

### c) Review Thermal Savings Opportunities:

Review the information you found in the walk-through assessment. Explain that these are indicators that there may be energy saving opportunities in the house.

- Insulation is in the attic
- Attic hatch is air sealed and weather stripped
- Insulation in the walls
- Box sills are insulated and air sealed
- Junction where sill meets foundation is air sealed
- Bulkhead door is air sealed and insulated
- Basement walls are insulated
- Fireplace is sealed
- Windows and doors are weather stripped

### d) Review Electrical Savings Opportunities:

Review potential electrical energy savings, including opportunities for:

- Compact fluorescent light bulbs: refer resident to discounted CFLs and LEDs sold at area retail stores
- Advanced Power Strips: refer residents to APSs sold at area retail stores
- Low-flow showerheads: refer residents to low-flow showerheads sold at area retail stores
- Refrigerator: if there is an old and potentially inefficient refrigerator, a) mention Efficiency Vermont appliance rebates and Efficiency Vermont's free kilowatt loaner program; b) inform resident about program to pay people for the removal of inefficient second refrigerators.

### e) Share Information on How to Reduce Heat Loss:

Homes lose energy through convection (air leaks usually found in the attic and basement) and conduction (cold surfaces exposed to warm surfaces). Plugging air leaks with foam and caulk addresses convective heat loss, while insulation addresses conductive heat loss. It's kind of like wearing both a windbreaker and a sweater on a cold, windy day - the windbreaker stops warm air from leaking out while the sweater keeps your body heat in.

Most homes will greatly benefit from a professional energy audit and comprehensive retrofit project and very few homes in Vermont were treated this way before 1990. If this has never been done, and if there are indications of a leaky house (cold drafts, low humidity, uncomfortable rooms, ice dams), the house may be a good candidate for a comprehensive improvement project through Home Performance with ENERGY STAR.

A professional Home Performance with ENERGY STAR or Vermont Weatherization contractor will evaluate the amount of air leakage and insulation in the home. They are certified to conduct diagnostic and safety testing, detect carbon monoxide, and assess indoor air quality. They are able to both identify areas for improvement and install the recommended energy efficiency improvements. Vermont Gas also provides this service to natural gas customers.

### f) Review Easy Steps:

**Thermostat:** For every 5 degrees a thermostat is lowered, it is estimated that 5% or more is saved on an energy bill over the heating season; a programmable thermostat makes setting back the temperature easier.

**Phantom Power:** Many modern products use energy even when they're supposedly turned off (5-8% of an electric bill); major culprits are home entertainment centers. Unplugging appliances when they're not in use or using an advanced power strip saves energy.

**Furnaces/Boilers:** Replace filters annually, keep registers clear, and have a regular clean and tune.

**g) Review Folder of Resources:** Walk participant through these materials and highlight special offers.

- Knowledge Guide: General Overview
- ENERGY STAR Home Sealing Guide
- Home Performance with ENERGY STAR brochures and Incentives
- Seasonal Energy Saving Tips
- List of local Home Performance with ENERGY STAR contractors
- Electrical Use Guide (and meter loan option)

Remind Home Participant they may receive a call from their local group about their visit and next steps.

### CHECKLIST OF HELPFUL ITEMS TO BRING WITH YOU:

- Cell phone
- Pen/pencil/marker (for completing Home Intake forms)
- Measuring tape (for measuring square footage of home)
- Calculator (for computing worksheet on "How Energy Efficient is Your Home")
- Flashlight
- Stepladder (for attic)
- Watch
- Inside shoes/sneakers
- Milk jug for measuring shower head flow
- Folder of Efficiency Vermont resource materials



## 1. INTRODUCTION

Give your name, name of local group

- Explain that:
  - Visit is part of the Vermont Home Energy Challenge - a statewide effort to help weatherize 3% of the homes in the state in one year.
  - This is not a professional energy audit, but rather a walk-through assessment. Clarify that you are a volunteer not a trained energy professional.

The primary purpose of the visit is to identify energy saving opportunities in the home and to provide the homeowner with information about resources for moving forward.

- The visit will last approximately one hour.
- Confirm their interest in going ahead with the visit.
- Ask the homeowner to join you for the walk-through assessment.

## 2. ASK HOMEOWNER TO COMPLETE RELEASE AND LIABILITY WAIVER

Ask the homeowner to complete the Participant Release and Liability Waiver on the back page of the “Home Energy Visit Form”. If individuals are unwilling to sign the waiver form, please do not conduct a home energy visit on this home. This form is essential to releasing the volunteer, the local group and Efficiency Vermont from any possible damages that might occur during the home energy visit. The chances of any serious damages occurring are relatively small given the nature of the visit. Please note: If the property is a rental, the landlord must sign a waiver before the energy visit can take place.

## 3. COMPLETE THE “HOW ENERGY EFFICIENT IS YOUR HOME” WORKSHEET

Ask the homeowner if they have assembled their annual home heating energy usage information and/or completed the worksheet? If not, ask them to do so. This can help to determine the relative efficiency of the house. This worksheet may be mailed prior to the visit by the local group. Homes using over 40,000 BTU/square foot generally have opportunities for cost-effective savings. Homes using more than 600 kwh/month in electricity may have opportunities for cost-effective savings.

## 4. CONDUCT WALK-THROUGH ASSESSMENT

Using the Home Visit Form to record notes, take a walk-through the house and check the following locations (so long as they are easily accessible):

### Thermal Efficiency Opportunities

#### Attic:

- **Actions:**
  - **Attic hatch:** Check to see if the home has an attic hatch or pull-down stairs. See if there is a tight seal around the hatch (with weather stripping) and whether it has been insulated.
  - **Attic insulation:** If possible, poke your head in the attic to see if the attic has been insulated, and if so, how much insulation exists and the type of insulation. Note: We discourage volunteers from walking around in the attic due to safety concerns.
- **Facts:** Many homeowners assume that if their house was built or insulated within the last few decades it was properly weatherized, but air sealing techniques have grown leaps and bounds in the last decade alone. Air sealing and insulating the attic is often the most cost-effective measures that homeowners can take to improve thermal efficiency of their home because it stops heated air from leaving the living space. Also, an attic hatch or pull-down stairs that is not air-sealed and insulated can be a huge source of heat loss.

#### Walls:

- **Action:**
  - **Wall insulation:** Try to determine whether the walls have insulation. For older homes, look for evidence of “plugs” on the exterior walls. Ask the homeowner about whether any wall insulation work has been done.
- **Facts:** Generally, identifying insulation in the wall is difficult to assess without additional tools, training, and time. Most houses that are less than 50 years old have insulation in the walls, but many older ones do not (unless it has been blown in). If it has been blown in, there may be evidence of “plugs” in the walls. For any house more than 50 years old, try to determine if the original lath and plaster is still there (in other words, have they torn it down and replaced it with drywall). If it’s still lath and plaster, and no insulation has been added to the walls in the last decade, the house may be a good candidate for wall insulation.

#### Basement:

- **Actions:** There are a number of opportunities for improving efficiency in the basement. These include:
  - **Box sills:** Look to see if the foundation walls above grade where the floor joists extend have been air-sealed and insulated. Check to see if it was done properly, or if instead, fiberglass has been “stuffed” into the space.
  - **Mud sill:** Check to see whether the junction where the sill meets the foundation has been insulated and air sealed. Ideally, this junction should be air sealed with some type of spray foam or caulk.
  - **Basement walls:** See if all or a portion of the basement walls have been insulated.
    - If yes, what type of insulation?
  - **Bulkhead door:** Check to see if there is a bulkhead door. If so, examine whether it has been air sealed and insulated.
  - **Dirt or stone floor:** Determine whether there is an exposed stone or dirt floor, i.e. without some type of vapor barrier such as plastic covering.
- **Facts:** Many Vermont homes can benefit from increasing insulation and air sealing in the basement. Air sealing and insulation reduces cold air from making its way into the house. The key action here is to insulate and seal out the cold air coming in. A major leak in most basements is the junction between the sill and foundation. This can be easily sealed by running a bead of spray foam along this gap. Regarding dirt or stone floors, these do

not unto themselves result in heat loss - however, a dirt or stone floor without a vapor barrier can be a large source of unwanted moisture in the house. Further, if there is no vapor barrier on the floor, this can be an indicator that comprehensive efficiency improvements have not been undertaken.

#### Living Space:

- **Actions:**
  - **Fireplace:** If the home has a fireplace, check to see if the fireplace is closed off with a tight seal - either with a fireplace insert or some other type of seal (in other words, something more than just the damper).
  - **Windows and doors:** Check to see if the windows and doors have been tightly-latched and weather-stripped.
- **Facts:** Fireplaces lose more heat than they generate (in cold weather) because they suck in cold outside air for combustion. Weather stripping doors and windows can have an impact in terms of reducing drafts and air leakage - though not as significant as air sealing in the attic and basement. Replacing windows is one of the least cost-effective energy savings strategies.

#### Also look for the following electrical saving opportunities:

#### ENERGY STAR® compact fluorescent light (CFLs) bulbs or LEDs:

- **Action:** Look for incandescent light bulbs that could be replaced with CFLs or LEDs.
- **Facts:** CFLs last up to 10 times longer than traditional incandescent light bulbs. CFLs also use up to 66% less electricity. CFLs come in a variety of wattages, shapes, sizes and types, and can be used in almost all lighting applications, including 3-way, “A” style (similar in shape to an incandescent), recessed cans, exterior flood lights, and dimmable applications. Expired CFLs should be returned to local hardware store for recycling because they contain small amounts of mercury.

#### Phantom Power and Advanced Power Strips:

- **Action:** Identify whether there is a home entertainment center or home computer center that does not have an Advanced Power Strip.
- **Facts:** When your electronics are off, they may still use power. An Advanced Power Strip (APS) shuts off the power for you. For example, game consoles, like the Xbox360 or Playstation, draw 120-150 watts of electricity when in use - but they can also use up to 150 watts of electricity when they’re supposed to be off. This can add up to more than \$100 per year on your electric bills. The Advanced Power Strip shuts down power for you, so when you turn your TV off, you can have your entire home theater-your DVD player or VCR and game consoles-turn off, too.

#### Low-flow shower heads:

- **Actions:**
  - Determine whether any showerheads use more than two gallons per minute. To determine whether a showerhead uses more than two gallons/minute, use the following procedure:
    - Cut off the top of a 1-gallon plastic milk/cider jug. Fill it halfway with water, draw a line along this halfway water level, and write “2” with a marker on the jug. Then, turn on the water fixture full blast, insert jug underneath the fixture, and using your watch, count off exactly 15 seconds and then shut off the shower. Each quart per 15 seconds corresponds to one gallon per minute. If the amount of water in the jug exceeds the “2” mark, then there is an opportunity to save water and energy with a new efficient showerhead.
- **Facts:** Low-flow shower aerators work by restricting the flow and forcing the water through very small apertures which aerates and increases the velocity of the water, creating a very fine but “wet” feeling spray pattern. Replacing an existing high-use shower head with a low-flow model rated at two gallons per minute can reduce hot water use by one-half from showering, resulting in savings of \$175/year with a standard electric water heater.

#### Refrigerator:

- **Action:** Identify whether there is a potentially inefficient refrigerator and whether the resident could benefit from a kilowatt meter to measure electrical usage. Ask the homeowner how old the refrigerator is. If it is at least 10-15 years, it is a good candidate for replacement with a more efficient model. Also, is there a second refrigerator that is inefficient and has the potential for being eliminated? Efficiency Vermont has a program to haul away inefficient second refrigerators for free and even pay for removal!
- **Facts:** ENERGY STAR® qualified refrigerators use significantly less electricity than standard models manufactured before 2001. Since ENERGY STAR qualified refrigerators use advanced features such as better insulation and more efficient technology, they can save you up to \$255 over the life of the appliance. The money you save on energy can more than make up for the cost of buying a new ENERGY STAR model. Efficiency Vermont offers rebates for purchasing the most energy efficient refrigerators (also referred to as the CEE Tier 3 or ENERGY STAR Most Efficient refrigerators).

## 5. HOLD KITCHEN TABLE DISCUSSION

**a) How Efficient is Your Home: Walk the homeowner through the “How Energy Efficient is Your Home?” worksheet.**

**b) Ask the homeowner questions on comfort and energy efficiency:**

- Is your house drafty or uncomfortable?
- Do you have ice dam problems?
- Do you know if any major energy efficiency improvements have been done in the last ten years?
- Are there mold or moisture issues?