

PAREI's Housewarming Weatherization - Rumney NH's Habitat for Humanity Home - December 2009



The Cummings' family home was completed December 2009. Major weatherization upgrades were made possible by the work of Plymouth Area Renewable Energy Initiative (PAREI). Funds supporting PAREI's work were in part made possible by a GHGERF grant for the development of neighbor to neighbor Housewarming weatherization services.

Pemi-Valley Habitat for Humanity's 2009 build, on Old North Groton Rd in Rumney NH, was completed just prior to Christmas. The newest Habitat family is Chris and Jess Cummings and their children Malachi 11 and Cassandra 4. Chris has lived in the Plymouth area for most of his life, and has worked as a Building Service Worker at Plymouth State University for almost 10 years. Jess grew up throughout New England and currently works in childcare. Chris and Jess were diligent and enthusiastic Habitat workers, logging almost 3 times the hours that homeowners are required to work on their home. They are known for their smiling faces and upbeat attitudes at the site. When asked what she was most looking forward to about her new home, Jess laughed and replied "Windows!" (the family currently lives in an unfinished basement, with no view to the outside). "We are just so excited to have a home. We feel that it is a fresh start for our family. It will be so wonderful to have someplace that is all our own!" (As per www.pemivalleyhabitat.org)

PAREI staff and volunteers became involved in this project in November 2009. At that point the home's walls were being insulated and sheetrock was being applied. Habitat's general contractor was pleased to accept PAREI's offer to coordinate all of the attic weatherization work. The PAREI team focused on the following:

1. Evaluated Habitat's original plans for the attic. (Included some air sealing and 7½ inches of cellulose.)
2. Conducted a blower door test to determine the homes air tightness.
3. Recommended to the Habitat general contractor weatherization techniques they could use to improve the homes overall efficiency. This included air sealing various places including all wall assemblies prior to insulation. The general contractor then directed their volunteers to complete the air sealing.
4. Designed the attic air sealing and insulation improvements to integrate with the original design.
5. Air sealed all attic penetrations with one part foam and caulk.
6. Installed soffit insulation baffles and installed foam to hold the baffles in place over the wall headers.
7. Installed four inches of foam board over existing attic flooring.
8. Built wood dams around the foam board to support 18 inches of cellulose. (18" settles to 16" or R60)
9. Installed 18' of cellulose insulation. Eighty bags of cellulose were used for dense pack and loose fill.
10. Custom built an air tight attic hatch with eight inches of foam board.

To complement the attic work PAREI addressed the whole house as a system. Additional work included:

11. Installed a Heat Recovery Ventilator (HRV) to add 70 cubic feet per minute of fresh air to the home.
12. Installed foam board and air sealing to seal the basement sill boxes.
13. Conducted a test-out blower door test to determine the home's final air tightness.
14. Educated the general contractor and homeowners on the benefits and use of the HRV.

To complete all of the above PAREI coordinated the following:

1. \$6,000 of weatherization work including labor and materials.
2. The work of over 10 individuals for 60 hours of volunteer labor and 80 hours of donated labor.
3. Over \$2,000 of donated materials of which \$500 was funded by PAREI's GHGERF grant.
4. Also funded by GHGERF grant was the Blower Door test equipment used for this home and others.

27% Projected Savings = 7.2 million BTUs, 92 gallons of propane, and 0.5 ton of CO₂ saved yearly.

Plymouth Area Renewable Energy Initiative (PAREI) Housewarming Weatherization

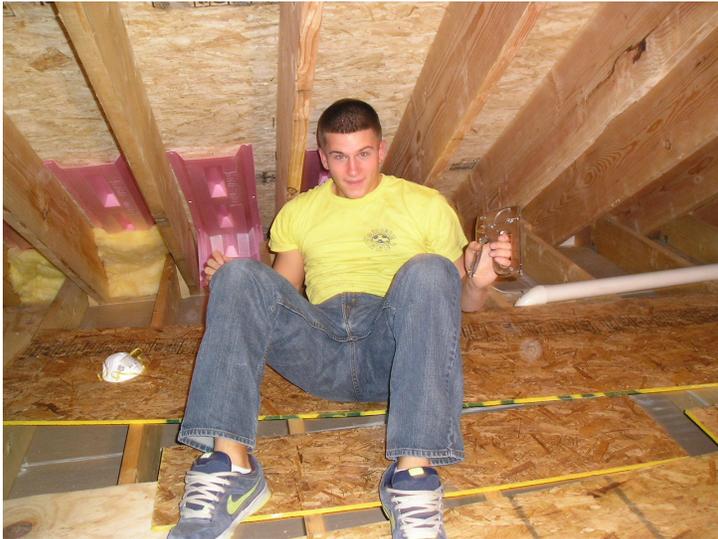


a. New home under construction with no air sealing or insulation installed.

Pemi-Valley's Habitat for Humanity Home 2009



b. Soffit insulation baffles prepared by volunteer.



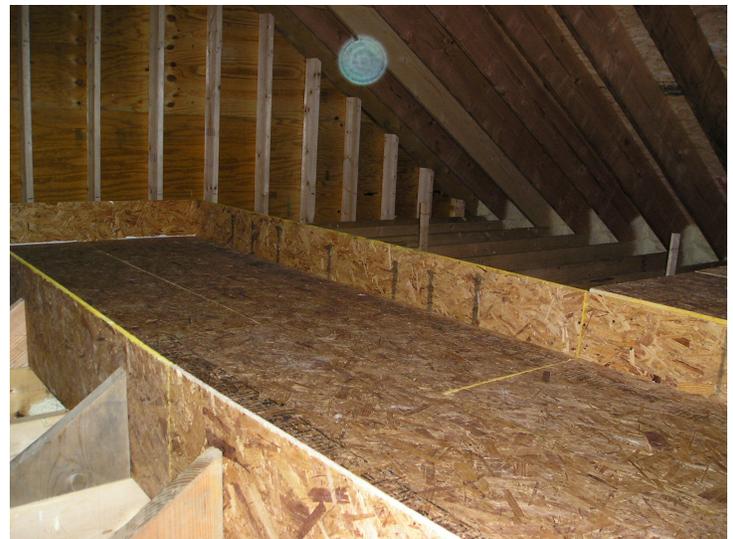
c. Volunteer installing baffles over the soffit vents.



d. Two part foam installed over the perimeter wall.



e. 80 bags of cellulose insulation being delivered.



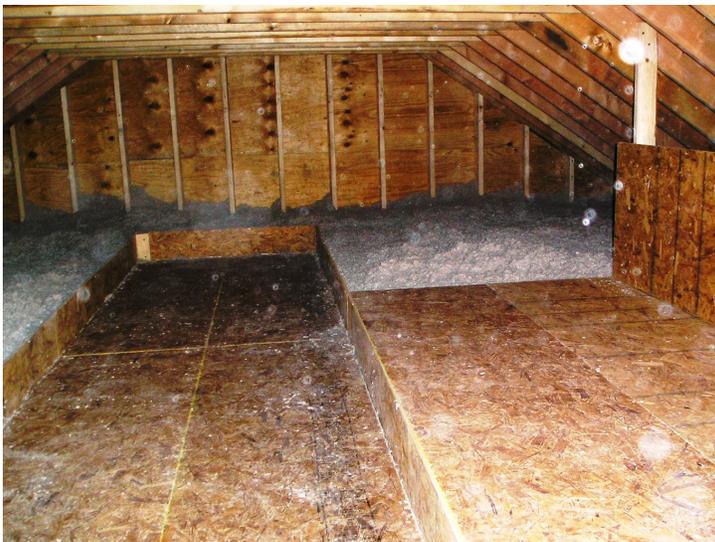
f. Insulated attic floor encircled with cellulose dam.



g. Cellulose blower being prepared by volunteer.



h. Cellulose being blown into attic cavities.



i. R60 insulation, including under the storage area.



j. Insulated attic hatch prepared for insertion.



k. Homeowners instructed on HRV operation.

Results by the Numbers:

300 board feet of two part foam
80 bags of donated cellulose insulation
16 inches of attic insulation for R60
8 sheets of two inch foam board

10+ neighbors trained and then volunteered time
140+ hours volunteer and donated labor
\$6,000 value of weatherization labor and materials

70 cfm Heat Recovery Ventilator (HRV)
33% of home's air replaced hourly with fresh air
70% of heat, from exhausted air, is recovered

7.2 million BTUs of energy saved each year
27% annual savings = 92 gallons of propane
0.5 ton of CO₂ reduced each year
4 residents living in a healthy home - priceless