



SEAL & INSULATE THE ATTIC OCTOBER ENERGY ACTION SHEET

This month's projected annual savings: up to \$75; 1.9% of energy use

This month, if you live under an attic, seal and insulate it and the ducts that run through it. If you rent, you might offer to do the work if your landlord will pay for the supplies. ***Sealing and insulating an attic is like closing a window that's been open 24/7 – you stop heating and cooling the out-of-doors.*** This is the program's only big job – and you can contract it out. In any case, it's satisfying: **sealing and insulating increases comfort and saves a heap of energy and money for decades to come.**

Why seal your attic? Most attics are outside the “building envelope”, which separates the inside that is heated and cooled from the outside. To keep the heat in in winter and out in summer, the building envelope should include both an “air barrier” – like a jacket's shell - and insulation – like its padding. No matter how well-padded, a jacket with holes won't keep out the cold.



References available upon request from CreationCarePartners@gmail.com. This This info sheet employs the Task of the Month concept developed by Dr. Stephanie Kimball for Earth Care, an affiliate of Hoosier Interfaith Power & Light.

You can contract this job out: for most people, this is not a do-it-yourself job. After studying the information and links below, ask several contractors to show you what they'd seal and how. Specify the type and depth of insulation you want (see below). Before they insulate, see that they sealed as they said they would. After they insulate, check the depth and coverage.

HOW TO DO IT: SEALING

1) Seal big holes first.

Many homes have large uncapped cavities that leak huge amounts of heated air into the attic.

- a) From the floor below, identify where holes might be - on top of built-in cabinets; over dropped ceilings, ducts and recessed lighting; and around utility lines, vents and chimneys.

- b) In the attic, look under discolored and sunken insulation. See what you're looking for [here](#) (0:0 - 1:18) and [here](#) (1:29 - 1:58).
- c) To seal cavities, cut and secure pieces of rigid foam board over them or stuff fiberglass batts wrapped in garbage bags into them. See how [here](#) (1:0 - 1:12).
- d) Spray foam or caulk the perimeter to complete the seal.

2) Seal small holes and gaps.

- a) Watch this excellent, [short video](#) that walks through the entire process.
- b) [Buy](#) or [make](#) (see 2:33 - 53) boxes to enclose recessed ("can") lights.
- c) Spray foam or caulk cracks around wiring, plumbing pipes, electrical boxes, fan casings, and where ceilings & walls meet as shown [here](#).

3) Seal and insulate heating-cooling ducts.

See how [here](#), from 4:30. Poorly-insulated ducts in an attic increase energy use for heating and cooling by, on average, 15 to 17%. Supplies: duct mastic, paintbrush, foil tape, foil faced insulation (R-13+), knife.

STAY SAFE & AVOID HEALTH HAZARDS

Wear a heavy cap, dust mask, goggles and, with fiberglass, gloves, pants and a long-sleeve shirt.

Most attics are **dark!** Have a bright reliable work light, wear a headlamp and keep tools in a bucket.

Attics get **dangerously hot**. Work on a cool day or during cool hours. Carry a full water bottle.

Don't fall through the ceiling! Step only on *joists* - wood planks - or boards that rests on joists.

STOP if you see [vermiculite](#) - light, grainy insulation with shiny flecks - or [knob & tube wiring](#).

MOLD. *If insulation, floor or ceiling is moist or water-stained, hire a pro* to find & fix the problem.



HOW TO DO IT: INSULATING

- 1) **Choose the type of insulation:** a) blown-in cellulose or fiberglass loose fill or b) batts/rolls.

Blown-in Loose Fill: Cellulose or Fiberglass	Batts or Rolls: Fiberglass
Easy. Must rent a blower (Home Depot, Menards.) Compared to fiberglass, cellulose provides a greater air barrier, is more fire-resistant, and insulates better in extreme cold.	Although laying it can be quick and easy, doing so well is slow and requires skill. Even pro's often do it poorly. If it's not done well, it doesn't insulate well.

- 2) **Determine how much more insulation you want.** The higher the R-value of insulation, the more effective it is. The R-value is a function of the type and depth of insulation. In an attic, aim for a total R-value of R-49 or higher.

a) Measure the attic's current inches of insulation (and its length and width).

b) Use this table to calculate its current R-value (current inches x R-value for the type it has now).

Existing Insulation: R-Value Per Inch		
Batts	Loose Fill	
Fiberglass	Fiberglass	Cellulose
R-3.2	R-2.5	R-3.7

c) Calculate the R-value you should add by subtracting the current R-value from your target R-value.

For example, if your aim is R-49 of insulation and the attic currently has 6 inches of cellulose loose fill, then you still need: $R-49 - (6 \times R-3.7) = R-49 - R-22.2 = \mathbf{R-26.8}$

d) To calculate how much more insulation this requires, check the [labels \(see 1:05\)](#).

3) Prepare the attic for insulation

- a) Install rafter vents. [See how](#) at 1:35.
- b) Build dams - [see](#) how at 3:35 - including around the attic access - [see](#) 2nd photo.
- c) Build fire-preventive dams around the chimney and any exhaust pipes from a water heater, furnace, boiler, or generator. [See how](#) at 2:08.
- d) Make a map of important fixtures and put up "rulers". ([See](#) 3:20 to 3:35.)

- 4) **Insulate the hatch.** Glue on layers of rigid insulation to reach the target R-value – see [third photo](#). Weather stripping and latches make it air-tight (see [step 8](#)).

- 5) **Insulate the floor.** For loose fill, see how [here](#) and [here](#) (0:25 – 1:37). For batts or rolls, see how [here from 1:14](#), [This](#) gives a little more detail. If you have [knee walls](#), see [here](#), [here](#) (0:50 - 1:15), and diagrams & final photo [here](#).

Estimated Annual Savings	Energy Footprint	Financial
Increase attic insulation from 6 inches to 14 inches	1.3%	\$50
Seal air leaks in attic	0.6%	\$25
Actual figures will vary greatly depending on the building and the cost of fuel.		



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