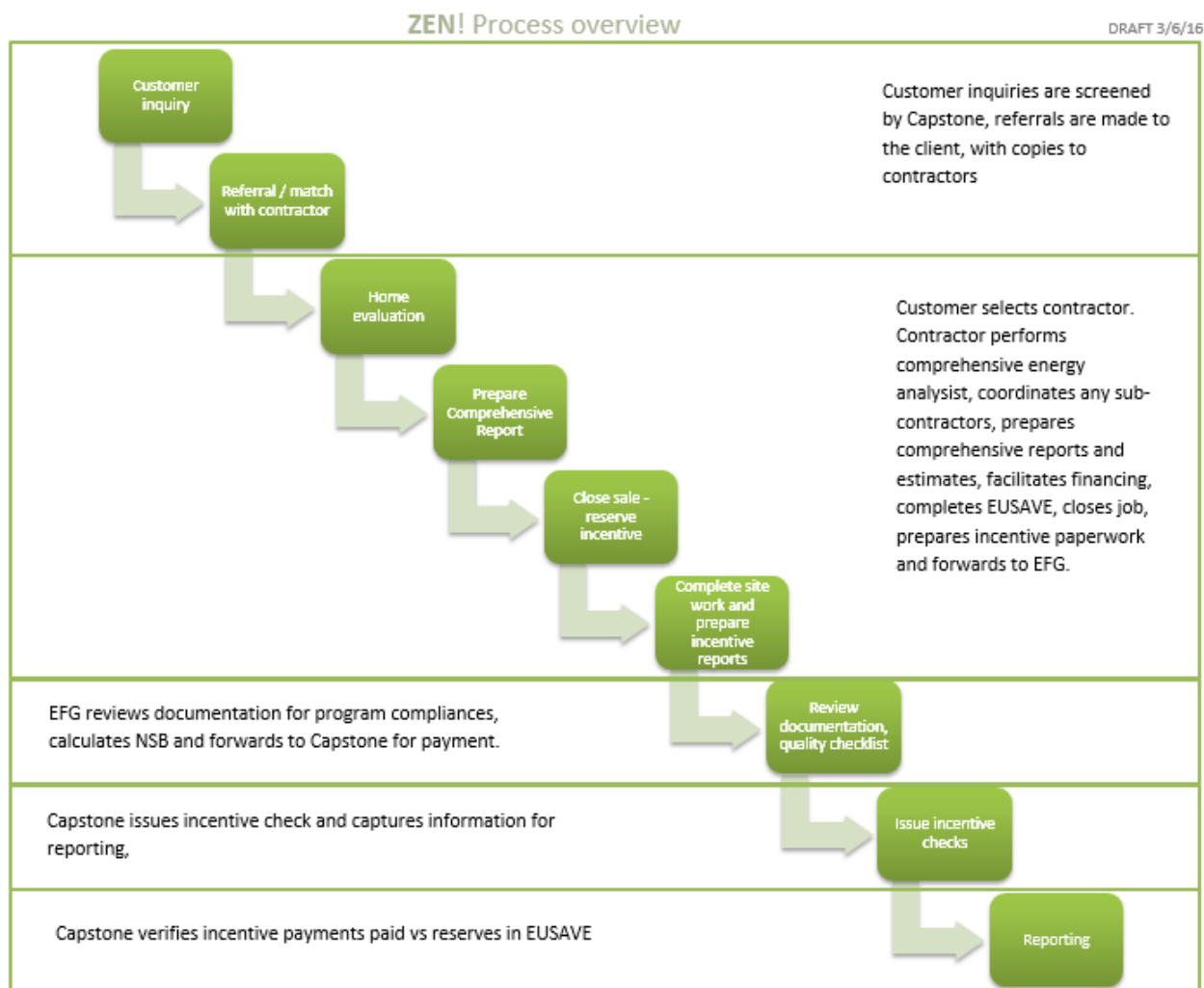
There are several steps involved in implementing the Zero Energy Now Program overall, as explained throughout this Program Plan. The purpose of this “Implementation” section is to focus on the specific steps needed to process a particular Zero Energy Now retrofit project. Generally, the Home Performance with ENERGY STAR contractor and Capstone will act as the primary customer-facing entities. The implementation process described below assumes that the majority of projects will have one, leading Home Performance with ENERGY STAR contractor under whom other subs may be contracted to work. However, there may be alternative approaches undertaken (e.g. a biomass pellet installer is the primary contact with the customer initially, with the installer reaching out to a Home Performance with ENERGY STAR contractor as a result of the customer choosing to participate in Zero Energy Now).

The primary, high-level process steps for a project to be completed include:

- Customer contacts Capstone to identify a contractor (the customer will experience working with Zero Energy Now program staff, not Capstone). Capstone provides contractor contact information to customer (described below). Once customer has selected a contractor, then:
- Contractor returns call to customer (within two business days) and schedules and completes a site visit and audit (within ten business days), with EUSAVE generating a customer-facing report. When customer confirms they want to move forward, then:
- Contractor submits an Incentive Reservation Form to Capstone (other incentive requests for Efficiency Vermont efficiency measures, and for the Renewable Energy Resource Centers biomass pellet measures are to be submitted to the respective entities overseeing those incentive programs by the Contractor or subs, with Contractor acting as General Contractor). Capstone reviews Incentive Reservation and reserves funds. Once retrofit work is scheduled and completed (within, on average, twelve weeks), then:
- Contractor completes a Test Out and submits a EUSAVE-generated Test Out Report and Incentive Request Form to Capstone. Then:
- EFG calls each customer to complete a Customer Quality Survey and Capstone reviews Test Out Report for compliance with Zero Energy Now program standards. If all approved, then:

- Capstone pays Incentive (via BPPA-VT) and provides EFG with monthly report showing project status and results (EFG to run Net Societal Benefit test and provide monthly report to GMP).

Table 5. Process Diagram for Retrofit Project



5.2 Initial Customer Contact

To schedule a contractor site visit, customers may reach program staff at Capstone by calling 1-802-477-5249, by e-mailing info@zeroenergynowvt.com or by filling out information available at zeroenergynowvt.com.

5.3 Lead Distribution

Capstone will respond to customer calls accordingly and in the following order:

1. Inbound inquiries will first be asked if they were referred by someone or if they had a contractor in mind. If yes, and if the contractor is in the Zero Energy Now network, then only the contact information for that contractor will be provided.
2. For inbound inquiries who do not reference a specific contractor, Capstone will provide contact information for three contractors: the contractor that is closest to the customer location (determined by travel distance via a google map to be developed by Capstone) and two other randomly-determined contractors in the customer's county.

Note: Contractors that have not documented follow through with two prior leads or are late on monthly reporting of their jobs' status will be passed over when the next lead contacts Zero Energy Now.

5.4 Intake Process for Initial Customer Contact

All leads are captured and loaded in a database to track progress. Following first contact, prospects receive a welcoming email with full contact information for up to three contractors based on criteria above. All referred contractors will also be copied with the email. Below the referral contact information, an image will be pasted into the e-mail with a description of the contractor/firm and their logo or other credentials (± 300 words, 3" x 7" total area when printed). If email presents a barrier for the prospective customer, the preferred contact phone numbers for each contractor will be provided.

Contractors must reply via email to manager@zen-vt.com with confirmation that they have responded to the prospect notification and a short description of the status. Status updates related to lead distribution may include:

- Scheduled a site visit on _____ date
- Did not want to schedule because prospect is engaged with someone else
- Prospect poor candidate for this program / this contractor
- Called, no response; will follow-up by phone or email by _____ date

If none of the initial contractors respond with confirmation of a site visit appointment within 2 full business days, then the prospective customer will be emailed three additional contractor contacts, cc'ed to those contractors.

5.5 Contractor Completes Site Visit and Audit, Submits Reports, Confirms Customer Will Move Forward

Upon completion of a site visit and audit, it is the General Contractors responsibility to:



1. Ensure the customer is a legacy CVPS customer by reviewing the database provided. If there is confusion about the address or name, contractor should call Efficiency Vermont to clarify. Capstone will also double check that each project that is submitted for the additional Zero Energy Now Incentive is a legacy CVPS customer. Efficiency Vermont will contact the contractor if the customer is **not** a legacy CVPS customer.
2. When submitting the HERO report to Efficiency Vermont, contractors must enter "BPPA ZEN!" into the note field of the Project Details tab in HERO, as shown here:

Building Info

Residency ☒ Full Time ☐ Seasonal

Total Residential Units

Attached Unit / Townhouse ☐

Total Bedrooms

Total Residents * *

Residential Finished Floor Area (ft²) * *

Conditioned Volume (ft³) * *

Number of Floors

Building Age (Years)

BSM/Crawl Height (ft)

Avg. Foundation Above Grade (ft)

Basement Above Grade Heated? ☐ Yes ☒ No

Basement Below Grade Heated? ☐ Yes ☒ No

Window/Door Condition ☐ Poor ☐ Fair ☒ Good

Storm Windows/Doors ☒ Yes ☐ No

Attached Garage ☐ Yes ☒ No

Garage Insulated ☐ Yes ☒ No

Garage Heated ☐ Yes ☒ No

Garage Condition ☐ Poor ☐ Fair ☒ Good

Shell Savings Adjustment Factor

Notes and Comments

BPPA Zen!

3. If the customer is interested in other incentives, including various Efficiency Vermont incentives, the Renewable Energy Resource Center biomass pellet heating incentive or is interested in financing opportunities or pursuing the 30% federal tax credit for a solar installation, it is the General Contractors responsibility to assist the customer with identifying this information or connecting the customer to a helpful resource (e.g. the biomass pellet incentive may be more overseen by a biomass installer rather than the General Contractor).

After the above steps have been completed, Capstone confirms and replies to the contractor that the incentive reservation has been approved and retrofit work can be scheduled and completed.

The contractor (and subs) then complete the work.

Upon work completion, the contractor completes a Test Out and submits a EUSAVE-generated Test Out Report and Incentive Request Form to Capstone, who shares report information with EFG. The Incentive Request Form is available in the Appendices of this Program Plan.

EFG then calls each customer to complete a Customer Quality Survey and Capstone reviews Test Out Report for compliance with Zero Energy Now program standards.

Once the aforementioned reports and surveys have been completed and approved, Capstone processes the incentive payment to the customer on behalf of BPPA-VT.

To monitor overall program results, contractors are also required to submit to EFG a monthly report. This report includes project status, key milestones and customer information. This report is available in the Appendices. EFG utilizes this monthly report, EUSAVE data and the financial reporting provided from Capstone, to run the required monthly Net Societal Benefit test for GMP. The Net Societal Benefit test is also available in the Appendices.

5.6 Service Level Agreements: Turn-Around Time

To provide excellent customer service and to meet the goal of fifty completed homes by December 31, 2016, the following “turn-around time frames” are requested of participating contractors. Given the tight timeline for this project, these timeframes are intended to be met to the extent feasible. However, it is understood that at times there may be extenuating circumstances that may mean the below time frames cannot be adhered to.

- i. 2 days for phone call response to a lead
- ii. Audit completed with work scope provided to customer within 10 business days of response phone call contact
- iii. Project completed and incentive submitted within an average time frame of twelve weeks, including work done by subs

5.7 Reporting

There are multiple reporting requirements for the Zero Energy Now program. These are provided below according to who is responsible for the report(s).

Contractor reporting requirements will include:

- To EVT: HERO project and incentive information.
- To RERC: Biomass pellet project and incentive information.
- To Capstone/EFG: Zero Energy Now project and incentive information AND monthly report.

Capstone reporting requirements will include:

- Monthly report to EFG.

EFG reporting requirements will include:

- Monthly Net Societal Benefit report to EVT and GMP.
- Quarterly report to GMP and EVT: This report will provide information available through the Net Societal Benefit report, and will also include a narrative description of the program overall.

EVT (for CEED) and **GMP** (to the PSB and PSD) reporting requirements will continue to include their standard requirements. Efficiency Vermont will continue to utilize their internal HERO reporting tool to track savings through the Home Performance with ENERGY STAR typical approach. Efficiency savings will be booked as usually occurs through the HERO tool, and incentives will be paid to the customer. Savings over and above what is incentivized by EVT will then be captured in EUSAVE and claimed by GMP (more information on the GMP CEED NSB calculator is in Appendix 5).

5.8 Allocation of Incremental Savings between EVT/GMP

****NEED MORE DETAILS/CLARIFICATION TO THIS SECTION?****

6. Quality Assurance

There are three primary mechanisms through which Zero Energy Now will incorporate quality assurance. These include:

- Incorporation into EVTs standard quality assurance program whereby 5% of Home Performance with Energy Star retrofits receive review
- Surveying property owners who participate in Zero Energy Now
- Contractor-provided quality guarantee
- Review of the number and type of claims made by customers through the Guarantee program

7. Evaluation

The evaluation of Zero Energy Now will be overseen by the PSD as per standard evaluation proceedings for all GMP CEED programs and projects.

8. Looking Forward

Depending on the success of Zero Energy Now, it is very much hoped that the program will be emulated and repeated so as to become an option through which Vermont utilities are able to achieve Tier III compliance requirements effective January 1, 2017 for the Vermont Renewable Energy Standard.

Appendices

1. Contact Information

Zero Energy Now Program Implementation Contact Information		(note: * denotes a BPPA-VT Board Member)	
Zero Energy Now Program Role	Business	Name	E-Mail
Program Oversight & Recipient of Incremental Savings	Green Mountain Power (GMP)	Kirk Shields, Shawn Enterline	kirk.shields@greenmountainpower.com, shawn.enterline@greenmountainpower.com
Responsible for Project Results, Project Applicant, Fund Recipient	BPPA-VT Board*; Executive Director	Malcolm Gray*, Chuck Reiss*, Allan Bullis*, Phil Cecchini*, Richard Faesy*, Bruce Landry*, Tom Perry*, Walter Scott*, John Unger Murphy*, Paul Zabriskie*, Jonathan Dancing (ED)	malcolm@montpelierconstruction.com, vbreiss@gmavt.net, energyal@csenergyvt.com, pcecchini@cvcac.org, rfaesy@energyfuturesgroup.com, bruce@5starenergytech.com, pzabriskie@CVCAC.org, john@murphyscelltech.com, wscott@veic.org, vbreiss@gmavt.net, tsperry@gmavt.net; JDancing@BPPA-VT.org
Project Management, Primary Contact for GMP/EVT/Vt Gas	EFG	Richard Faesy*, Gabrielle Stebbins	rfaesy@energyfuturesgroup.com, gstebbins@energyfuturesgroup.com
Supports Project Operations, Primary Contact for Public & Contractors	Capstone	Paul Zabriskie*, Phil Cecchini*	pcecchini@cvcac.org, pzabriskie@cvcac.org
Developer of EUSAVE Tool and Model	NRGREV	Paul Scheckel	paul@nrgrev.com
Trains Contractors in Sales	Omstout Consulting	Mike Rogers	mike.rogers@omstout.com
Review of RE components to project; liaison with RE installers	Renewable Energy Vermont (REV)	Ansley Bloomer	ansley@revermont.org
Coordination with existing EVT programs	Efficiency Vermont (EVT)	Perry Vasta; Carol Weston; Jenniver Norz	pvesta@veic.org, cweston@veic.org, jnorz@veic.org
Coordination with existing Vermont Gas programs	Vermont Gas	Jeremy King	jking@vermontgas.com
Support in Energy Labelling	Vermont Energy Investment Corporation (VEIC)	Emily Levin; Leslie Badger	elevin@veic.org, lbadger@veic.org
Development of Marketing Plan	Flywheel Consulting	Michael Levine	michael@flywheelvt.com
Targeted marketing to community groups/partners	Independent Consultant	Bob Walker	bobwalkervt@gmail.com
Oversight of CEED	PSD	Asa Hopkins, Kelly Launder	Asa.Hopkins@vermont.gov, kelly.launder@vermont.gov



2. Budget and Timeline

Direct Cost Breakdown

<i>Cost Element</i>	<i>Start-Up Costs</i>	<i>Implementation Costs</i>	<i>Total Program Costs</i>
Planning & Reporting	\$ 152,549	\$ 7,600	\$ 160,149
Admin	\$ -	\$ 98,322	\$ 98,322
Tech Assistance	\$ 44,373	\$ 9,500	\$ 53,873
Incentives	\$ -	\$ 260,000	\$ 260,000
Marketing	\$ -	\$ 78,200	\$ 78,200
Information Technology	\$ 47,673	\$ -	\$ 47,673
Participant Share of Costs	\$ -	\$ -	\$ -
Total Costs	\$ 244,594	\$ 453,622	\$ 698,216

Budget v.4 9/16/15				Schedule											
#	Task	Total		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Develop the Comprehensive Approach														
1.1	Program Design	\$ 28,673													
1.1.1	Convene Stakeholder Meetings	\$ 5,173													
1.1.2	GMP Coordination	\$ 9,704													
1.1.3	Contractor RFP and Selection	\$ 5,000													
1.1.4	REV Input and Coordination	\$ 2,000													
1.2	Contractor Sales Training	\$ 19,600													
1.3	Systems Development														
1.3.1	Enhance EUSAVE Modeling & Analysis Tool	\$ 35,000													
1.3.2	Develop a Savings Guarantee offering	\$ 78,500													
1.3.3	Field testing with BPPA contractors	\$ 8,000													
1.3.4	Field testing with REV contractors	\$ 4,000													
2	Coordinate Development with EVT														
2.1	Coordination with EVT	\$ 28,673													
2.2	Home Energy Label coordination/integration	\$ 7,600													
2.3	EUSAVE integration	\$ 12,673													
3	Marketing & Consumer Education														
3.1	Hire marketing firm	\$ 5,700													
3.2	Develop case studies and other materials	\$ 13,000													
3.3	Carry out marketing campaign, manage mktg firm	\$ 59,500													
4	Implementation														
4.1	Contractor coordination, support and provide incentives	\$ 10,000													
4.2	Coordination and trouble-shooting	\$ 9,500													
4.3	Provide Incentives	\$ 250,000													
5	Reporting														
5.1	Compile regular reports for GMP	\$ 7,600													
6	Project Management														
6.1	Oversight, coordination, management	\$ 28,500													
7	Total														
	Sub Total	\$ 628,394													
	Administration (pct total)	\$ 69,822													
	Total	\$ 698,216													

3. Wood Heating Standards and Requirements

3.a. Estimated Seasonal Average Efficiency for Existing Wood Heat Systems

(To Be Used When Establishing Existing Building Performance)

Appliance	Fuel	Age	Estimated seasonal average efficiency
Boiler	Pellets	new	82%
	Pellets	1-10 years old	80%
	Pellets	10+ years	75%
	Cordwood	New (with thermal storage)	78%
	Cordwood	1-10 years old	65%
	Cordwood	10+ years	55%
Furnace	Pellets	new	78%
	Pellets	1-10 years old	75%
	Pellets	10+ years	65%
	Cordwood	new	76%
	Cordwood	1-10 years old	63%
	Cordwood	10+ years	52%
Stove	Pellets	new	75%
	Pellets	1-10 years old	70%
	Pellets	10+ years	70%
	Cordwood	new	70%
	Cordwood	1-10 years old	65%
	Cordwood	10+ years	60%

3.b. Required Efficiency and Emissions Standards for New Wood Heat Systems

(To Be Used to Determine Which Systems May Receive a ZEN! Incentive for Wood Heating)

Appliance Type	Recommended Minimum Peak Efficiency Rating on HHV Basis	Recommended PM 2.5 Emissions Limit
Pellet Boiler	85%	0.08 lbs/MMBtu
Pellet Furnace	85%	0.08 lbs/MMBtu
Pellet Stove	78%	2.0 grams per hour
Cordwood Boiler (with <u>required</u> thermal storage)	75%	0.15 lbs/MMBtu
Cordwood Furnace	75%	0.15 lbs/MMBtu
Cordwood stove	75%	2.0 grams per hour



4. Incentive Reservation Request Form

REV 10-8

Building Performance Professionals Association of VT, Inc.
2016 Zero Energy Now! (ZEN!)
Comprehensive Energy Retrofit
Incentive Payment Request

Date Submitted: ___/___/2016
Project Completion Date: ___/___/2016

Customer Name: _____ Contractor Name: _____
Contractor Address: _____
Project ID: _____ Contractor Phone: _____

Physical Address		Mailing Address	
Street		Address	
City, ST		Address	
		City, ST, Zip	

Primary Phone: _____
Include area code
eMail address: _____

Project Profile

Project is in legacy CVPS Territory: _____ Contractor Initial (Look-up and on Hero): _____

Customer Savings

- >= 10% reduction envelope heat loss: Per HERO
Modeled heat loss Pre: _____ Post: _____ Reduction: _____ PCT reduction: _____ %
- >=50% reduction fossil fuel and grid electric: EUSAVE
Annual elec. Pre: _____ Post grid & fossil fuel elec. _____ Reduction: _____ PCT reduction: _____ %
- 50%+ of total energy is from renewable electric, biomass, other renewables (MMBTU) EUSAVE
Post annual energy _____ from renewables _____ PCT from renewables: _____ %

Calculation of Incentive: EUSAVE
MMBtu prior: _____ MMBtu post: _____ MMBtu savings: _____
Incentive amount at \$50/MMBtu \$ _____
(not to exceed \$5,000.00)

Attachments

Attached: Proposed Scope of work
EUSAVE
IRS Form W-9

Certification

By signing below I certify that, to the best of my knowledge, the information above is true and copies of this form and attachments have been provided to the Client by the Contractor.

Client _____ Date _____ Contractor _____ Date _____
Taxpayer ID Number: _____
(We are unable to process without a taxpayer ID number)

eMail complete incentive requests to: manager@zen-vt.com

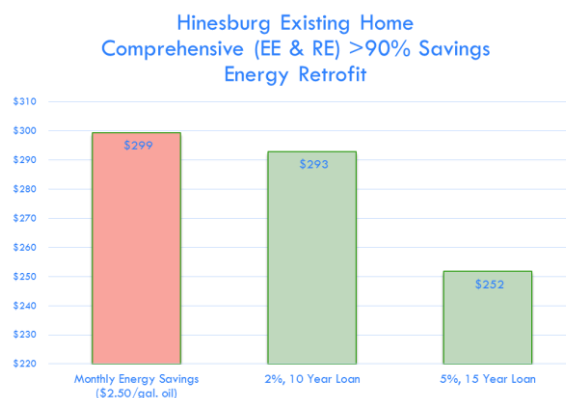
Internal use only: Net Societal Benefits (NSB)
- NSB including those attributable to EYT (>= 2.2) ____ Attach calculation
- NSB excluding those attributable to EYT (>= 1.2) ____ Attach calculation
Quality Assurance Survey

5. Hinesburg Case Study

Recommendations for Weatherization and Energy Work		Estimated Cost	
1	Add attic insulation and seal penetrations in main attic space	\$ 2,920	
2	Insulate and weather strip attic hatch	\$ 350	
3	Weather strip and adjust kitchen exterior doors	\$ 132	
4	New master bathroom fan	\$ 650	
5	Reduct guest bath fan	\$ 287	
6	Foam basement band joist bays	\$ 957	
7	Insulate heat pipes in basement	\$ 250	
8	Mitsubishi multi-head heat pump (15k, 2-6k units)	\$ 13,500	
9	Solar PV	\$ 17,100	
10	Heat pump domestic hot water	\$ 2,200	
11	Energy Audit	\$ 400	
12	Test Out	\$ 200	
13	Total		\$ 38,946
14	Potential Credits/Incentives		\$ (7,113)
15	Net Project Cost		\$ 31,833

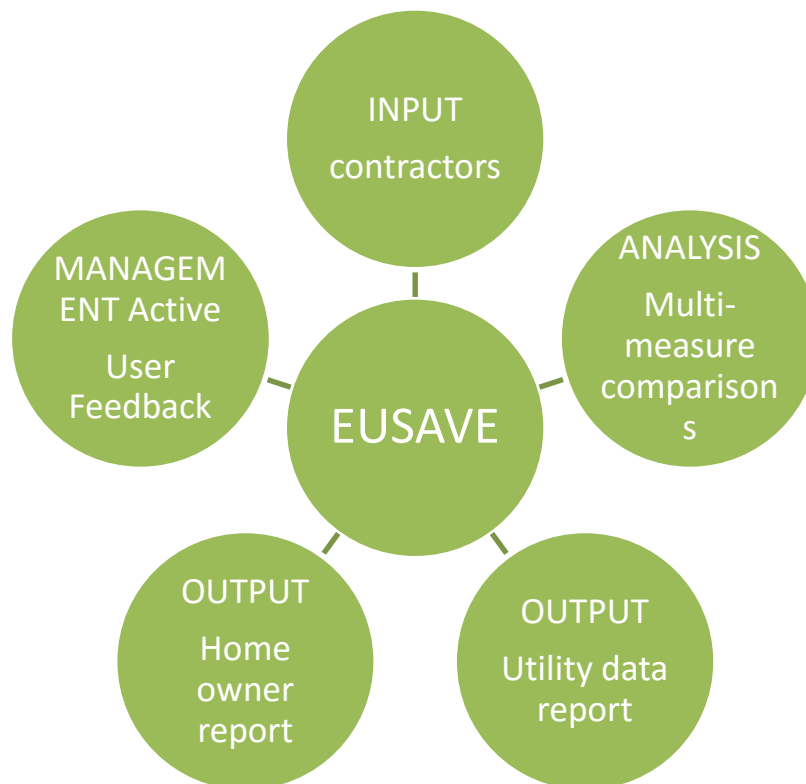
Recommendations would replace the existing 1,053 gallons of oil and \$960 annual electricity costs with energy efficiency improvements, a solar photovoltaic system, multi-head cold climate heat pump and heat pump water heater for a total net cost of about \$32,000 after tax credits and incentives.

At \$2.50/gallon for oil plus electric costs, the homeowners currently pay about \$300/month in energy costs. A 2%, 10 year loan to finance the \$32,000 costs of making their home 100% solar would cost about the same (\$293/month), and in 10 years they would have no energy costs! Even a 5%, 15 year loan would save more than the homeowners currently pay for their energy bills.



6. EUSAVE: Description, Cross Functionality, Additional Development Needs and Liability/Ownership

The Energy Use, Savings, Analysis, and Valuation Estimator (EUSAVE) is a web based tool developed by Paul Scheckel that allows users to quickly and accurately model and evaluate building energy improvements across a broad spectrum of important metrics. The tool provides more realistic savings estimates through straight-forward modeling, allows for the adjustment of important efficiency parameters, and also offers a 'true-up' function so that savings is based on real energy use history. True up helps to alleviate the trend of most energy modeling tools to over-estimate energy savings and is ideal for use with energy retrofits. EUSAVE contains separate modules for various efficiency improvement categories and is designed to deliver meaningful results to novice and advanced users while requiring only the most important inputs. Once a few basic entries are completed, minimal user input is required to characterize and analyze each subsequent measure. Guidance is provided via orientation text on each screen, and with pop up 'help bubbles' for clarification and guidance of specific input. Greater user understanding of building energy systems yields more accurate modeling results.



The homepage allows the user to log in and create a new project with a few basic building and climate descriptors. From there, any of the various improvement analysis modules can be selected. These include:

1. **Fuel Choices** module includes fuel cost, equipment efficiency, inflation rate, and fuel escalation rate. A table is populated showing current and future (real and nominal) fuel costs in \$/unit and \$/MMBtu. A graphical energy cost comparison chart is also generated allowing users to understand relative short and long term fuel cost implications.
2. **Heating** module allows the entry of multiple existing heating systems of any fuel type. Existing fuel use and heating system information is entered, then the proposed new heating system is characterized. The tool will evaluate the annual and lifetime savings potential for multiple upgrades, with a numerical table and graphical chart generator for each existing and proposed scenario.
3. **Water Heating** module is similar to the heating module, and includes additional adjustment and aid for determining and calculating Energy Factor.
4. **Electricity Use** allows the user to enter existing and proposed appliance energy use and equipment cost and graphically compare multiple upgrades side-by-side.
5. **Photovoltaic** systems can be modeled to account for kWh/kW factor and multiple incentive levels including production credits.
6. **Shell** module allows for modeling of multiple, individual envelope assembly components and upgrades. Inputs are also included for energy loss of air leakage and mechanical ventilation. Here, the entire building can be modeled and results trued up against actual energy use from billing history. Results are delivered using the existing heating system efficiency and, if modeled, the proposed efficiency.
7. **Summary Page** – provides a comprehensive overview of all measures modeled in the tool in both table and graphical views. This allows for direct comparison of costs and benefits of all measures in order to develop an acceptable improvement package that meets homeowner expectations, practical considerations, and program requirements.

EUSAVE was initially designed to help decision makers (contractors, architects, LEED providers, etc. and informed homeowners) understand and compare multiple ways to evaluate a proposed energy upgrade. To provide the internal functionality that is needed to support the reporting needs of weatherization contractors to customers and utilities, the following enhancements will be made:

1. Cooling module to model cooling energy upgrades
2. Enhanced ability to model multiple fuels with an emphasis on ASHP capability
3. Financing module allowing for scenario building to compare impacts of rebates and financing
4. Enhanced customer report that can be edited, branded, and emailed to client in PDF format
5. Inclusion of energy label
6. Data export for utility tracking of installed EEMs

As Zero Energy Now is implemented and contractor feedback is received, a determination will be made as to (a) whether a tablet app would be helpful for offline use and (b) whether there are funds to support this additional development and investment.

Regarding liability and ownership, EUSAVE is proprietary software representing the intellectual property of the owner (Paul Scheckel) who retains all current and future ownership, distribution,

and development rights to the tool. In recognition of GMP and BPPA support to enhance the functionality of the tool, the owner will grant full licensure for use of the tool to BPPA members and internal GMP staff through the end of 2016 calendar year. After this period, the owner reserves the right to negotiate terms for continued use and support.

7. NSB Calculations

To estimate the net societal benefits (NSB), two real homes were modeled through the GMP CEED NSB Calculator. One home at 1152 square feet is an actual home in Richmond that has been upgraded with this comprehensive approach and for which we have actual costs and savings. We assumed half of the 50 homes might cost and save like this home. The second 2240 square foot home is one which has had a bid for a comprehensive treatment recommended and for which the work will begin shortly, but we only have existing energy costs and not actual savings yet. We assumed that 80% of their 1052 gallons of oil and 80% of the EIA average Vermont home kWh use would be saved with the measures recommended, which is likely conservative. We assumed that half of the participants (25) would be represented by each of these two homes.

We ran two versions of the NSB tool with each of these homes, one that assumed GMP would benefit from all of the savings (since some of these projects will likely not have participated without the comprehensive approach) and the other that shared the project costs and savings with Efficiency Vermont. The rationale for this was based on the fact that, at the time of the development of the CEED proposal, we were unsure of how savings would be claimed between EVT and GMP. For the scenario where we assumed GMP would claim all savings, the result was 3.6. When we netted out potential Efficiency Vermont costs and savings the result was 2.2, with 20% of NSB achieved in electric benefits and a significant fossil fuel benefit resulting from heat pumps (powered by PVs) that replace traditional heating fuels. In the NSB screening, these benefits are 80%.

Green Mountain Power Community Energy and Efficiency Development NSB Calculator

Enter your program's values in the yellow cells below

Do not alter the grey cells

Name of ProposerRichard Faesy

Proposed Program NameBPPA Comprehensive Approach

Efficiency Measure	Thermal, Electric, or Both (T, E, B)	Residential, Commercial or Industrial (R, C, I)	# of Participants	# Units Installed	Program (Non-Incentive) Costs (2016\$)	Risk Adjustment Factor	PV of Societal Non-Incentive (Program) Costs (2016\$)	PV of Societal (Measure) Costs (2016\$)	PV of Societal (Program & Measure) Costs (2016\$)	PV of Societal (Measure) Benefits (2016\$)	Net Societal Benefits (2016\$)	GMP Investment (2016\$)	GMP NSB Ratio	Participant Investment (2016\$)	Third Party Investment (2016\$)
1152 sq. ft. Home	B	R	25	25	\$ 219,108	10%	\$ 197,197	\$ 798,998	\$ 996,195	\$1,003,227	\$ 7,033	\$339,108	0.0	#####	#####
2240 sq. ft. Home	B	R	25	25	\$ 219,108	10%	\$ 197,197	\$ 875,453	\$ 1,072,650	\$1,985,885	\$ 913,235	\$344,108	2.7	#####	#####
Measure 3					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 4					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 5					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 6					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 7					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 8					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 9					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 10					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 11					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 12					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 13					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 14					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Measure 15					\$ -	10%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -
Totals			50	50	\$ 438,216		\$ 394,394	\$ 1,674,450	\$ 2,068,844	#####	\$ 920,268	#####	1.3	#####	#####



8. Monthly Status Report

Zero Energy Now Monthly Project Status Report																		
Please Submit to manager@zen-vt.com by the 5th of the month for the previous month.																		
Date of this Report:																		
Contractor Information			Customer Information				Date Information				Other Project Information							
Name of Home Performance Business	Name of Installing Contractor	Customer Last Name	Customer First Name	Customer Street Address	Customer Town	Customer Zip Code	If Applicable, Date Referred to	Date Contractor Responded to Customer	Audit Booked Date	Date Audit Report Delivered	Estimated Date for Project to Start	Date Incentive Payment Request	File Name as saved in EUSAVE	Total \$ amount of job	Anticipate d ZEN \$ Request	If job was lost or is no longer a ZEN job.	If applicable: # of ZEN-type jobs	Notes
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		

9. Savings Guarantee

Green Mountain Power Zero Energy Now Program

Energy Usage "Savings" Guarantee

1. OVERVIEW

Green Mountain Power (GMP) guarantees that for one year following retrofit completion, the total energy usage for any building participating in the "Zero Energy Now" program will not exceed the projected amount estimated on the "EUSAVE" energy usage modeling software report provided by the contractor, as adjusted according to the terms of this guarantee. In the event that the actual total energy usage is higher than the adjusted projection, GMP will refund the difference in cost between what was actually consumed and the adjusted projection, as calculated according to the terms of this guarantee, up to a maximum of \$1,000 per participating property and a maximum of \$50,000 across all participating properties.

2. APPLICABILITY

- A. Eligible Properties.** All properties participating in the Zero Energy Now program are eligible for this guarantee.
- B. Alterations.** If the building structure is altered in a manner that changes the square footage of conditioned space after the Zero Energy Now project scope is complete, the guarantee shall be null and void.
- C. Building Use.** If building usage changes following completion of the retrofit and prior to the filing of a claim (e.g., new usage as home day care or home office; change in hours of operation for commercial buildings), the guarantee shall be null and void.

D. Owner's Responsibilities. This guarantee will be null and void if the Owner(s) fail to practice reasonable and prudent energy conservation habits, including but not limited to:

- i. Scheduling a service call whenever there appears to be a problem with the operation of any energy-related system, equipment, or feature of the building, and making repairs found to be necessary for proper operation during that service visit within 30 calendar days;
- ii. Changing all filters (if present) according to the manufacturers' instructions;
- iii. Maintaining all windows and doors and keeping them closed during heating system operation, except for normal use; and
- iv. Setting all thermostats at or below 70 degrees during the heating season and at or above 78 degrees during the cooling season.

E. Disclosure. If the Owner(s) do not completely and accurately provide any and all information to the Zero Energy Now program related to the EUSAVE modeling report and any subsequent claims, this guarantee will be considered null and void.

3. TERM

The term for coverage of the guarantee (the "Guarantee Period") is one calendar year from the date of retrofit completion, defined as the date of the project blower door test-out. A claim may be filed any time after one year following the retrofit completion, up to 90 calendar days following the end of the Guarantee Period.

4. CLAIMS PROCEDURES

A. Process. In order for a claim to be eligible and honored, the following steps must be taken by the Owner(s):

- i. The Owner(s) must submit a completed "GMP Total Energy Usage Guarantee Claims Form" (hereinafter "Claims Form");
- ii. Provide copies of all energy bills for the one year after retrofit completion; and
- iii. The Owner(s) will make the property available for inspection by Zero Energy Now program staff, in order to resolve any claims that may arise from this guarantee.

B. Burden of Proof. The Owner(s), and not GMP, shall be responsible for collecting and submitting all information required on the Claims Form in order to file a claim.

C. Turn-Around Time Frame. Within 60 days of receipt of a completed Claims Form, Zero Energy Now program staff shall review the Claims Form and submit claim to the

Owner(s) if warranted, or, otherwise, state in writing the reason for denial of a reimbursement.

D. Calculations. The Owner(s) must first submit a complete and accurate Claims Form and copies of all fuel bills in question for 12 months following the retrofit completion. Based on this information, and any inspections of the building, if carried out, Zero Energy Now program staff will calculate total energy usage and compare to projected energy usage in order to determine the amount of the claim. Standard and accepted engineering calculations, analyses, and estimates will be used. The basic calculation will be as follows:

- Zero Energy Now program staff will review the actual bills for each fuel used. Program staff will subtract the amount of any unused fuel remaining in the building, adjust for billing and fuel delivery schedules, and consider the net amount as the amount consumed for each fuel. Claims involving wood will be verified based on the customer's word plus an inspection.
- The amount consumed for each fuel will be multiplied by the Vermont Public Service Department reported price per unit of each fuel (see http://publicservice.vermont.gov/publications-resources/publications/fuel_report). The cost of consumption calculated in this way for each fuel will be added together to determine a total cost of actual consumption for purposes of this guarantee.
- Program staff will also multiply the fuel usage projections on the EUSAVE modeling report by the Vermont Public Service Department reported price per unit of each
- fuel, adjusted for the time period covered by the filed claim, and adjusted for weather and building occupancy. The projected cost of consumption for each fuel calculated in this way will be added together to determine a total cost of projected consumption for purposes of this guarantee.
- Subject to the terms of this guarantee, if the total cost of actual consumption across all fuels is greater than the total cost of all projected fuel usage, as calculated using the methodology described above, GMP will make a payment to the Owner(s) for the difference between the actual and projected total cost over the Guarantee Period.

5. GUARANTEE LIMIT

Individual savings guarantee claims for any property participating in the Zero Energy Now program will be limited to \$1,000. The total amount of claims paid out collectively to all Zero Energy Now program participants will be limited to \$50,000.

10. Quality Guarantee

Green Mountain Power Zero Energy Now Program

Quality Guarantee

1. OVERVIEW

All contractors participating in the Green Mountain Power (GMP) Zero Energy Now program who have signed a memorandum of understanding with the program guarantee to fix any customer-identified quality-related deficiencies within the contractor's control in installations performed or managed by the contractor to the customer's satisfaction at no cost to the customer. Customer satisfaction is defined by customer confirmation via written or electronic communication to Zero Energy Now program staff.

2. APPLICABILITY

- A. Eligible Properties.** All properties participating in the Zero Energy Now program are eligible for this guarantee.
- B. Eligible Measures.** This quality guarantee applies only to measures installed directly by the participating contractor or overseen by the participating contractor acting as a general contractor for other installations.
- C. Participating Contractors.** For purposes of the quality guarantee, participating contractors are defined as home performance contractors who participate in the Efficiency Vermont Home Performance with ENERGY STAR program and have signed a memorandum of understanding with the GMP Zero Energy Now program.
- D. Reasonable Maintenance.** In order for this guarantee to apply, property owners must exercise reasonable maintenance and upkeep of the property and may not negligently or intentionally cause damage to the property resulting in any of the deficiencies identified.
- E. Scheduling Inspection and Work.** In order for this guarantee to apply, customers participating in the Zero Energy Now program must make the building available for inspection and follow-up work within the timeframes identified in Section 4 of this guarantee ("Claims Procedures").
- F. Deficiencies Beyond Contractor's Control.** This guarantee does not apply to deficiencies that occur for reasons beyond the control of the contractor. Zero Energy Now program staff will make the ultimate determination as to whether

deficiencies identified by the customer are beyond the contractor's control.

- G. Ultimate Determination of Applicability.** Ultimate determination of applicability of this guarantee will be determined by Zero Energy Now program staff following a building inspection.

3. TERM

Quality guarantee claims may be made anytime following the completion of the retrofit up to the deadline for filing a savings guarantee claim (i.e., 90 days after the one-year anniversary of retrofit completion, as defined by the date of the blower-door test-out procedure conducted to determine air tightness following the retrofit).

4. CLAIMS PROCEDURES

- A. Process.** In the case of a quality guarantee claim, the steps in the claims process are as follows:
- i. The customer files a claim using the quality guarantee claims form;
 - ii. The claim automatically triggers an inspection by Zero Energy Now program staff;
 - iii. Once the deficiency is verified and the applicability of the guarantee is confirmed by Zero Energy Now program staff, the participating contractor will fix the deficiency;
 - iv. The problem will only be deemed "fixed" and the contractor released from any further responsibility to fix deficiencies once the customer confirms that they are satisfied via written or electronic communication to the Zero Energy Now program.
- B. Inspection Timeframe.** Zero Energy Now program staff will inspect the building within 10 calendar days of receiving a communication from the customer identifying a deficiency.
- C. Fixing Deficiency.** Contractors will make a good-faith effort to fix the deficiency to the customer's satisfaction within 30 calendar days of the inspection.
- D. Customer Sign-Off.** Contractors who fail to fix a deficiency or receive a customer sign-off within 30 days of the inspection may be subject to removal from the Zero Energy Now program. The ultimate decision regarding whether to remove a contractor from the Zero Energy Now program will rest with Zero Energy Now program staff.

5. LIMITATIONS

Aside from potential removal from participation in the Zero Energy Now program at the discretion of Zero Energy Now program staff, failure to satisfy the terms of this guarantee on the part of the contractor will not result in any additional obligations or repercussions being placed on the contractor.

This guarantee is provided by participating Zero Energy Now program contractors only and does not place any obligations on the Zero Energy Now program itself, its staff, or affiliated organizations; nor does this guarantee place any obligations on GMP.

11. Sample Contract

Between [name of subcontractor] and

Building Performance Professionals Association

This Contract dated ____ day of _____ 20__ is between **[name of subcontractor]** of **[address of subcontractor]** ("**[subcontractor abbreviation]**" or "SUBCONTRACTOR") and Building Performance Professionals Association of P.O. Box 8125 Brattleboro, VT 05304 ("BPPA" or "CONTRACTOR"). As this contract is executed for the performance of a subset of the services outlined in a separate general contract (the "Prime Contract,") included as **[Attachment Number]** between CONTRACTOR and Green Mountain Power ("CLIENT"), this contract will hence forth be referred to as the "Subcontract."

WHEREAS CONTRACTOR has entered into, or will hereafter enter into, a general contract with CLIENT to provide certain services described therein; and

WHEREAS, CONTRACTOR desires to retain SUBCONTRACTOR to provide a subset of the services described in the Prime Contract; and

WHEREAS, SUBCONTRACTOR desires to provide CONTRACTOR with such services;

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein, the parties hereto agree as follows:

SCOPE OF WORK

The SUBCONTRACTOR shall provide all the labor, equipment and any and all other items required to perform the services set forth in Attachment A, "Services and Statement of Work to be Performed by the Subcontractor for the Contractor" (the "Services Statement") within the timeframe set forth in Attachment B, "Timeline for Completion of Services" ("Timeline").

All services to be provided by the SUBCONTRACTOR shall be under the direction of its representative **[name of organization's project manager]**. The SUBCONTRACTOR may also

designate additional staff to provide such services, subject to the maximum allowable payment amount set forth in Section 3.

SUBCONTRACTOR will provide CONTRACTOR with intermediate work products as they are completed, including interim analyses, working drafts, and memoranda prepared in accordance with the Services Statement.

CONTRACTOR shall carry out the Services with due diligence and efficiency, in a practical manner designed to promote the purposes of the Subcontract and Prime Contract and with due regard to the obligations of the parties to each of these agreements. SUBCONTRACTOR agrees to comply with all CONTRACTOR requests to provide any information or take any other actions reasonably requested by CONTRACTOR to allow CONTRACTOR to meet its obligations under the Prime Contract.

PERIOD OF PERFORMANCE

The period of performance for this Subcontract shall be from October 1, 2015 through December 31, 2016

SUBCONTRACTOR will adhere strictly to the work and deliverable schedule detailed in Attachment B, except by written mutual agreement of both parties to this Subcontract.

FEES AND PAYMENTS

The SUBCONTRACTOR shall be paid according to the hourly rates listed for each SUBCONTRACTOR staff member in the Services Statement, up to a combined maximum allowable payment to SUBCONTRACTOR of **[maximum allowable payment]**.

The maximum allowable payment shall apply to all payments to SUBCONTRACTOR for performance of services under this contract, even if SUBCONTRACTOR designates additional staff to perform these services.

In addition, SUBCONTRACTOR will be paid \$0.575 per mile traveled for the primary purpose of performing services under this Subcontract.

SUBCONTRACTOR will invoice CONTRACTOR monthly for Labor, Fees, and Reimbursable Costs. The monthly invoices will detail the name of staff, hours being billed, hourly rate, cost, task description and line item detail of reimbursable expenses and receipts for all reimbursable expenses. Invoices shall be submitted within five business days after the end of each month.

If invoices are submitted by mail, they should be sent to:

Richard Faesy
Energy Futures Group
P.O. Box 587
Hinesburg, VT 05461

If submitted via e-mail invoices should be sent to finance@energyfuturesgroup.com.

Richard will review and approve invoices that are within scope and budget and then forward then to Capstone to pay within 30 days of CONTRACTOR's receipt of payment from the CLIENT.

INDEPENDENT CONTRACTOR

For the purposes hereof, SUBCONTRACTOR is an independent contractor, and shall not be deemed to be an employee or agent of CONTRACTOR or CLIENT. SUBCONTRACTOR shall pay any and all taxes and fees on it imposed by any government under this Subcontract.

INSURANCE

SUBCONTRACTOR is solely responsible for obtaining any and all workers compensation, auto and liability insurance as required by any applicable laws and regulations or by the Prime Contract, and to protect its own interest and property throughout the term of this Subcontract. None of CONTRACTOR's insurance shall apply. If required by CONTRACTOR's insurance provider or the Prime Contract, SUBCONTRACTOR shall provide proof of its insurance in a form acceptable to CONTRACTOR's insurance provider.

REPRESENTATIONS

SUBCONTRACTOR represents that it is in the business of providing the services described in the Services Statement and that it shall perform such services:

- a. In accordance with all applicable federal, state and local laws and regulations; and
- b. In accordance with generally accepted industry principles and practices.

SUBCONTRACTOR further represents that there are no existing undisclosed or threatened legal actions, claims, encumbrances, or liabilities that may adversely affect its performance of services under this Subcontract or CONTRACTOR's rights hereunder.

SETTLEMENT OF DISPUTES

Any disputes or differences arising out of this Subcontract that cannot be amicably settled between the parties shall be finally settled under the Commercial Arbitration Rules and Mediation Procedures of the American Arbitration Association by one or more arbitrators appointed in accordance with said Rules. The arbitration shall take place in Hinesburg, Vermont or any other location chosen by CONTRACTOR.

INDEMNIFICATION

SUBCONTRACTOR shall defend, indemnify and hold CONTRACTOR harmless against: any injury, death, loss, suit or claim, including expenses and attorneys' fees arising from (i) SUBCONTRACTOR's violation of the representations contained in Section 6 hereof; (ii) any liability or loss resulting from

SUBCONTRACTOR's failure to pay any taxes or fees imposed upon it by any government under this Subcontract; and (iii) any other negligent action or omission on the sole part of SUBCONTRACTOR in connection with this Subcontract.

CONTRACTOR shall defend, indemnify and hold the SUBCONTRACTOR harmless against: any injury, death, loss, suit or claim, including expenses and attorneys' arising from any negligent action or omission on the part of CONTRACTOR in connection with this Subcontract.

GOVERNING LAW

The interpretation of the terms and conditions of this Subcontract shall be governed by the laws of the State of Vermont.

DEFAULT TERMINATION

Either party may terminate this Subcontract in whole or in part in the event that the other party fails to strictly adhere to any of the terms and conditions of this Subcontract or fails to maintain the progress of the work so as to jeopardize the successful and timely completion of the services outlined in the Services Statement or the Prime Contract. In such event, SUBCONTRACTOR shall cease performing services under this Subcontract immediately upon CONTRACTOR's demand. In the event of termination, SUBCONTRACTOR shall perform such additional work as is necessary for the orderly filing of documents and termination of services. Such work shall only pertain to the actual services outlined in the Services Statement and does not include any administrative tasks, such as preparing final invoices, etc. SUBCONTRACTOR shall only be compensated for all undisputed portions of the completed portion of the work actually performed prior to the effective date of termination, plus the work required for filing and closing. In the event of termination, SUBCONTRACTOR shall turn over to CONTRACTOR all work completed to date, all related documents, and all other information gathered under this Subcontract.

TERMINATION FOR CONVENIENCE

Notwithstanding any other provision of this Subcontract, CONTRACTOR may terminate this Subcontract without cause by giving thirty (30) days advance written notice thereof to SUBCONTRACTOR.

Upon termination of this Subcontract pursuant to this section, SUBCONTRACTOR shall have no further obligation to provide services to CONTRACTOR pursuant to this Subcontract and, except for payment of fees to SUBCONTRACTOR for services rendered prior to the date of termination, CONTRACTOR shall have no further obligation to pay SUBCONTRACTOR.

SUBCONTRACTOR shall render a final bill for services to CONTRACTOR within thirty (30) days from the date of termination and CONTRACTOR shall pay that bill within thirty (30) days of receipt of payment for these services from CLIENT.

MAINTENANCE OF RECORDS

SUBCONTRACTOR shall keep, maintain, and preserve at its principal office throughout the term of the Subcontract and for a period of three years after the end of the Subcontract full and detailed books, accounts, and records pertaining to the performance of the Subcontract.

AUDIT ADJUSTMENT

Any payment made under the Subcontract shall be subject to retroactive reduction for amounts included therein which are found on the basis of any audit of CONTRACTOR or the SUBCONTRACTOR by an agency of the United States not to constitute an allowable charge or cost hereunder.

NON-DISCRIMINATION REQUIREMENTS

In accordance with all State and Federal statutory and constitutional non-discrimination provisions, the SUBCONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, age, disability or marital status.

NOTICES

- a. CONTRACTOR's primary contact is Richard Faesy.
- b. SUBCONTRACTOR's primary contact is **[name of Contractor project manager]**.
- c. Any notice or request required or permitted to be given or made in this Subcontract shall be in writing to the appropriate primary contact. Such notice or request shall be deemed to be duly given or made when it shall have been delivered by hand, mail, facsimile or electronic mail to the party to which it is required to be given or made, at such party's address specified below or at such other address as the party shall have specified in writing to the party giving such notice, or making such request.

FOR CONTRACTOR:

Richard Faesy
P.O. Box 587
Hinesburg, VT 05461
Telephone: (802) 482-5001
Fax: (802) 329-2143

For SUBCONTRACTOR:

[Full name, mailing address, phone, fax and e-mail of Contractor Project Manager listed above]

PRECEDENCE OF THE PRIME CONTRACT

The Prime Contract will take precedence over all agreements made in this Subcontract. In connection with the performance of services under this subcontract, SUBCONTRACTOR agrees to adhere to all

requirements of the Prime Contract, as well as the requirements of this Subcontract. To the extent that the Subcontract conflicts in any way with the Prime Contract, the Prime Contract will control.

ATTACHMENTS

All attachments to this Subcontract are incorporated by reference and made a part of this Subcontract. In the event of a conflict between this Subcontract and any attachment hereto, this Subcontract shall control, with the exception of the Prime Contract (Attachment C), which shall take precedence over this Subcontract and all other incorporated attachments.

SEVERABILITY

If any term or provision of this Subcontract shall be held to be invalid or unenforceable, the remaining terms and provisions of this Subcontract shall be valid and enforceable to the fullest extent permitted by law.

NONWAIVER

The failure of CONTRACTOR to enforce any one or more of the provisions of this Subcontract shall not be construed to be a waiver thereof, nor shall such failure affect the validity of the Subcontract, SUBCONTRACTOR's obligations hereunder or the right of CONTRACTOR to enforce any provision of the Subcontract.

COUNTERPARTS

The Subcontract may be executed in several counterparts by the parties and when so executed shall be considered fully executed to the same extent as if all parties had signed the original document. Facsimile execution is authorized.

ENTIRE AGREEMENT

This Subcontract, including any appendices and attachments, constitutes the entire agreement between CONTRACTOR and SUBCONTRACTOR and supersedes all prior communications, representations, agreements and understandings whether oral or written made by either of them concerning the subject hereof. This Subcontract may not be modified or amended except by written instrument duly executed by an authorized officer or employee of the party to be bound.

SUBCONTRACT AMENDMENTS

Any changes to the SUBCONTRACTOR's Scope of Work under the Services Statement (Attachment A) or Timeline (Attachment B) and fees will be accomplished via written amendment to this Subcontract, signed by an authorized officer or employee of the SUBCONTRACTOR and CONTRACTOR.

IN WITNESS WHEREOF, SUBCONTRACTOR and CONTRACTOR have caused this Subcontract to be executed.

FOR SUBCONTRACTOR

FOR CONTRACTOR

Signature

Signature

Printed Name

Printed Name

Title

Title

Organization

Organization

Date

Date

12. Memorandum of Understanding

Memorandum of Understanding (MOU)

Between

Building Performance Professionals Association – Vermont (BPPA-VT)

and

Participating Home Performance Contractors

Pertaining to the Zero Energy Now! (ZEN!)⁷ Program

Overview of CEED Fund and Zero Energy Now! (ZEN!) Program

⁷ Note: The program was originally referred to as ZEN! (Zero Energy Now!), and subsequently the program name was changed to Zero Energy Now. All MoU's were developed and signed using the original name. Hence, there is discrepancy between the name of the program overall, in this Program Plan, and the name of the program in the MoU at the time of obtaining signatures.

Green Mountain Power's "Community Energy & Efficiency Development" Fund (CEED) is an investment fund focused on customer energy efficiency, community-based renewable energy, weatherization and other improvements that must create additional value benefit for former Central Vermont Public Service (CVPS) customers. During 2016, CEED funds are supporting the Building Performance Professionals Association Vermont (BPPA-VT) pilot comprehensive energy retrofit called Zero Energy Now! (ZEN!).

There are several program design elements that make ZEN! unique. These include but are not limited to:

- (1) bringing together select Efficiency Vermont Home Performance with ENERGY STAR Efficiency Excellence Network participating contractors with Renewable Energy Vermont's solar and biomass heating installers so that customers may receive an "all of the above" approach to *both* reducing their energy consumption *and* switching to renewable energy sources;
- (2) utilizing existing home performance and renewable federal and state incentives and augmenting these incentives through CEED funds. The additional CEED incentive is based on a new "10-50-50" standard that strives to direct the project towards comprehensive energy offerings. This standard includes: order to be eligible for incentives for the ZEN! program, participants must achieve the following "10-50-50" minimum standards:
 - Test 1: At least a 10% reduction in envelope heat loss;
 - Test 2: At least a 50% reduction in combined fossil fuel and grid electricity;
 - Test 3: At least 50% customer's total energy consumption is derived from renewable electric, biomass, or other recognized renewable sources.
- (3) developing and refining the EUSAVE energy modeling tool that combines weatherization savings with renewable generation estimates
- (4) developing and providing an energy usage and work quality guarantee to solidify customer confidence to increase participation
- (5) piloting the development and implementation of a Home Energy Labeling program in partnership with Vermont Energy Investment Corporation (VEIC)
- (6) targeted marketing and outreach to drive customer interest
- (7) achieving 50 comprehensive (efficiency and renewables) retrofits
- (8) ongoing "plan-do-act-check" with market service providers (weatherization contractors, renewable installers, utilities) and program implementers to identify areas for program modification to continually improve program delivery, customer satisfaction and energy savings.

Roles and Responsibilities

There are multiple businesses and utilities involved in the execution and oversight of ZEN! The ultimate responsibility for achieving 50 comprehensive energy retrofits rests with **BPPA-VT**. The actual weatherization and system installation work will be achieved by **Participating Contractors**.

While there is no formal contract between **BPPA-VT** and **Participating Contractors**, this MOU assists in clarifying program expectations between **BPPA-VT** and **Participating Contractors**, and

also requires **Participating Contractors** to comply with confidentiality requirements pertaining to utility data and sensitive customer-specific data.

Although **BPPA-VT** is responsible for the overall management of ZEN!, ultimately it is the **Participating Contractor** who will ensure the success of individual projects. As the industry trade association for **Participating Contractors**, all of **BPPA-VTs** work is conducted, ultimately, to advance the businesses of **Participating Contractors**. As such, **BPPA-VT** will strive to implement ZEN! efficiently and effectively, and welcomes a partnership with **BPPA-VT** members (you, the **Participating Contractor**), in which you actively engage to see ZEN! succeed and further grow your business opportunities.

Participating Contractors play a critical role in helping to develop, market, sell and complete ZEN! comprehensive projects. This is an opportunity for additional, future work over the next decade as Vermont transitions towards a Renewable Energy Standard that requires more comprehensive energy retrofits through the Third Tier, the “Energy Transformation Tier”.

The ZEN! program is grant funded with an end date of December 31, 2016. However, it is **BPPA-VTs** goal to see ZEN! succeed so that it will continue to expand, or a similar type of program will emerge. Therefore, as additional incentive for working towards a successful outcome for ZEN!, **BPPA-VT** commits to providing the right of first refusal to contractors who deliver on their number of committed jobs (see below), if the program continues beyond December 31, 2016 under BPPA oversight.

Participating in ZEN! is also a responsibility, as this new program model will require patience, flexibility and dedication as the program is developed, designed and honed. **Participating Contractors** are required to commit time to the program at two training sessions, and it is likely that there will be some ongoing time commitment due to the required learning curve that could interrupt the flow of **Participating Contractors** existing business models. However, there is no direct financial investment required to participate.

In exchange for participating in ZEN! and agreeing to the below, **Participating Contractors** receive:

- Additional Promotional Support through ZEN!
- Additional Sales and Program Training
- Access to a comprehensive retrofit analysis tool during the duration of ZEN!
- Opportunity to offer more incentives and more energy savings for their customers
- Opportunity to be at the forefront of ZEN!, which has the potential to lead to multiple projects as Vermont’s Renewable Energy Standard, Tier Three “Energy Transformation Tier” is defined and implemented.

Participating Contractors agree to the following:

- b. Total Number of Projects:** Strive to achieve ____ completed projects by 12/31/2016. If it appears that the Participating Contractor will not achieve ____ completed projects by 12/31/2016, Participating Contractor will notify **BPPA-VT** by August 31, 2016.
- c. Quality Guarantee:** Offer a quality guarantee to fix any customer-identified deficiency within the contractor's control in installations performed or managed by the contractor to the customer's satisfaction at no cost to the customer. See attachments for details.
- d. Software Protection and Exclusive Use:** Use the EUSAVE model and tool only for the purposes of ZEN!, and not to share or sell the model. As of December 31, 2016, the EUSAVE model must not be used.
- e. Use of CVPS Customer List:** Use for the purposes of ZEN! only and not share or sell the data in any way. As of December 31, 2016, the CVPS list must not be used.
- f. Service Level Agreement:** Below are goal timelines for responding to customers. Given the tight timeline for this project, these timeframes are intended to be met to the extent feasible. However, it is understood that at times there may be extenuating circumstances that may mean the below time frames cannot be adhered to.
- i. 2 days for phone call response to a lead
 - ii. Audit completed with work scope provided to customer within 10 business days of response phone call contact
 - iii. Project completed and incentive submitted within _____ weeks including work done by subs (to be agreed upon by contractors & **BPPA-VT**)
- g. Regular Reports and Survey:** Provide reports as needed to ensure compliance with overall program requirements. Additionally, Participating Contractors are required to fill out a survey at the end of the ZEN! Program (or before, if the **Participating Contractor** chooses to end their participation in ZEN! prior to December 31, 2016).
- h. Attend trainings:** Each **Participating Contractor** must have one representative from their business attend two trainings: a Program Training and a Sales Training.
- i. Liability:** All entities involved in the implementation and management of ZEN! will not be held liable for any contractor activities (e.g. BPPA-VT, EFG, Capstone, etc.). **Participating Contractors** conduct their work separate to **BPPA-VT** and are not subcontractors to **BPPA-VT**.
- j. Term:** ZEN! is a grant-funded program that ends December 31, 2016. As of December 31, 2016 this MOU ends and contractors must stop using ZEN! related materials (e.g. EUSAVE tool and other tools, the ZEN! name, CVPS customer list and any other ZEN!-specific material).
- k. As the overall, Home Performance with Energy Star contractor overseeing your particular ZEN! projects,** you also agree to the following (renewable energy system installers do not need to comply with the below):
- i. Be a current Efficiency Vermont Efficiency Excellence Network Home Performance Contractor
 - ii. Ensure the work undertaken under ZEN! is being completed at a former CVPS-customer site (**BPPA-VT** will provide this dataset but contractors must confirm)
 - iii. Join **BPPA-VT**

- iv. Ensure that solar photovoltaic system installers are aware that Renewable Energy Credits must be retired – they are considered to be owned by the building owner.

By signing below, Participating Contractor abides to follow, to the degree possible and articulated in the language above, with this Memorandum of Understanding.

Participating Contractor:

Name:

Business Name:

Business Address:

Signature:

Date:

On behalf of BPPA-VT:

Name:

Business Address: PO Box 8125 Brattleboro, VT 05304

Signature:

Date:

Appendices: Quality Guarantee Language and Form

[13. Marketing Plan \(to be included when available\)](#)