



Understanding R402.2: How to Handle Attic Insulation prescriptively

This guide explains how roof insulation rules work, when you can use them, and when you can't. It also explains why truss height at the eaves matters, because that's where most heat loss actually happens.



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This guide is based on the
2018, 2021 and 2024 IECC
Editions.



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Understanding Pathways & Attic Insulation Options



First Things First: Which Path Are You Using?

Before you use any of these insulation “breaks,” you have to know how the project is showing compliance.

You can usually use these sections if you are using the prescriptive path.

- Specifically, you can use this if you’re using the R-Value Method of Compliance (2018, 2021 and 2024 IECC)
- The U-factor Method (2024 IECC Only)

You usually cannot use these sections if you are using:

- Component Performance (R402.1.5)
- Simulated Performance or ERI Methods

If the plans don’t say which path they’re using — that’s the first question to ask.

R402.2.1: Insulation Reduction Options

What This Rule Is Saying (In Plain English)

If the code calls for:

- R-38, you’re allowed to install R-30
- R-49, you’re allowed to install R-38
- R-60, you’re allowed to install R-49 (If you are using the 2021 edition)

Basically, you can reduce by **one full insulation size**. These are specified in the edition of the code you use in this section.

<<<<BUT THERE IS A CATCH>>>>



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R402.2.1: Attic Insulation Options

Getting Full Depth Insulation Over the Top Plate

In order to use this exception, the insulation must be uncompressed over the top plate, retaining it's full thickness all the way to the exterior wall.

Why does the code allow this???

Most heat loss in a house happens:

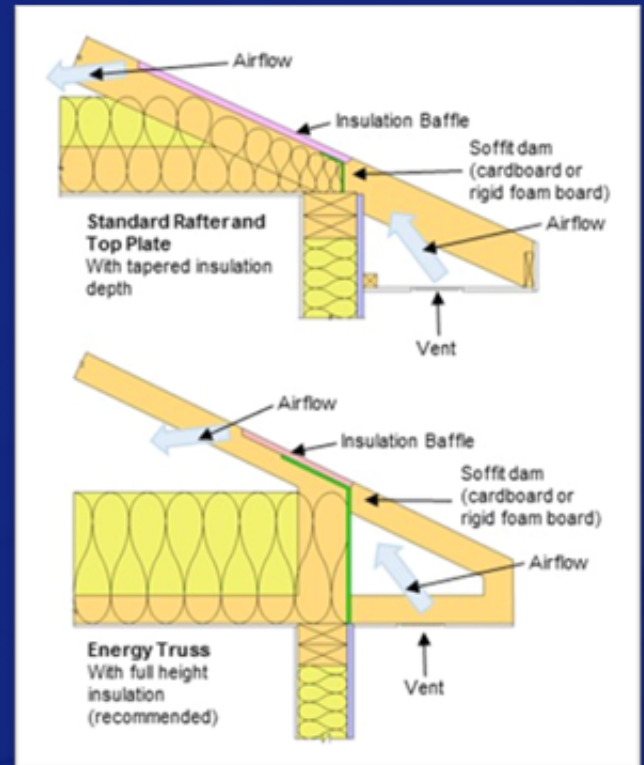
- At the edges of the attic
- Right where the roof meets the wall

If insulation gets thin there, the house leaks heat like crazy, so the code says:

"We'd rather have a little less insulation everywhere than a lot in the middle and almost none at the edges."

What Inspectors & Reviewers Should Look For:

- ✓ Insulation covers 100% of the attic
- ✓ Insulation is not smashed down
- ✓ Full thickness goes past the top plate of the wall
- ✗ If insulation tapers down to nothing at the eaves, this reduction does not apply.



Source: California Energy Commission



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R402.2.1: Attic Insulation Options

How can we review and inspect for these?



Truss Height and Rafter Height at the Eaves

The height of the roof truss above the wall decides:

- How much insulation fits at the edge
- How well the roof actually performs
- Whether the insulation keeps its rated R-value

When a low truss heel or rafter tail is used:

- It squishes insulation at the eaves
- This can cause cold spots, ice dams and comfort problems

Deep rafters and taller framing members ensure that:

- Insulation lets the insulation stay the full thickness
- Reduce heat loss at the wall line
- Allow less insulation in the cavity to perform better than traditional framing methods.

Bottom Line

R-30 done with a truss heel can outperform R-38 done without. They are both compliant, but this one lets you reduce costs and overall ceiling depth.

SO WHAT IF THERE'S NO ATTIC SPACE?>>>>



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R402.2.2: Ceilings Without Attics



Ceilings without attic spaces might include:

- Vaulted or Cathedral Ceilings
- Sloped Roofs
- Areas with no open attic space
- Additions that cannot change the existing roofline.

What the Code Allows

(2018, 2021 and 2024 IECC based on the rules from page 2)

If the code calls for more than R-30, you're allowed to use R-30, but only:

- Over 500 square feet, or
- 20% of the total ceiling area, **whichever is smaller**

This is a limited exception, not a free pass.

Important Conditions

- ✓ Insulation must go over the top plate
- ✓ Insulation cannot be compressed