



TRAIN THE TRAINER

Attic Insulation

Learning Objectives

U.S. DEPARTMENT OF

ENERGY

Energy Efficiency & Renewable Energy

ATTIC INSULATION

By attending this session, participants will:

- Learn the importance of following cost-effectiveness guidelines when insulating attics.
- Recognize that proper attic treatment can save up to 20% of home heating and cooling bills.
- Understand that, combined with air sealing, attic insulation reduces the likelihood of structural damage due to condensation on the roof deck.
- Learn the process for insulating attics with blown-in cellulose.

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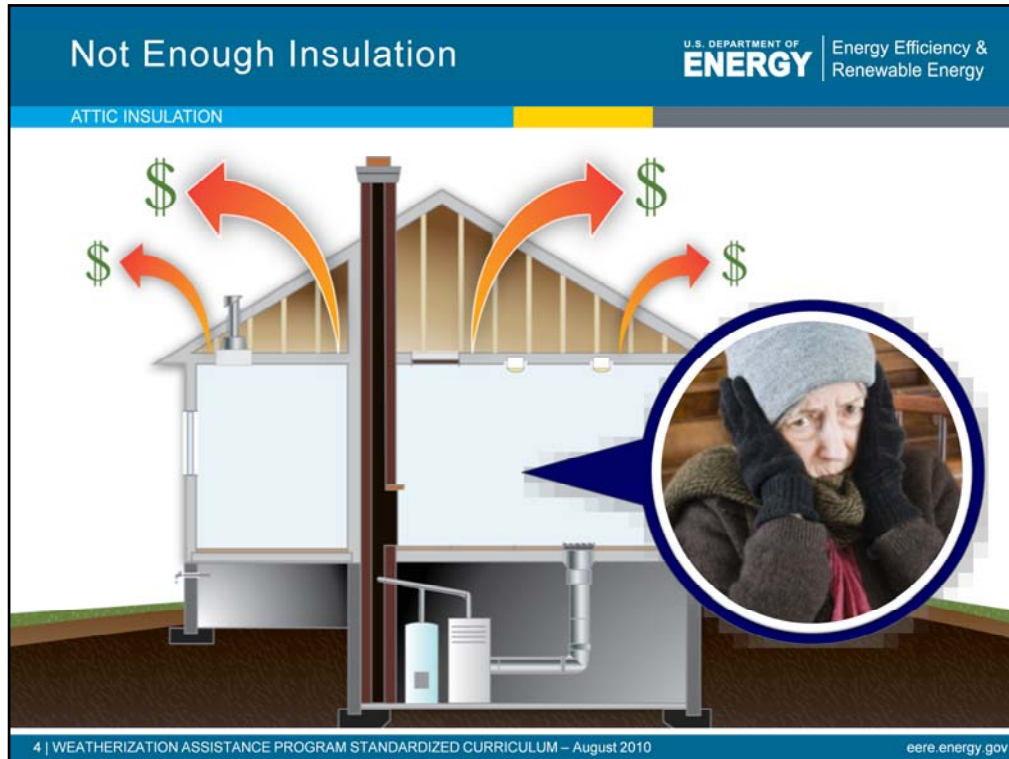
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Cost-Effective Insulation Levels									
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ATTIC INSULATION									
Zone	Gas	Heat Pump	Fuel Oil	Electric Furnace	Attic	Cathedral Ceiling	Wall	Floor	
							Cavity	Insulation Sheathing	
1	✓	✓	✓	✓	R30 to R49	R22 to R38	R13 to R15	None	R13
2	✓	✓	✓		R30 to R60	R22 to R38	R13 to R15	None	R13
2				✓	R30 to R60	R22 to R38	R13 to R15	None	R19 - R25
3	✓	✓	✓		R30 to R60	R22 to R38	R13 to R15	None	R25
3				✓	R30 to R60	R22 to R38	R13 to R15	R2.5 to R5	R25
4	✓	✓	✓		R38 to R60	R30 to R38	R13 to R15	R2.5 to R6	R25 - R30
4				✓	R38 to R60	R30 to R38	R13 to R15	R5 to R6	R25 - R30
5	✓	✓	✓		R38 to R60	R30 to R38	R13 to R15	R2.5 to R6	R25 - R30
5				✓	R38 to R60	R30 to R60	R13 to R21	R5 to R6	R25 - R30
6	✓	✓	✓	✓	R49 to R60	R30 to R60	R13 to R21	R5 to R6	R25 - R30
7	✓	✓	✓	✓	R49 to R60	R30 to R60	R13 to R21	R5 to R6	R25 - R30
8	✓	✓	✓	✓	R49 to R60	R30 to R60	R13 to R21	R5 to R6	R25 - R30

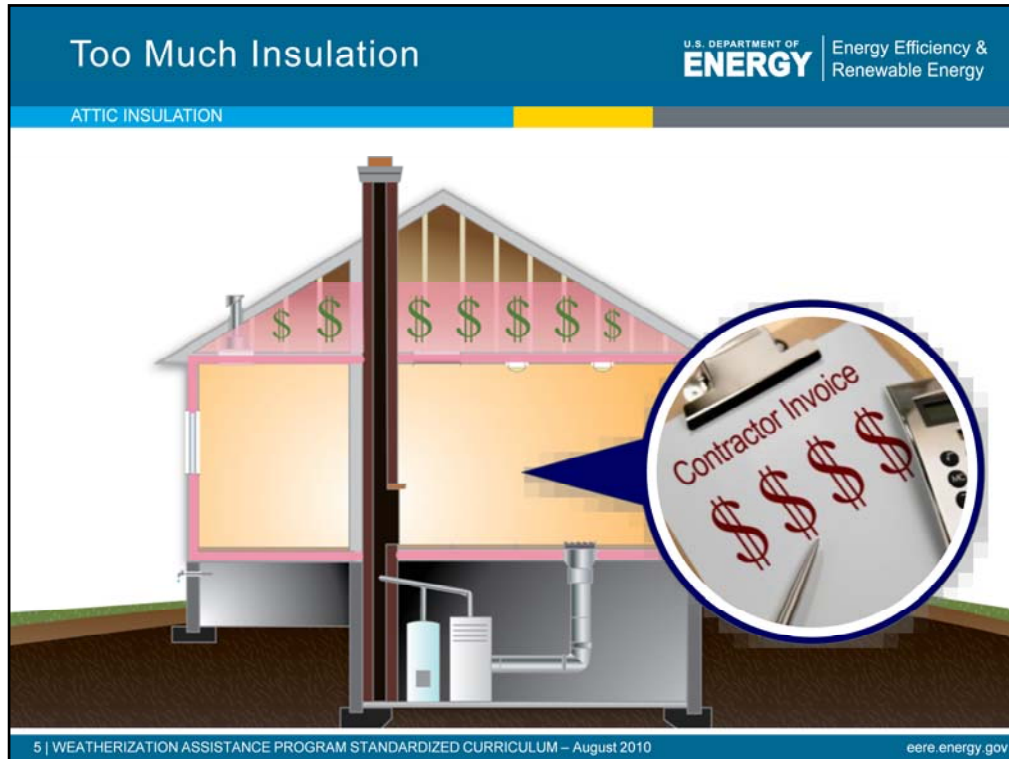
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- Heat rises, and in many homes it rises quite freely right out of the attic.
- Insulating the attic helps maintain the *thermal envelope* of the home.
- EPA estimates that just by air sealing a home and adding proper levels of insulation, households can cut their heating and cooling costs by 20%—about 10% of the entire energy bill for many people.
- In addition to saving money, proper attic air sealing and insulation reduces structural damage and IAQ issues resulting from condensation in the attic.
- This table shows the cost-effective levels. Attics range from R-30 to R-60, depending on the region and heating fuel and equipment.
- Savings from cooling equipment aren't as high as from heating equipment. This is why the southern regions have lower recommended *R-values*.



Too little insulation means the heating and cooling equipment has to work harder and the energy bills remain high.



Too much insulation will never pay back.

- Energy saved from insulation above recommended levels would never equal the cost of installing that insulation.

Measuring Blown-In Insulation

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ATTIC INSULATION



How much is in that back corner?



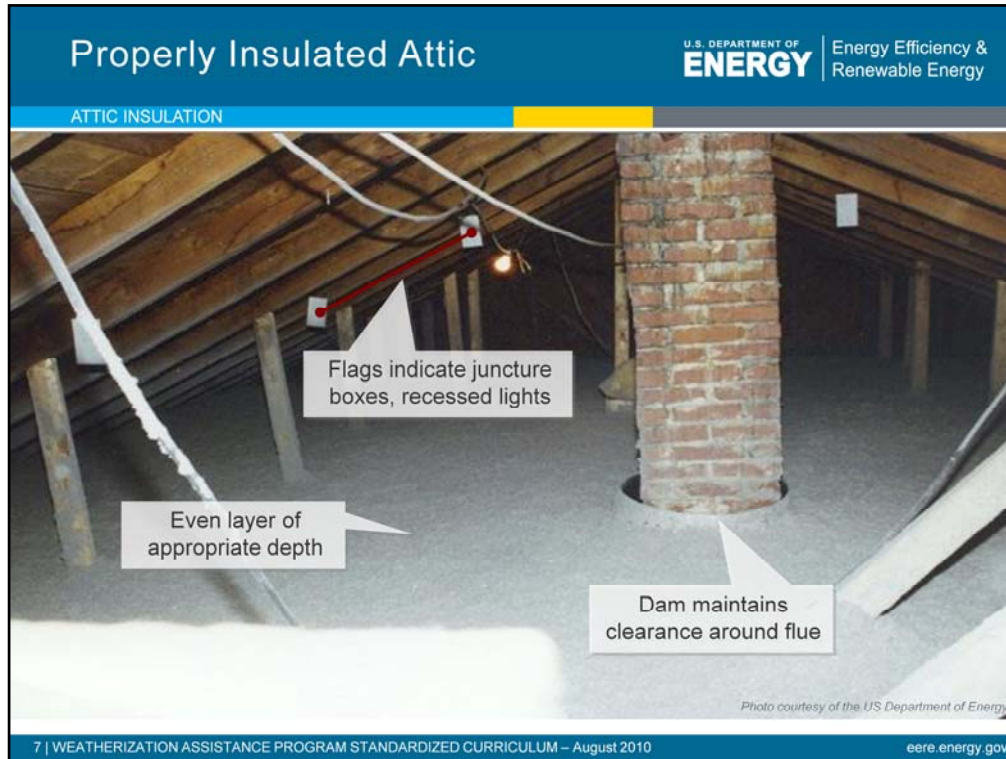
Staple rulers every 15 feet for even coverage.

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Blown-in insulation works well, but it's not as simple as rolling out batts and knowing the installed R-value. Follow these guidelines for quality installation:

- Staple rulers like this one on the right every 15 feet or so around the attic to keep track of the depth.
- Staple them so they face your exit.
- Blow in from the far end and work backwards.



- Lights and juncture boxes are marked.
- Chimney has a dam to keep the cellulose at the proper clearance.
- Insulation is even and of the proper depth all the way across.

Dos and Don'ts

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ATTIC INSULATION

Do

- Install per manufacturer instructions.
- Cover every spot.
- Blow in insulation at the proper density (no “fluffing”).

Don't

- Install insulation in a leaky attic where it will get wet.
- Ignore existing problems.
- Compress or leave voids.
- Get too close to high-temperature fixtures (e.g. can lights) or chimneys.

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Summary

ATTIC INSULATION

- Insulating and air sealing attics can reduce home heating and cooling costs by 20%.
- Insulation provides the thermal envelope or boundary around conditioned living space.
- Follow cost-effective guidelines to determine the target for the installed R-value.
- Maintain appropriate clearances from high-temperature building components.
- Mark electrical boxes and fixtures before insulating.
- Use rulers stapled to rafters to measure depth of blown-in attic insulation.
- Cover every spot.
- Do not install insulation where it will get wet.

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