Branchflower/Fox Home Weatherization Success Story

Stephen Branchflower & Coleen Fox & Noah, Houghton Hill Road, Thetford Hill
Our home is an old camp building built in the 30’s and after doing a small renovation to our bathroom I discovered the walls of this old camp were not insulated. Working as an architect and caring greatly about energy efficiency and the environment I had an energy audit done to see just how extensive the problems were. While insulation helped tremendously I was most impressed with the effects of properly air sealing our home – the information revealed through the use of thermal imaging cameras was the biggest eye opener. Long story short we are quite comfortable and very happy with Efficiency Vermont and their network of subcontractors.

Measures Installed
- Increased distribution efficiency of direct vent propane heaters.
- Air sealed attic, exterior walls and crawlspace penetrations.
- Insulated attic, exterior walls and crawlspace rim.

Savings Achieved
Air Leakage Reduced by – 36.3%
Projected Heat Energy Savings – 39.6%
Cost of Job – $3,600
Incentives from Efficiency VT – $1,427
Net Cost to Homeowner – $2,173
Projected Annual Dollar Savings – $656
Years to Payback Through Savings – 3.31
Return On Investment – 30.21%

Alice Gollnick Home Weatherization Success Story

Alice Gollnick, Poor Farm Rd., Thetford Center
In addition to the added comfort of more even heat throughout the house and basement as well as significant savings on heating costs, the contractor made several very helpful suggestions and improvements related to health and safety concerns.

Measures Installed
- Air sealed attic and basement penetrations.
- Insulated attic and basement.

Savings Achieved
Air Leakage Reduced by – 39.9%
Projected Heat Energy Savings – 12.8%
Cost of Job – $10,277
Incentives from Efficiency VT – $1,294
Net Cost to Homeowner – $8,983
Projected Annual Dollar Savings – $626.53
Years to Payback Through Savings – 14.33
Return On Investment – 7%

Weatherization is a long-lasting investment, bringing energy savings and increased comfort for years to come - long after your initial investment is paid off.
Rick & Jody Biddle Home Weatherization Success Story

Rick & Jody Biddle, Gove Hill Road, Thetford Center

In 2008 my wife, Jody and I bought a 1968 vintage house because we loved the sunny south-facing hillside. With the encouragement and help from Eric Solsaa, I went through Efficiency Vermont’s Do-It-Yourself program. We have accomplished many upgrades to our almost 50 year old house. Now the sun heats our water and house and generates our electricity. On stormy days the house is much warmer due to our weatherization improvements. Since September 12th we have used 3/4 cord of wood 45 gallons of propane and have bought no electricity.

Measures Installed
- Sealed and insulated attic with spray foam.
- Air sealed basement and insulated with foam board.
- Installed new high efficiency boiler and heat recovery ventilator.

Savings Achieved
- Air Leakage Reduced by – 50%
- Projected Heat Energy Savings – 40%
- Cost of Job – $8,532*
- Incentives from Efficiency VT – $2,235
- Net Cost to Homeowner – $6,297
- Projected Annual Dollar Savings – $1,261
- Years to Payback Through Savings – 5
- Return On Investment – 20%

*Note: The Biddle’s participated in the Do-It-Yourself track of Home Performance work and did most of the labor on their own, which was not counted in the costs of the job.

Sharon Harkay Home Weatherization Success Story

Sharon Harkay, Tucker Hill Road, Thetford Center

I was tired of being too cold in winter and too hot in summer upstairs. I also wanted to save money and help do my share to save the environment.

Measures Installed
- Increased distribution efficiency of oil furnace.
- Air sealed attic, kneewall, wall and basement penetrations.
- Insulated attic and kneewalls

Savings Achieved
- Air Leakage Reduced by – 39.4%
- Projected Heat Energy Savings – 26.52%
- Cost of Job – $9,005
- Incentives from Efficiency VT – $1,780
- Net Cost to Homeowner – $7,225
- Projected Annual Dollar Savings – $790
- Years to Payback Through Savings – 9.15
- Return On Investment – 10.92%

Weatherization is a long-lasting investment, bringing energy savings and increased comfort for years to come - long after your initial investment is paid off.
Richard Krzal Home Weatherization Success Story

Richard Krzal, Cobble Hill Road, East Thetford

There was an Efficiency VT advertisement that showed a dripping tap. It said, ‘You would fix a leaky faucet, shouldn’t you fix your leaky house?’ I decided to do something about the cold drafts I was feeling. Now the house is more comfortable and I have reduced my wood use about a third.

Measures Installed
- Air sealed attic, kneewall (contractor)
- Air sealed basement walls and garage (owner)
- Insulated attic and kneewalls with cellulose (contractor)
- Insulated basement walls with poly board (owner)
- Upgraded bathroom exhaust fan

Savings Achieved
Air Leakage Reduced by – 44%
Projected Heat Energy Savings – 17.3%
Cost of Job – $6,600
Incentives from Efficiency VT – $2,650
Net Cost to Homeowner – $3,950
Projected Annual Dollar Savings – $610
Years to Payback Through Savings – 6.48
Return On Investment – 15.4%

Scott Hesser Home Weatherization Success Story

Scott Hesser, Godfrey Road in East Thetford

Before the work, the house felt drafty and cold on a regular basis. We had serious moisture problems in our attic because so much warm air was flowing out of our living space and into the attic where it was condensing on the roof. On cold days, it could look as if it were raining in the attic. Our house is much more comfortable now.

Measures Installed
- Air sealed attic and basement penetrations.
- Insulated attic and basement

Savings Achieved
Air Leakage Reduced by – 86.3%
Projected Heat Energy Savings – 27.8%
Cost of Job – $4,977
Incentives from Efficiency VT – $1,635
Net Cost to Homeowner – $3,342
Projected Annual Dollar Savings – $1,060
Years to Payback Through Savings – 6.48
Return On Investment – 31.74%

Weatherization is a long-lasting investment, bringing energy savings and increased comfort for years to come - long after your initial investment is paid off.
Helena Gardner
Four Wheel Drive Road, Norwich

“After moving in the winter of 2015 into an old house built without regard to energy efficiency, experiencing a couple of uncomfortably cold winters, and seeing the Energy Committee’s listserv post about $100 energy audits, I scheduled an energy audit of my house with HEAT Squad. HEAT Squad prepared a professional report listing priority projects to obtain the highest impact for the lowest cost, and walked me through the report. HEAT Squad sent me the names of certified energy efficiency contractors, and explained the process for doing a follow-up round of testing and earning cash back on the work done. The work has made the house noticeably more comfortable, the recommended contractors were thoroughly professional, and the follow-up testing and incentive processes were very easy.”

Measures Installed
- Air sealed: attic penetrations (wires, pipes, top plates, pocket doors, etc.), attic access hatch/pull down stairs, recessed light/bath fan fixtures, drop ceilings/soffits, chimney/flue penetrations, cantilevered floors
- Insulated attic open cavity and floor

Savings Achieved
Air Leakage Reduction = 35.1%  Cost of Job $7,200
Projected Heat Energy Savings = 42.19%  Incentives from Efficiency VT ($1,970)
Projected Annual Dollar Savings = $1,122  Net Cost to Homeowner $5,230

Years to Payback through Savings = 4.6
Return on Investment = 21.7%

---------------------------------------------------------------

Nancy Cressman & Alan Berolzheimer
Union Village Road, Norwich

“Before we did this and some other weatherization work, this was a pretty drafty 1860s farmhouse. The transformation has been very noticeable—we don’t feel cold drafts along the floor, the central part of the house holds its heat longer, and it’s all around a lot more comfortable.”

Measures Installed
- Air sealed: attic penetrations (wires, pipes, top plates, pocket doors, etc.), attic access hatch/pull down stairs, knee-wall floors/walls, chimney/flue penetrations, door, basement and ceiling moldings, fireplace knee-wall, basement, attic, chimney, doors, walls
- Insulated attic hatch, knee walls, attic open and closed cavities, basement rim joist, and basement above and below grade

Savings Achieved
Air Leakage Reduction = 32.3%  Cost of Job $12,230
Projected Heat Energy Savings = 23.76%  Incentives from Efficiency VT ($2,137)
Projected Annual Dollar Savings = $659  Net Cost to Homeowner $10,093

Years to Payback through Savings = 15.3
Return on Investment = 6.5%
Jonathan & Wendy Teller-Elsberg  
Church Street, Norwich

"Bit by bit, we've been improving the efficiency of our home. One year it was basement air sealing and insulation. Another was the attic. Another was window improvements. All along, we've watched our oil use drop significantly and we've enjoyed a more comfortable home. I remember the first day I walked downstairs after the basement had been insulated--instead of an uncomfortably cold floor on my bare feet, it felt as though we had in-floor radiant heat. The change was that dramatic."

**Measures Installed**
- Air sealed: attic penetrations (wires, pipes, top plates, pocket doors, etc.), attic access hatch/pull down stairs, doors, windows, base and ceiling moldings, basement/crawlspace penetrations
- Insulated basement rim joist, basement both above and below grade

**Savings Achieved**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage Reduction</td>
<td>15.6%</td>
<td>Cost of Job</td>
<td>$1,906</td>
</tr>
<tr>
<td>Projected Heat Energy Savings</td>
<td>13.26%</td>
<td>Incentives from Efficiency VT</td>
<td>($520)</td>
</tr>
<tr>
<td>Projected Annual Dollar Savings</td>
<td>$428</td>
<td>Net Cost to Homeowner</td>
<td>$1,386</td>
</tr>
</tbody>
</table>

Years to Payback through Savings = 3.2  
Return on Investment = 31.25%

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Kathleen & Jack Shepherd  
New Boston Road, Norwich

“In a three-room addition over a two-car garage originally built in 1980, we completed a semi-finished room, replaced drafty light fixtures with LEDs, installed extra roof and wall insulation, and sealed places where newer and older construction meet. It produced a much warmer and easy-to-heat space. The Solsaa contractors were a pleasure to work with."

**Measures Installed**
- Air sealed: attic penetrations (wires, pipes, top plates, pocket doors, etc.), attic access hatch/pull down stairs, chimney/flue penetrations, doors, wall penetrations (electrical outlets/dryer vents), base and ceiling moldings
- Insulated west and north walls, closed cavity ceiling, basement above and below grade, attic hatch, and attic open cavity

**Savings Achieved**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage Reduction</td>
<td>18.4%</td>
<td>Cost of Job</td>
<td>$5,130</td>
</tr>
<tr>
<td>Projected Heat Energy Savings</td>
<td>17.85%</td>
<td>Incentives from Efficiency VT</td>
<td>($1,090)</td>
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<tr>
<td>Projected Annual Dollar Savings</td>
<td>$258</td>
<td>Net Cost to Homeowner</td>
<td>$4,040</td>
</tr>
</tbody>
</table>

Years to Payback through Savings = 15.6  
Return on Investment = 6.4%
"A Tale of Two Roofs"
Will and Stephanie Davis  
Sharon, VT

The difference in snow cover on the roof sections tells the whole story.
A beautiful blanket of (unmelted) snow on the left section of roof shows the success of recent weatherization efforts.
No work was completed on the larger parallel roof on the right, which still shows evidence of heat escaping: uneven snow coverage, the premature snow slide, melting from peak.
Prior to purchasing their home (built 1978) in Sharon, Will and Stephanie Davis commissioned an energy audit:

"Having the report…allowed us to fully understand the condition of the house and how we should expect it to perform with respect to energy use, comfort, and safety."       -Will Davis

Upon purchasing the house, they improved Nora’s bedroom with:

- Closed-cell spray foam installed  
  - 4” in walls (R26) / 6” along roof (R40)
- Replaced casement window

Results
The renovated portion of the house is noticeably more comfortable and no longer has ice dam issues. The difference is equally noticeable on hot August afternoons and cold January nights.

| Air Leakage Reduction:       | 34%       | from a 3200 CFM50 of to 2104 CFM50 |
| Incentives earned:           | ($955)    | (provided by Efficiency Vermont)   |
| Net Job Cost:                | $7,663    |                                  |
| Heat Energy Savings:         | 20%       |                                  |
| Return on Investment:        | 4.7%      |                                  |

Now it’s YOUR Turn!

Weatherize Upper Valley is a collaboration between Vital Communities, resident volunteers, and committed building performance professionals. FREE professional home visits and quotes, and great PRIZES if you commit to a project by May 31.

Learn More & Get Started: VitalCommunities.org/Weatherize or 802.291.9100 x109
The Mellinger Home: An Energy Investment

The Mellinger’s 20-year-old Cape was pretty typical for a house of that era and build. Their energy bills weren’t outrageous, and the family was comfortable. Still, they knew there was room for improvement. In winter, ice dams and icicles were sometimes a problem and the Mellingers worried about long-term damage to the roof. A Home Performance with ENERGY STAR® contractor conducted an energy audit, and infrared photos revealed a “glowing red ring” around the house, indicating pervasive heat seepage from the basement.

The contractor presented the Mellingers a list of recommended efficiency improvements and an energy savings estimate, and they considered incentive information from Efficiency Vermont and Vermont Gas as well as available tax credits. The Mellingers decided on the following measures:

- Air sealing throughout the home, especially the basement
- Blown-in insulation, particularly in knee-wall and attic areas
- Boiler replacement

The total cost of the project was $11,150. The Mellingers received $1,647 in incentives from Efficiency Vermont and $2,200 in other incentives.

The Mellingers are now more comfortable and tests show that they’ve reduced air leakage by 40% — that’s 10% above their contractor’s projection. This past winter, several neighbors experienced serious ice dam issues, resulting in roof leaks and extensive damage. The Mellingers were happy to report: “Not a single ice dam.”

A Summary of Annual Heating Energy Savings and Cost

<table>
<thead>
<tr>
<th>Without Improvements</th>
<th>With Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,305</td>
<td>$628 Energy savings</td>
</tr>
<tr>
<td>$677 Actual energy cost after improvements</td>
<td></td>
</tr>
</tbody>
</table>

“We’re definitely glad we did it. Not a single ice dam this past winter!”

—Dan Mellinger
Paying for Energy Efficiency Home Improvements

The least expensive way to pay for energy improvements is with cash. Given the typical size of these projects, however, few homeowners have this option available. For Vermonters who are interested in making significant energy efficiency home improvements, appropriate financing can make the investment not only possible, but affordable.

Energy savings can offset fixed monthly loan payments, and the money that would have been spent on energy bills becomes available to make most or all of the loan payments. Although the total cost of a longer loan is higher, increasing the number of payments can reduce the monthly cost and more closely match energy savings.

| PERSONAL SAVINGS | 
|------------------|------------------|
| Personal Savings Used | $7,658 |
| Annual Interest Rate | 1.00% |
| Annual Interest | $77 |
| Annual Cash Flow | $551 |

| The Mellinger’s Project Summary | 
|---------------------------------|------------------|
| Total Project Cost | ($11,505) |
| Efficiency Vermont Incentive | $1,647 |
| Other Incentives | $2,200 |
| Total Customer Cost | ($7,658) |
| Energy Savings | $628/yr.* |

Instead of earning $77 in interest by keeping the money in their savings account, the Mellingers would save $628 on their energy bills, coming out $551 ahead the first year, and every year after that.

<table>
<thead>
<tr>
<th>FINANCING SCENARIOS</th>
<th>7 yr. Personal Loan</th>
<th>15 yr. Home Equity Loan</th>
<th>30 yr. Mortgage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Amount Borrowed</td>
<td>($7,658)</td>
<td>($7,658)</td>
<td>($7,658)</td>
</tr>
<tr>
<td>Annual Interest Rate</td>
<td>7.50%</td>
<td>5.25%</td>
<td>4.75%</td>
</tr>
<tr>
<td>Monthly payments</td>
<td>($117)</td>
<td>($62)</td>
<td>($40)</td>
</tr>
<tr>
<td>Total Interest</td>
<td>($2,209)</td>
<td>($3,423)</td>
<td>($6,723)</td>
</tr>
<tr>
<td>Total Cost</td>
<td>($9,867)</td>
<td>($11,081)</td>
<td>($14,381)</td>
</tr>
<tr>
<td>Total Energy Savings During Repayment Period</td>
<td>$4,393</td>
<td>$9,414</td>
<td>$18,827</td>
</tr>
<tr>
<td>Cash Flow**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td>($65)</td>
<td>($9)</td>
<td>$12</td>
</tr>
<tr>
<td>Annual</td>
<td>($782)</td>
<td>($111)</td>
<td>$148</td>
</tr>
<tr>
<td>Total Cash Flow During Repayment Period</td>
<td>($5,474)</td>
<td>($1,667)</td>
<td>$4,446</td>
</tr>
</tbody>
</table>

If the Mellingers decided to use a personal loan, they would need $5,474 over the term of the loan, in addition to the money from energy savings. The Mellingers would continue to save $628* a year after the loan payments were complete.

If the Mellingers decided to use a home equity loan, they would need $1,667 over the term of the loan, in addition to the money from energy savings. The Mellingers would continue to save $628* a year after the loan payments were complete.

If the Mellingers decided to use a mortgage, they could use the money that would otherwise have been spent on energy bills to make their loan payments, and still have money left over. The Mellingers would continue to save $628* a year after the loan payments were complete.

*Assumptions: Energy prices do not change during the life of the loan. All loans are fixed rate. Energy Savings are calculated based on Normal Season Heating Degree Days.

**Cash Flow equals Total Energy Savings during repayment period minus Total Cost.
“The entire house is so much warmer in the winter. Savings on gas and electric were huge in the first year alone.”

—Phyllis Severance

Phyllis Severance’s 1840 Williston home was wasting money and losing energy by the minute. She was paying for heat that was leaking right out the roof, due to poor insulation and a lack of air sealing.

In November of 2008, Severance contacted Scott Gardner, of Building Energy, a participating Home Performance with ENERGY STAR® contractor, and had an energy audit performed on her home. Gardner presented Severance a list of ways to improve the energy efficiency of her home, an energy savings estimate and Efficiency Vermont incentive information. Together, they decided which areas to focus on for maximum benefit, including return on her investment.

The total project cost for this 3,100 sq. ft. home was $5,932. The selected improvements were:

• Air-sealing and insulating the basement;
• Re-insulating the attic above a recent addition;
• Blower-door directed air-sealing throughout the house.

Once the improvements were complete, diagnostic tests showed a 37% reduction in air leakage—falling neatly within Gardner’s projected range. Severance immediately felt more comfortable around her home, and soon after noticed significant changes in her energy bills.
## Paying for Energy Efficiency Home Improvements

The least expensive way to pay for energy improvements is with cash. Given the typical size of these projects, however, few homeowners have this option available. For Vermonters who are interested in making significant energy efficiency home improvements, appropriate financing can make the investment not only possible, but affordable.

Energy savings can offset fixed monthly loan payments, and the money that would have been spent on energy bills becomes available to make most or all of the loan payments. Although the total cost of a longer loan is higher, increasing the number of payments can reduce the monthly cost and more closely match energy savings.

### PERSONAL SAVINGS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Savings Used</td>
<td>$5,252</td>
</tr>
<tr>
<td>Annual Interest Rate</td>
<td>1.00%</td>
</tr>
<tr>
<td>Annual Interest</td>
<td>$52</td>
</tr>
<tr>
<td>Annual Cash Flow</td>
<td>$588</td>
</tr>
</tbody>
</table>

Instead of earning $52 in interest by keeping the money in her savings account, Severance would save $640 on her energy bills, coming out $588 ahead the first year, and every year after that.

### FINANCING SCENARIOS

<table>
<thead>
<tr>
<th></th>
<th>7 yr. Personal Loan</th>
<th>15 yr. Home Equity Loan</th>
<th>30 yr. Mortgage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Amount Borrowed</td>
<td>($5,252)</td>
<td>($5,252)</td>
<td>($5,252)</td>
</tr>
<tr>
<td>Annual Interest Rate</td>
<td>7.50%</td>
<td>5.25%</td>
<td>4.75%</td>
</tr>
<tr>
<td>Monthly payments</td>
<td>($81)</td>
<td>($42)</td>
<td>($27)</td>
</tr>
<tr>
<td>Total Interest</td>
<td>($1,515)</td>
<td>($2,347)</td>
<td>($4,611)</td>
</tr>
<tr>
<td>Total Cost</td>
<td>($6,766)</td>
<td>($7,599)</td>
<td>($9,862)</td>
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<tr>
<td>Total Energy Savings During Repayment Period</td>
<td>$4,480</td>
<td>$9,600</td>
<td>$19,200</td>
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</table>

### Cash Flow**

<table>
<thead>
<tr>
<th></th>
<th>Monthly</th>
<th>Annual</th>
<th>Total Cash Flow During Repayment Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>($27)</td>
<td>$11</td>
<td>($2,287)</td>
</tr>
<tr>
<td>Annual</td>
<td>($327)</td>
<td>$133</td>
<td>$2,001</td>
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<tr>
<td>Total Cash Flow During Repayment Period</td>
<td>($2,287)</td>
<td>$2,001</td>
<td>$9,338</td>
</tr>
</tbody>
</table>

If Severance decided to use a personal loan, she would need $2,287 over the term of the loan, in addition to the money from energy savings. Severance would continue to save $640 a year after the loan payments were complete.

If Severance decided to use a home equity loan or mortgage, she could use the money that would otherwise have been spent on energy bills to make her loan payments, and still have money left over. Severance would continue to save $640 a year after the loan payments were complete.

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*Assumptions: Energy prices do not change during the life of the loan. All loans are fixed rate. Energy Savings are calculated based on Normal Season Heating Degree Days.

**Cash Flow equals Total Energy Savings during repayment period minus Total Cost.