



Keep Your Home Warm!

A Habitat for Humanity/7 Rivers Maine
Guide to Home Weatherizing and Weatherization

What is Our Mission?

Habitat for Humanity/7 Rivers Maine creates successful homeownership opportunities for families with limited incomes by building sustainable housing and repairing and weatherizing existing homes.

BASIC INFORMATION ABOUT Habitat for Humanity/7 Rivers Maine's WEATHERIZING and WEATHERIZATION program

- What is Weatherizing?
- What is Weatherization?
- Who will be helped by HFH/7RM's Weatherizing and Weatherization program?
- Income Guidelines by county

WHAT DO WE MEAN WHEN WE USE THE TERMS WEATHERIZING AND WEATHERIZATION?

STEP 1 WEATHERIZING

- ❑ Low-cost improvements such as adding weatherstripping to doors and windows to save energy.

STEP 2 WEATHERIZATION

- ❑ Extensive and complex energy efficiency measures directed at a property's building envelope, including heating and cooling systems, electrical system, and all electricity consuming appliances. This process (often) begins and ends with a blower-test evaluation to establish baseline and exit energy efficiency through an energy audit.

Information is from The Department of Energy's Office of Energy Efficiency & Renewable Energy

WEATHERIZING OR WEATHERIZATION - WHAT WILL HABITAT BE DOING?

Habitat for Humanity/7 Rivers Maine will be focusing on **WEATHERIZING** or **Step 1** projects. HFH/7RM can meet the needs of more families by doing these projects. Weatherizing projects can be done by volunteers in a small amount of time using simple materials at a relatively low cost.

Basic weatherizing can have a significant impact on a home's energy consumption and maintenance costs. The reduction of energy issues can improve the quality of life for the family who will now live in a tighter, warmer, more energy-stable home environment.

WEATHERIZATION

Habitat for Humanity/7 Rivers Maine will be doing a limited number of WEATHERIZATION or Step 2 projects. These projects take more time, additional materials, and require skilled labor.

Site evaluations or assessments that identify “bigger” issues will have a second in-house screening to decide whether the project is an appropriate STEP 2 candidate. If it meets our criteria as a viable job it may move forward.

WHO WILL HABITAT'S WEATHERIZING PROGRAM BE HELPING?

Our services are available to residents of any age who:

- own the home they live in
- live in our service area (Sagadahoc and Lincoln Counties and Brunswick and Harpswell in Cumberland County)
- are considered low income or have already qualified for LiHeap

AND

- live in homes that are drafty
- have windows or doors that let in air or water
- need basement pipes wrapped
- live in homes with outlets and switches on outside walls
- have attic or basement doors that are not air tight

Income Guidelines by county

Sagadahoc County

# in Family	25%	80%
1	\$12,525	\$40,050
2	\$14,300	\$45,800
3	\$16,100	\$51,500
4	\$17,875	\$57,200
5	\$19,325	\$61,800
6	\$20,750	\$66,400
7	\$22,175	\$70,950
8	\$23,600	\$75,550

Lincoln County

# in Family	25%	80%
1	\$11,075	\$34,850
2	\$12,650	\$39,800
3	\$14,225	\$44,800
4	\$15,800	\$49,750
5	\$17,075	\$53,750
6	\$18,350	\$57,750
7	\$19,600	\$61,700

# in Family	25%	80%
1	\$12,675	\$40,500
2	\$14,475	\$46,300
3	\$16,275	\$52,100
4	\$18,075	\$57,850
5	\$19,525	\$62,500
6	\$20,975	\$67,150
7	\$22,435	\$71,750
8	\$23,875	\$76,400

Cumberland County
Brunswick and Harpswell

WHY SHOULD A HOME BE WEATHERIZED?

- Why should a home be weatherized?
- Energy Facts about home energy consumption.
- Where does air enter a home?
- Where does **warm air** exit and where does **cool air** enter?

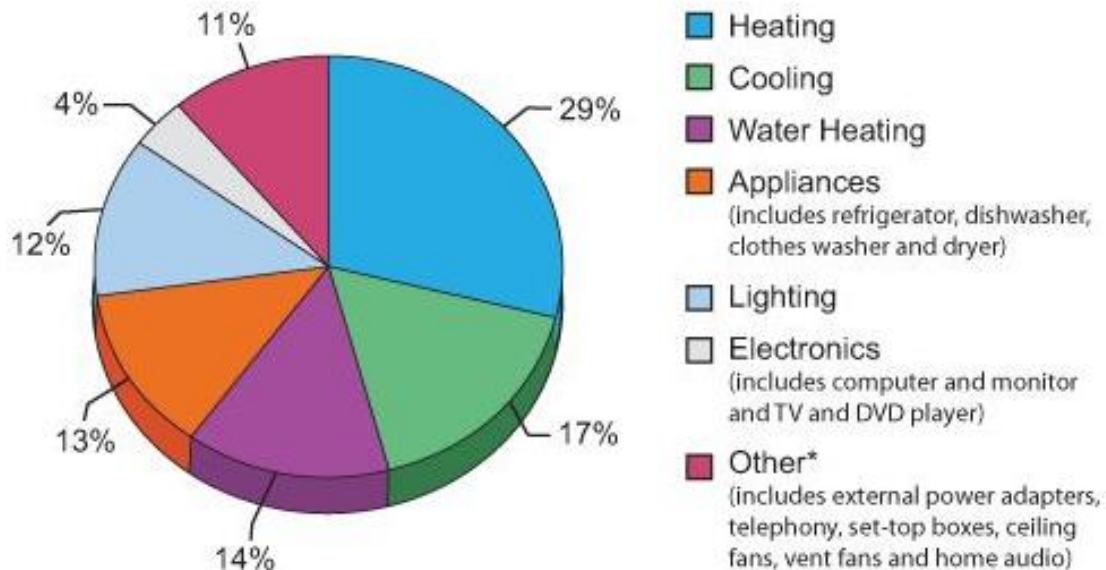
WHY WEATHERIZE?

Weatherizing saves energy and financial resources while improving the comfort and quality of life for the home's occupants.

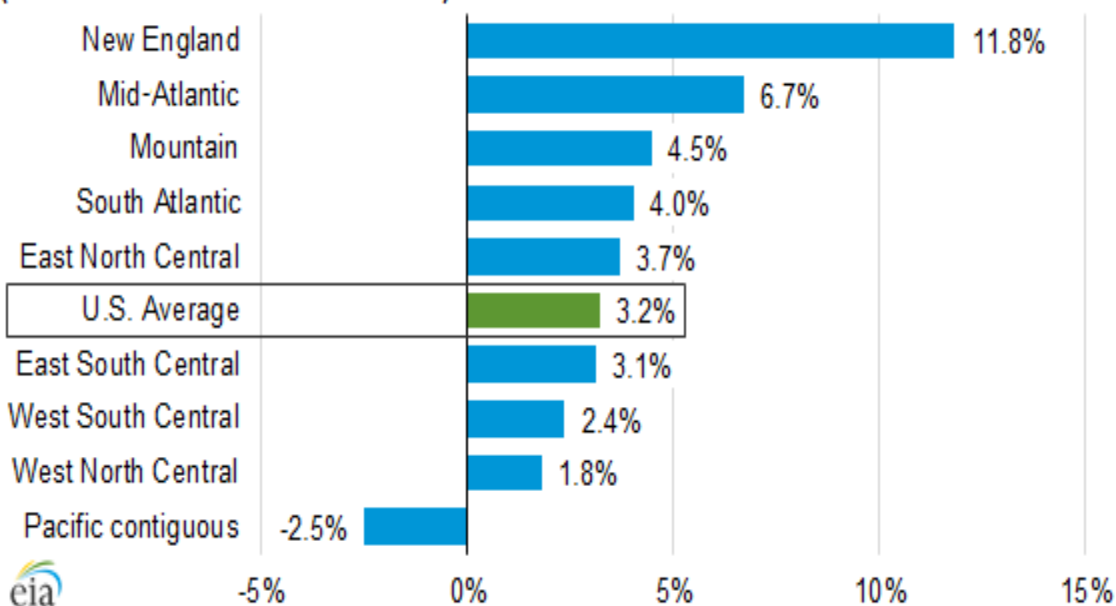
ENERGY FACTS

Where Does My Money Go?

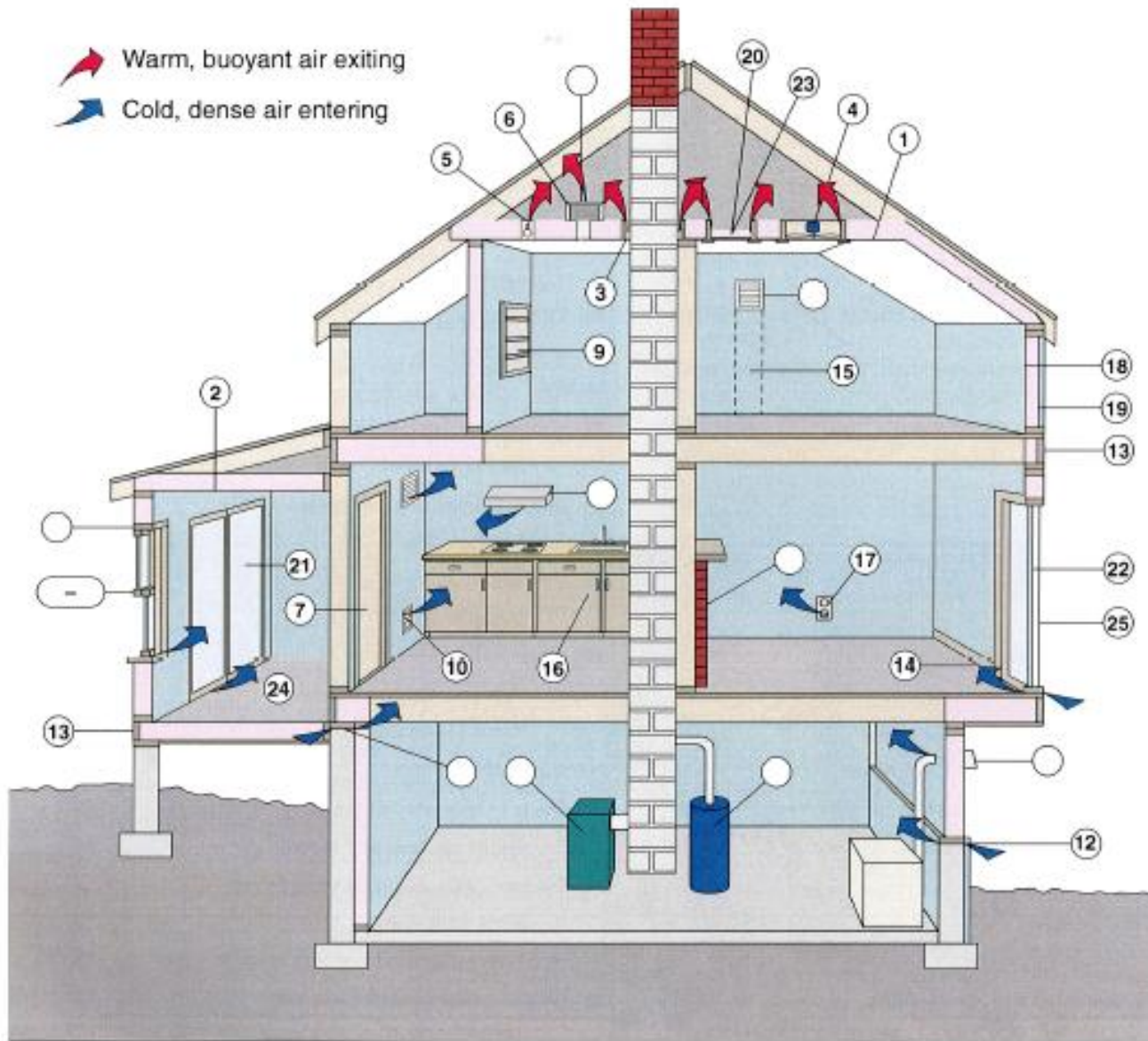
Annual Energy Bill for a typical Single Family Home is approximately \$2,200.



Change in average residential electricity prices by Census division (first half 2014 versus first half 2013)



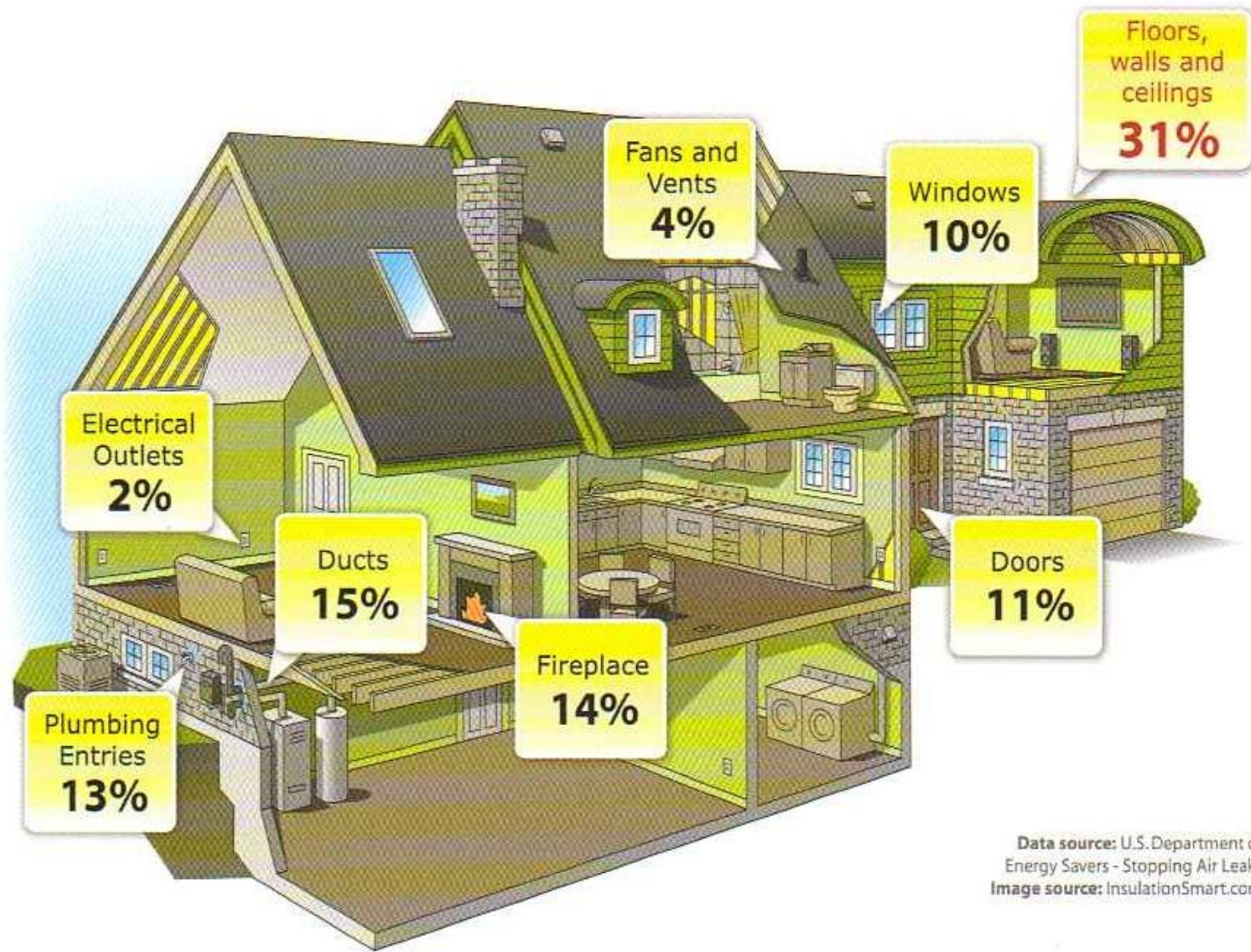
Common Heat Leaks in a Building Thermal Envelope



WHERE DOES
WARM AIR
EXIT?

WHERE DOES
COLD AIR
COME IN?

PERCENTAGE OF HEAT LOSS BY LOCATION



Data source: U.S. Department of Energy Savers - Stopping Air Leaks
Image source: InsulationSmart.com

THE STEP 1 WEATHERIZING PROCESS

- What is the Weatherizing process?
- What will you do if you are sent out to do a home assessment?
- What will you do if you are sent out to do a home installation?

WHAT IS THE WEATHERIZING PROCESS?

STEP 1 BASIC WEATHERIZING

Basic weatherizing begins with a home assessment to determine the home's weatherizing needs. The assessment process starts in the basement and finishes at the entrance to the attic.

A Habitat staff person or volunteer checks for weatherizing needs by looking for entry points for air and water, such as gaps in the home's foundation and entrances, and exit points for warm air, such as around plumbing, doors, and windows.

Some of the things that will be assessed during the process:

- doors and windows for snug closure and tight fit
- where needed - measurements for interior storm windows will be taken
- attic entrance seals
- basement - perimeter and ceiling insulation, pipes, and water heaters
- switch plates and outlets located on the exterior walls

Task and materials lists are generated from the assessment.

A date for installation is scheduled and the task list is completed.

Habitat for Humanity/7 Rivers Maine
Home Assessment Schedule

- Meet at *Habitat for Humanity/7 Rivers Maine* at _____
 - call 504 – 9333 if you are delayed, or during the day if an issue arises
- You will be given your assignment / a client list and directions to each home.
- You will be given *Habitat for Humanity/7 Rivers Maine* identification tags and the forms and materials you need to do the assessments.
 - Two *Consent and Waiver* forms
 - Home Inspection and Assessment Worksheet
 - Storm window worksheet
 - Worksheet to record measurements for door sweeps and outlet and light switch counts
 - Tape measure
 - Flashlight
 - Clipboard and pens
- You/your team will travel to each client's home where you will introduce yourselves to the homeowner and explain the plan for your time there.

WHAT WILL YOU DO IF YOU ARE SENT OUT TO DO A HOME ASSESSMENT?

- Next, have the homeowner sign two copies of the waiver - one for owner and one for HFH/7RM.
- Then, talk to the homeowner and take notes on any problems he/she identifies.
- Start assessing the property, beginning in the basement.
- Take notes making sure to include measurements where needed, especially for any "problem areas."
- Make sure to share information with the homeowner, especially about "problem areas."
- Measure the "window insert" windows and record the measurements using a clear numbering system.
- When the assessment is done, speak to the homeowner and confirm that the assessment is complete.
- When leaving, remember to take the signed waiver, the clipboard, and all materials.
- Follow the same steps at each location.
- Bring everything back to HFH/7RM when you have completed the assessments.
- Review your notes and confirm that they are accurate.
- Return the materials and assessments at the end of the process.

Habitat for Humanity/7 Rivers Maine
Home Installation Schedule

- Meet at *Habitat for Humanity/7 Rivers Maine* at _____
 - o call 504 – 9333 if you are delayed, or during the day if an issue arises
- Training, review of training information, or a brief question and answer session.
- You will be given your assignment and you will meet your team.
- The team will receive a client list with directions to each property.
- You will be given an identification badge and the completed forms from the assessment.
 - o Home Inspection and Assessment Worksheet – to be used as a checklist
 - o The storm window worksheet that matches the window inserts you will be installing
 - o Worksheet of the measurements for door sweeps, and the counts for outlets and light switches

WHAT WILL YOU DO IF YOU ARE SENT OUT TO DO A HOME INSTALLATION?

- The team will be given the materials needed for the installations at each property.
 - o Flashlight
 - o Clipboard and pens
 - o Kit containing all of the needed weatherization supplies and materials
 - o Tools, as needed, for installation
 - o First Aid Kit
- You/your team will travel to each client's home where you will introduce yourselves to the homeowner and explain the plan for your time there.
- Use the home assessment worksheet as a checklist to complete the installation process.
- Follow the same steps at each location.
- Check off the installation items on the list, making sure all steps have been completed.
- Bring everything back to HFH/7RM when you have completed the installations.
- Review and confirm your notes are accurate.
- Return the materials and home/property assessments.
- Discuss any issues that might have come up.
- Fill in a Volunteer Feedback form.

WEATHERIZING - “ON SITE”

- Materials
- Tools

THE BASEMENT

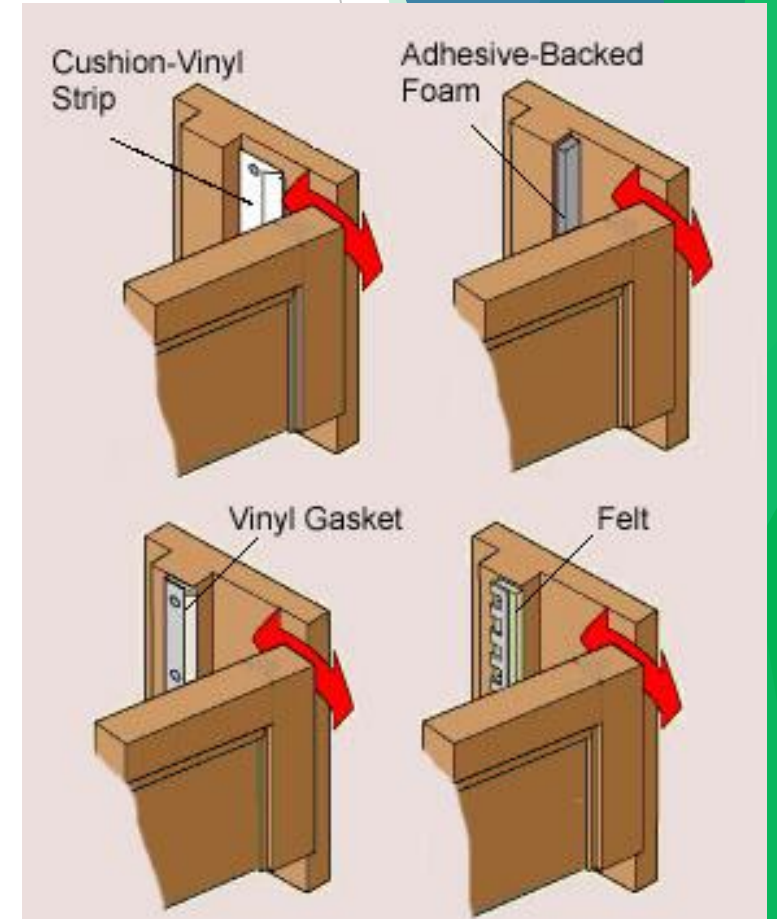
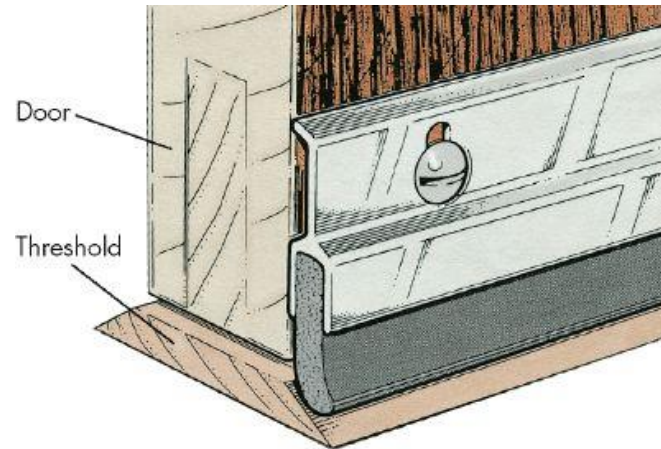
- Plugging holes in the basement and exterior
- Wrapping pipes and the water heater
- Air sealing guidelines
- Basement insulation

THE INTERIOR

- Plugging holes in the interior
- Weatherstripping on windows
- When Storm Window Inserts are needed
- Storm window measurement form
- Weatherstripping doors

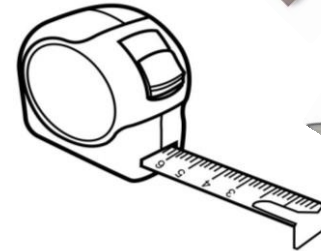
Materials

- Spray foam
- Caulk (siliconized acrylic)
- Rigid foam insulation
- Weather stripping
 - Vinyl
 - Felt
 - Foam
- Gaskets
- Door Sweeps
- Pipe insulation
- Water heater wrap
- CFL lightbulbs

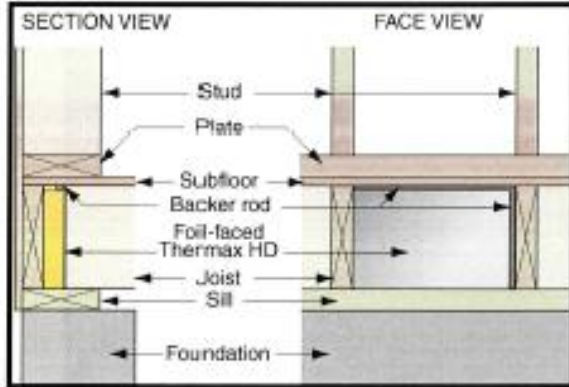


Tools

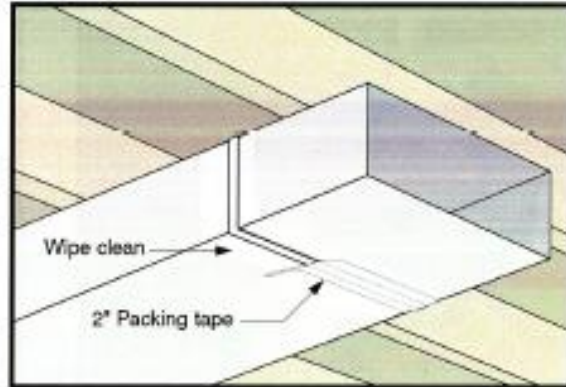
- Screwdrivers (various sizes, Phillips and flathead)
- A drill
- Box cutter
- Tin snips (to cut metal door sweeps to size)
- Hacksaw
- Hair dryer
- Caulk gun
- Scissors
- Step ladder
- Tape measure



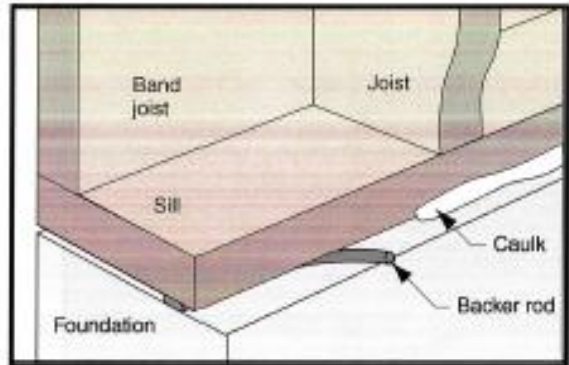
Plugging Holes in the Basement



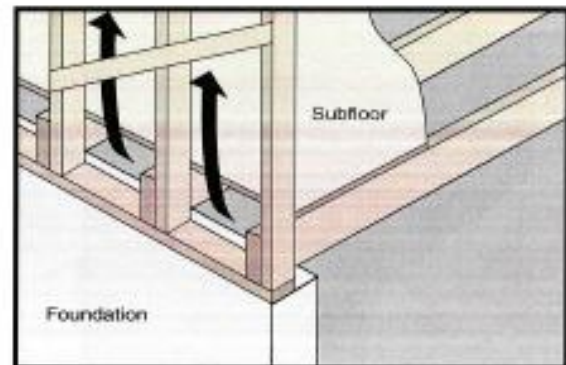
The rim joist at the ends of the floor joists is not insulated and often leaks air. Cut a plug of Thermax HD about 1/4-inch smaller in height and width. Push it in against the rim joist, and caulk the gaps with foam backer rod.



Metal ducts leak about 25% of the air they move. Warm air leaking into an unbeated space is thus a heat leak. Wipe clean the area around the seam, and seal the seam with ordinary clear or brown packing tape.



Newer homes have foam sill sealers, but the crack between foundation and sill in older homes doesn't. Seal with caulk, foam backer rod, or foam caulk—whichever is easier.

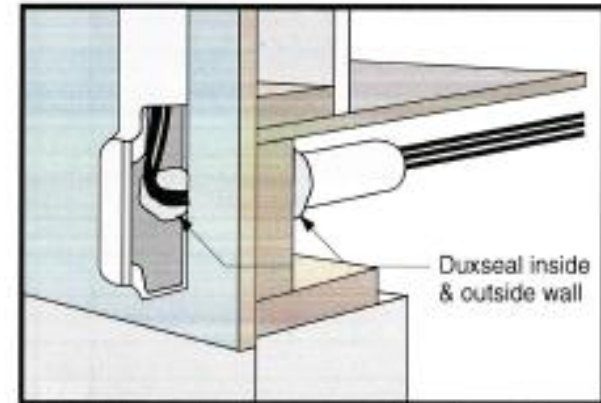


The bottoms of stud spaces in balloon-framed homes are open to the basement, providing little chimneys to the attic. Stuff these openings with bagged insulation.

Plugging Holes in the Exterior



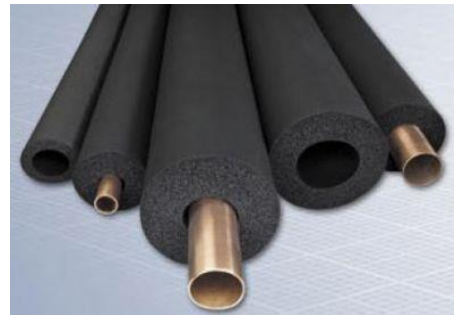
The dampers in more than 90 percent of dryer vents are stuck in the open position due to accumulated lint, leaving a permanent 4-inch hole to the laundry room.



A home's electrical service entrance cable is large and very stiff. Make sure the cable is sealed where it enters the wall, both inside and outside.

Basement: Water Heater and Pipes

- pipe insulation for exposed pipes
- water heater wrap
- spray foam or caulk gaps and cracks



Air sealing guidelines



Gaps $\leq 1/4$ "
Caulk



Gaps $1/4$ " - 3 "
Spray foam



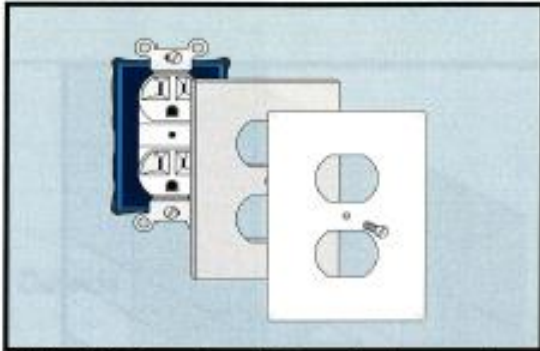
Other
Foam board,
fiberglass, etc.

Basement: Insulation

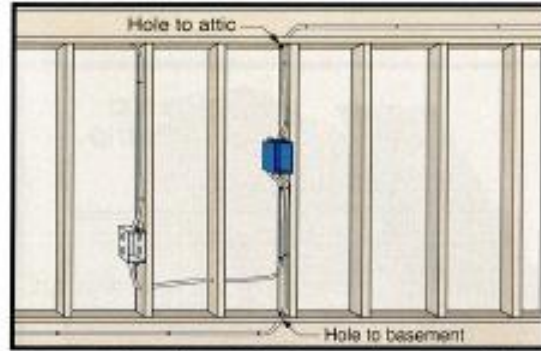
- Spray foam and rigid insulation on band joists
- Cover with drywall
- Seal with caulk



Plugging Holes in the Interior



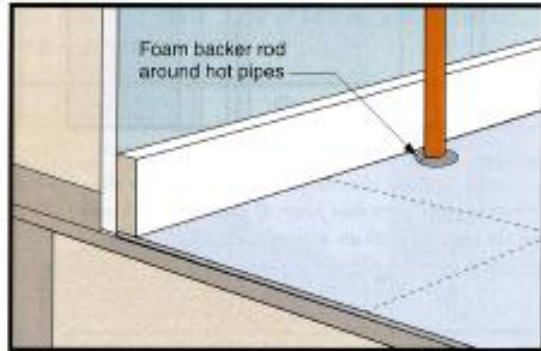
While the leakage of a single electrical outlet or switch is small, there are usually thirty or more, and sealing them is simple and inexpensive with foam gaskets,



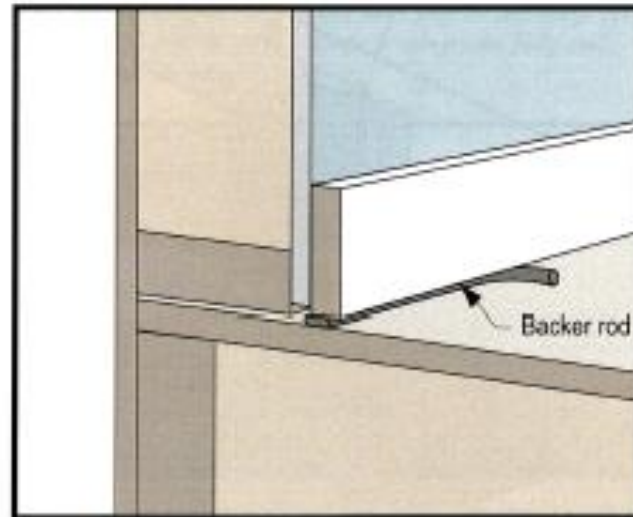
You never know where the hole around a wire or cable leads, so seal the hole with expanding foam—even in inside walls.



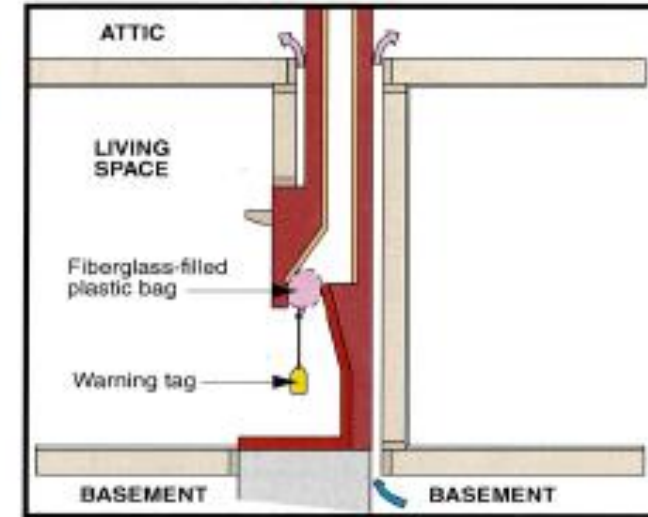
Here is an oversized hole through drywall for a gas pipe. Seal the opening inside and outside with expanding foam. See if you can do a neater job than shown!



Look inside kitchen and bath cabinets for hot and cold supply pipes and drain pipes. Seal all with expanding foam in the same manner as vent pipes.

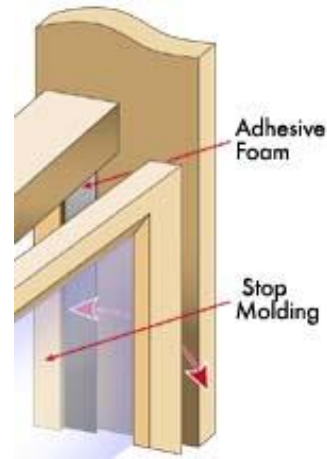
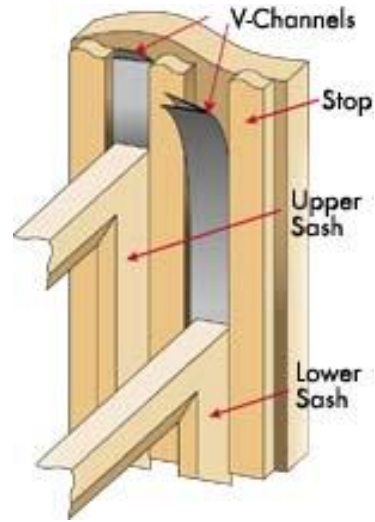


A large amount of leakage may occur under the baseboards of exterior walls. Provided the gap between baseboard and floor is at least 1/8", the least messy solution is "caulking" (as in a boat) the gap with foam backer rod of the appropriate diameter using a putty knife.



To get a good look at the flue and damper, take a digital photo with flash straight up the chimney. If the damper does not close tightly, the opening can be sealed with either one or more insulation-filled plastic bags or a storm window panel fitted to the fireplace opening.

Weatherstripping windows



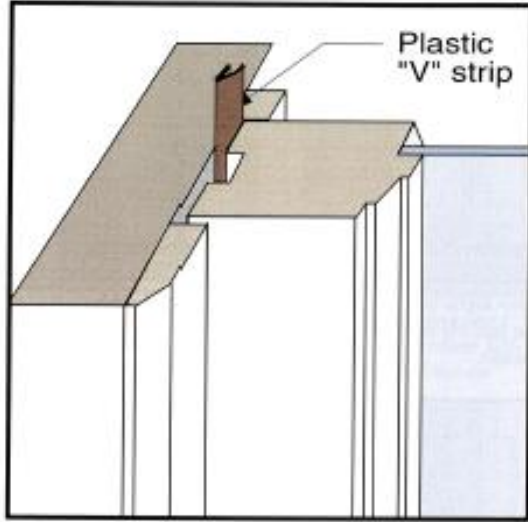
Caulk the interior trim

Tips

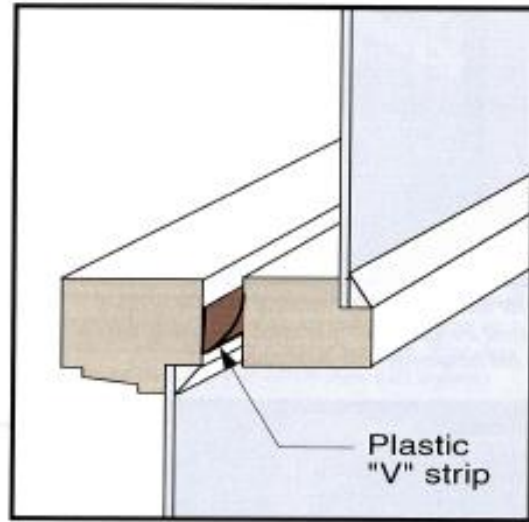
- The surfaces that you apply sealing to should be clean, dry and above 20 degrees Fahrenheit
- Measure twice before you cut anything
- Apply sealing snugly against both surfaces

Source: your-solar-energy-home.com

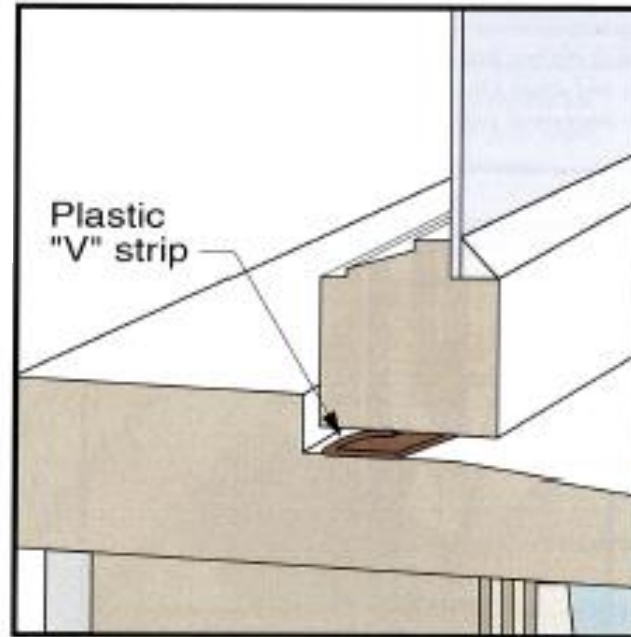
Weatherstripping Windows



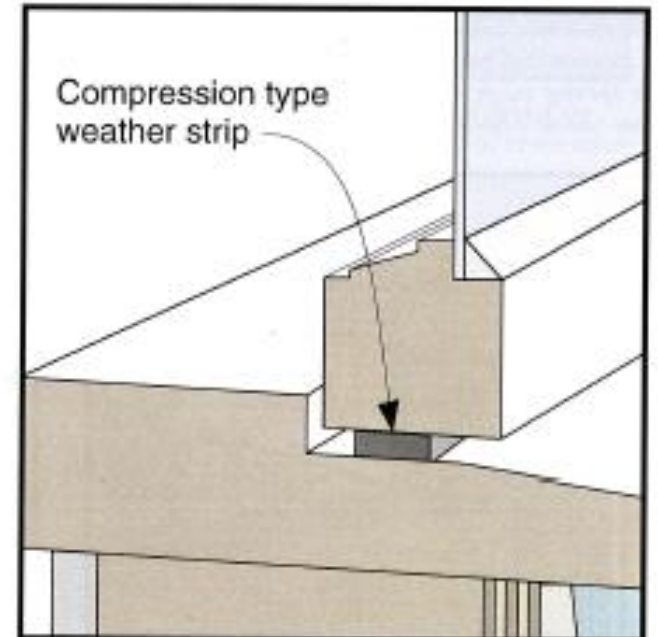
Raise the lower sash and insert a strip of self-adhesive "V" weatherstripping into the channel from below. Remove the adhesive backing and press into place. If the adhesive doesn't stick, wipe the channel with an alcohol swab first.



Apply V-strip to the top rail (horizontal part of sash) of the bottom sash in the direction shown. Make sure the sash lock still works.



Apply V-strip to the tops and bottoms of the sashes with the V opening toward the outside, as shown. Again, make sure the sash lock works.



Cushion foam weatherstripping is also an option for the tops and bottoms of sashes, but make sure the sashes will still lock after installation.

STORM WINDOW INSERTS

WHEN WEATHERSTRIPPING WINDOWS ISN'T ENOUGH

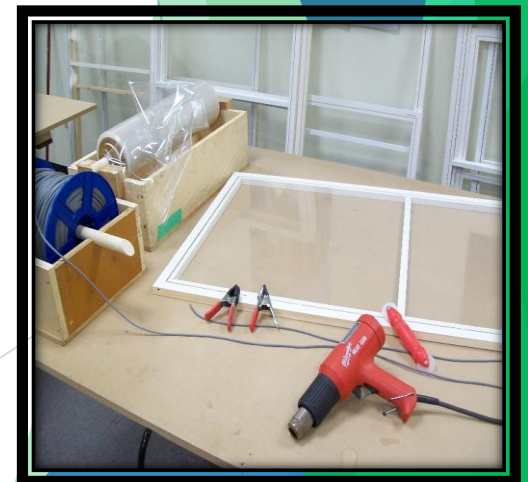
If weatherstripping windows is not the right remedy storm window inserts may be the solution. These windows which reduce air flow and hold in heat are carefully made to match the existing windows.

ASSESSMENT DAY

Measurement must be precise so “**measure twice**” to make sure our window producers make the correct size windows for the home.

INSTALLATION DAY

On Installation day correctly installing the window inserts is important. It is a good idea to involve the homeowner in this process. At least go over the handling of the windows so that the client can remove and store the storm window inserts safely at the end of the season.

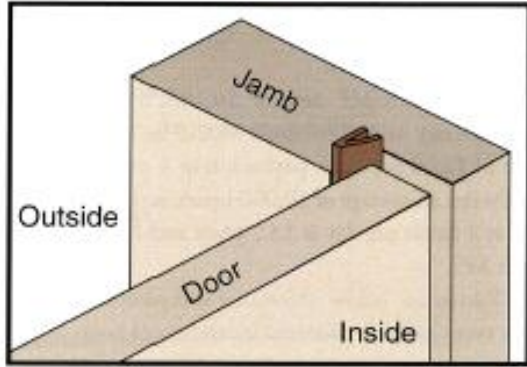


Doors

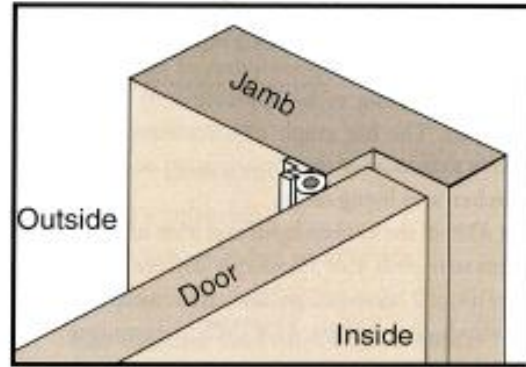
- Choose the right kind of **door sweep** for the bottom of each door.
- **Measure twice, cut once!**
- Seal the entire door jamb.
- Apply one continuous strip along each side.
- Make sure the seal meets tightly at the corners.
- Use a thickness that causes the seal to tightly press between the door and the door jamb when the door closes, without making the door difficult to close.



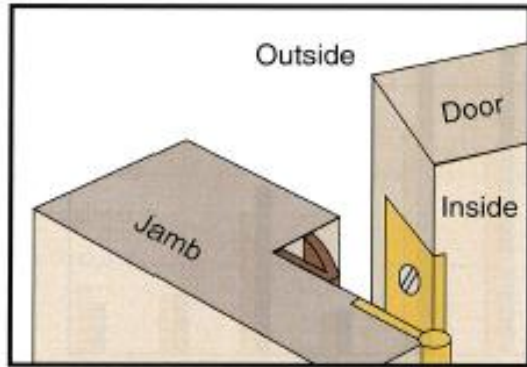
Weatherstripping Doors



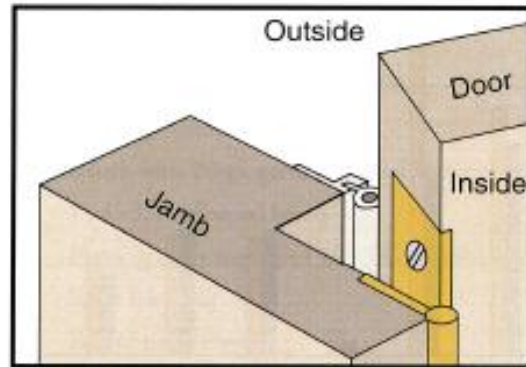
Clean the surface of the jamb with denatured alcohol. Cut the strip to length, peel off the protective film, and adhere to the door stop. Staple at top and bottom for longevity.



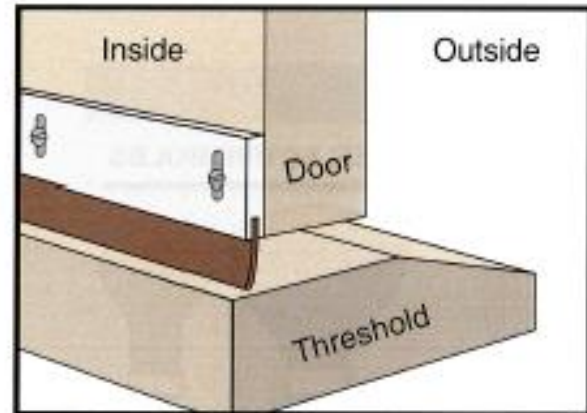
Tubular vinyl weatherstrip is useful where the surface of the door is uneven. Again, staple or tack top and bottom to keep in place permanently.



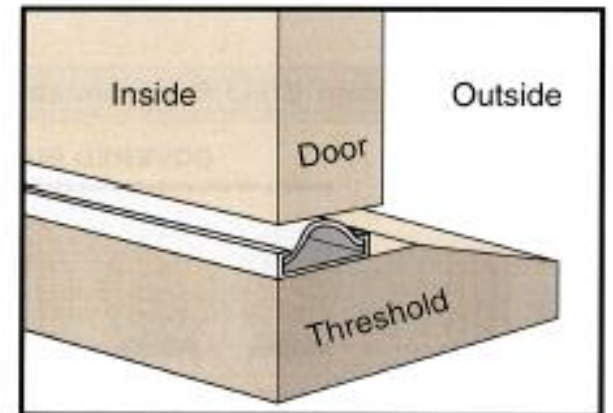
Affix V-strip weatherstrip to the door stop on the hinge side, as shown. V-strip is ideal because it compresses fully and doesn't bind the hinges.



Tubular vinyl weatherstrip is a second choice for the hinge edge because of wear. NEVER paint tubular weatherstrips!



Door sweeps are both the least expensive and easily installed door-bottom weatherstrips. Get the homeowner's permission to drill and enter the door width in the work order.



If incursion of wind-driven rain is a problem, inform the homeowner that bulb thresholds are a better solution.

LIGHTING

Replace fluorescent bulbs with energy saving CFL lightbulbs.



ASSESSMENT OR INSTALLATION DAY

RECAP FOR THE WORK DAY

- ❑ Meet at Habitat for Humanity/7 Rivers Maine
- ❑ Join us for coffee, a breakfast treat, team assignments, and a training review/Q & A session before setting out
- ❑ Break up into assessment or installation teams under team leaders
- ❑ Teams receive their assigned home(s), client information, and directions to the home(s)
- ❑ Set out and work on the project
- ❑ Complete the assessment or project and return to HFH/7RM



Questions?



STEP ONE

Picking the Low-Hanging Energy Fruit

(Compliments of Webber Energy Fuels)

Primary Source *for Images*



Thank you!