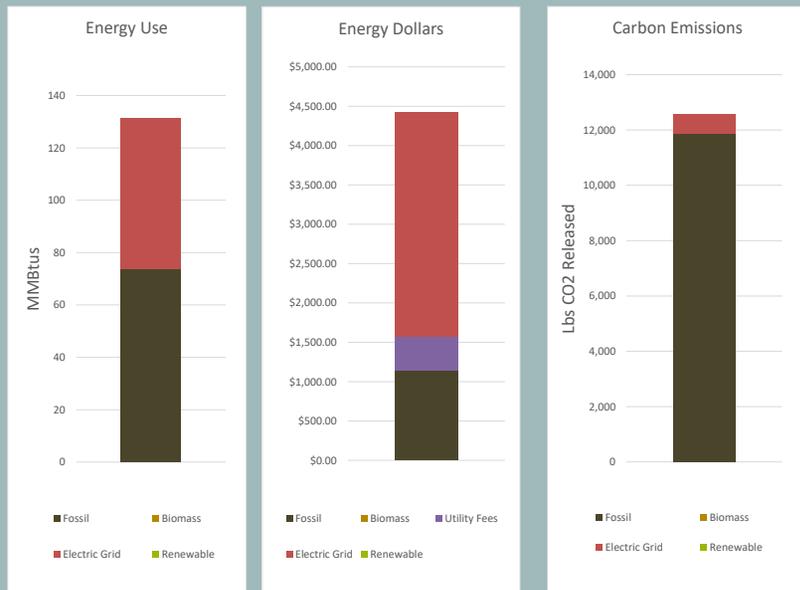


Zero Energy Now Program

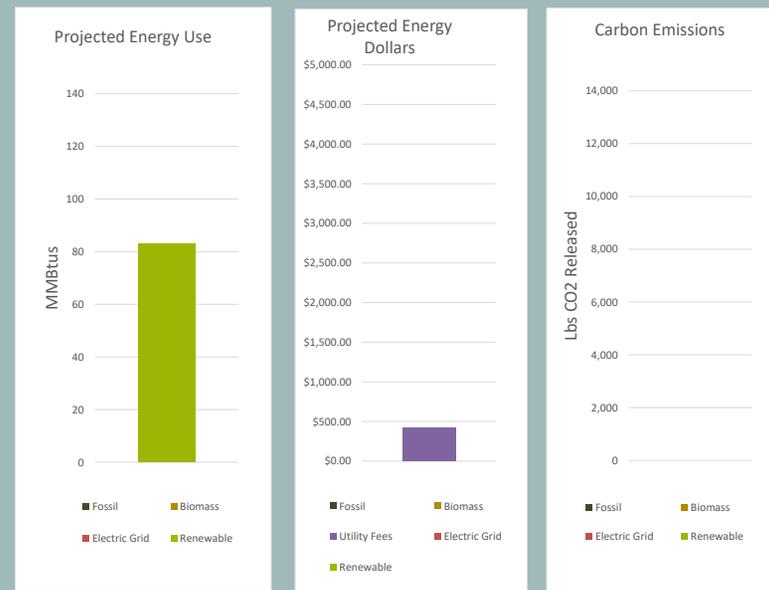
Contractor/Coordinator	New Leaf Design
House Style	Remodeled 1965 Cape Chalet
Location	Chittenden County, Vermont
Project Start Date	9/1/2020

How does your home stack up on the path to Zero Energy?

Your home's current energy profile



Your home's potential energy profile...



Proposed Work Scope

Heat Loss Analysis & Envelope Improvement

Envelope Components	Existing Heat Loss in MMBtus	Proposed Reduction	Improved Heat Loss	Cost of Improvement
Flat Attic - Air seal & Insulate	0.60	0.00	0.60	
Attic Slants & Cathedral Ceilings	2.90	0.00	2.90	
Exterior Walls	16.10	0.00	16.10	
Exposed Floors	0.80	0.80	0.00	
Basement A&I	18.40	7.30	11.10	
Basement Moisture				
Windows	9.10	0.00	9.10	
Doors	0.90	0.00	0.90	
Other Special Detail				
Living Space Measures				
Envelope Air Flow Analysis	Existing Air Infiltration	Improved Air		
Air Infiltration - CFM50	1250	1100	150	
Natural Air Changes per Hour	0.31	0.28	0.03	
Air Driven Heat Loss - MMBtus	11.2	1.1	10.1	
Envelope Totals				Total Cost
Total Estimated Building Heat Loss	58.96	9.14	49.83	
Total Cost of Envelope Improvement				\$ 26,700.00



Mechanical Installations

Existing Mechanical Systems

Mechanical Unit & System Type	Fuel	Make	Model	Efficiency	Effcy based on
Central Furnace	#2 Fuel Oil			80.00%	Default
DHW 1	Tank Direct	Electric		88.00%	Default
DHW 2	Tank Direct	Electric		88.00%	Default

Improved Mechanical Systems

Mechanical Unit & System Type	Fuel	Make	Model	Efficiency	Effcy based on
Mini-Split ASHP	Electric	Mitsubishi	Various	220.0%	Default
DHW 1	Heat Pump	Electric		200.0%	Default
DHW 2	Tank Direct	Electric		88.0%	Default
Total Cost of Mechanical Improvement					\$ 17,808.87

Renewable Energy Installations

Renewable Equipment - Existing

System Type	Size in kW DC	Productn Factor	Annual kWh AC	Other Relevant Details	Extg Rnwbl Input in kWh	Extg Load in kWh
					0.00	16,931.61

Renewable Equipment - Improved

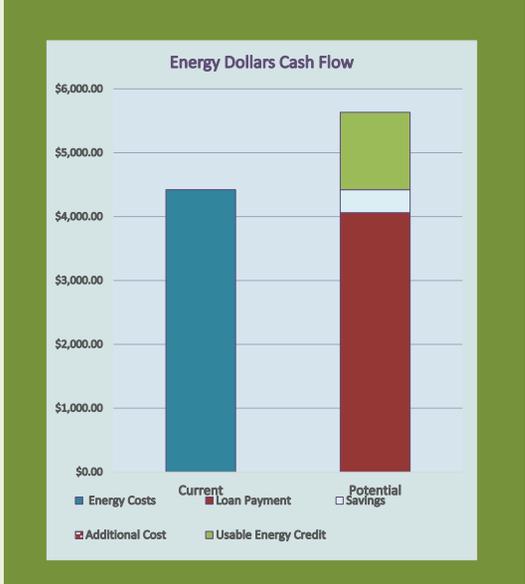
System Type	Size in kW DC	Production Factor	Annual kWh AC	Other Relevant Details	Totl Rnwbl Input in kWh	Improved Load in kWh
Fixd Grnd Mt	20.40	1.19	24,276.00		24,276.00	17,090.34
Total Cost of Renewable Installation					\$ 53,751.00	

Project Cost	
Weatherization	\$ 26,700.00
Heat Pumps & Appliances	\$ 17,808.87
Biomass Installation	\$ -
Renwble Electric Installation or Buy-In	\$ 53,751.00
Financing Costs	\$ -
Total Project Cost	\$ 98,259.87

Financing & Cash Flow Analysis	
Pre-project Monthly Energy Loan Pymt	\$ -
Pre-Project Monthly Energy Costs	\$ 368.50
Pre-Project Monthly Out of Pocket	\$ 368.50
Total Project Cost	\$ 98,259.87
Total Cash & Rebate Incentives	\$ 22,875.26
Down Payment or Cost Offset	
Financed Principal	\$ 75,384.61
Total Monthly Loan Payments	\$ 338.51
Post-Project Monthly Energy Costs	\$ 35.30
Annual Energy Savings	\$ 4,001.15
Monthly Energy Savings	\$ 333.43
Post-Project Monthly Out of Pocket	\$ 373.81
Net Monthly Cost	\$ 5.31

Incentive Summary				
	Cash Back Incentive	Tax Credit	Cost Reduction	
ZEN Incentives				
Test 2 Incentive	\$ 5,000.00			
Test 3 Incentive	\$ -			
Income Bonus	\$ -	\$ -	\$ -	\$ -
Other Incentives				
Weatherization	\$ 1,000.00	\$ 500.00	\$ -	
Mechanical	\$ -	\$ 600.00	\$ 350.00	
Renewable	\$ -	\$ 13,975.26	\$ -	
Appliance	\$ -	\$ -	\$ -	
Utility	\$ 1,200.00	\$ -	\$ 200.00	
Other Adjustme	\$ -	\$ 600.00	\$ 400.00	
Total Incentive	\$ 23,825.26	\$ 7,200.00	\$ 15,675.26	\$ 950.00

Financing				
	Amount to be Financed \$ 75,384.61			
	Principal	Term in Years	Rate	Monthly Payment
Loan 1	\$ 75,384.61	30.00	3.50%	\$338.51
Loan 2				
Loan 3				
Total Loans	\$ 75,384.61	Total Monthly Payment		\$338.51



ZERO ENERGY NOW GOALS				
	Required Standards	Minimum Required	Projected Achievmt	Meets ZEN
Test 1	Envelope Load Reduction	10.00%	15.50%	YES
Test 2	Fossil & Grid Energy Reduction	50.00%	100.00%	YES
Test 3	Renewable Energy Component	50.00%	142.59%	YES
Added Benefits		Recmnded	Projected	
	Reduction in CO2 Emissions	90.00%	102.34%	lbs elimntd: 12,876.27
	Energy Cost Savings	80.00%	100.00%	in pre-project dollars

Project Design Optimization		Primary Fossil Fuel	Load In Mmbtus	In Native Units	In Dollars	Likely Difference in Project Cost	Apply
Adjust Env Load	MMBtus						
Adjust HP Load	MMBtus						
Adjust PV Output	kWh						
Install HP DHW							
Other FF Appliance Chng:							
Adjust Biomass Use							
Adjst cost of Fuel							
Heating Load	Fossil Fuel (Consumptn)	Primary Fuel Cost	HP Load	kWh Load	Monthly OP	Net Project Cost	Adnl OP/Mo
49.83	0.00		49.83	17,090.34	\$ 373.81	\$ 75,384.61	\$ 5.31

Chittenden County Chalet Style House – originally built in 1965.

As part of a gut remodel, the homeowners wished to take the Zero Energy Now concept as far as they could. They replaced a central oil furnace with three heat pumps on each level of their three story, two unit house. They had completed substantial weatherization improvements in previous projects, and the bulk of the work was in the basement level. Because they had had significant under-slab plumbing issues, removal of the existing slab was required, which provided an opportunity to insulate the entire basement – down to the concrete block foundation and under the slab. A 48 panel solar array will provide enough energy for heat, two water heaters, and two cars – one fully electric and one a plug-in hybrid. Although an expensive project, when rolled into a 30 year mortgage, post-project cash flow is only slightly higher than pre-project energy costs!