



Preventing Ice Dams

FACT SHEET



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Ice dams, the ridge of ice that builds up on roof eaves, are a common wintertime problem for Wisconsin residents. They cause costly structural damage to houses every year. The shelf of ice and the icicles hanging from the gutters are obvious to the homeowner. What isn't so apparent is what causes the ice dam.

WHAT CAUSES ICE DAMS?

Ice dams need three things to form:

1. Snow
2. Heat to melt the snow
3. Cold to refreeze the melted snow into solid ice

Wisconsin's winter weather generally supplies the snow and cold. As little as one or two inches of snow accumulation on a roof, followed by sub-freezing temperatures, are the outdoor conditions that allow ice dams to form.

The heat to melt the snow comes from warm air inside the house or apartment building leaking into the attic and warming the roof. The melting snow runs down the roof until it reaches the cold roof edge, where it refreezes. Ice builds up along the eaves, forming a dam that can force water back up under the shingles and even into the ceiling or wall inside the house. Water-stained ceilings and walls, peeling paint and damaged plaster, damaged shingles and sagging gutters are the results.

How does warm air get into the cold attic?

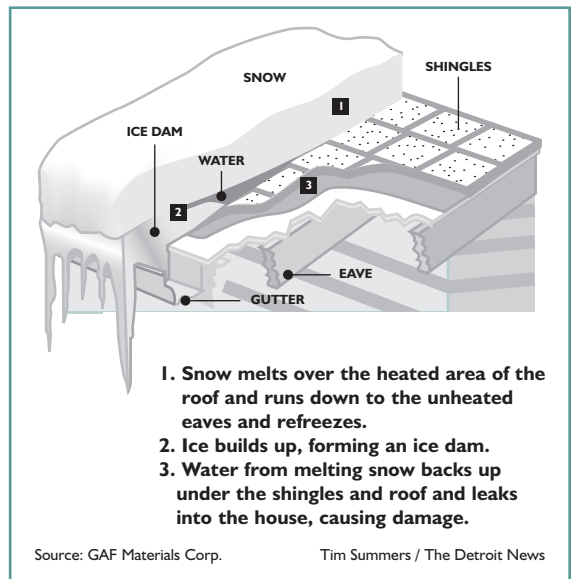
Inadequate or incomplete insulation in the attic is an obvious reason why an attic may not be cold. However, even if the attic is adequately insulated, warm air leaking through hidden pathways can cut the effectiveness of the insulation by 30 percent to 70 percent. Warm air finds many pathways leading from the heated space into the attic. These pathways are called attic bypasses. Fiberglass or cellulose insulation slows air movement, but they don't stop it.

Anything that penetrates the attic is a potential pathway. Some common attic bypasses are:

- Vent stack (the upper portion of the plumbing waste pipe through which gases and odors escape)
- Attic entry (hatch doors, pull-down stairs or stairways)
- Chaseways (where chimneys, garbage chutes, etc., go between floors and attic)
- Heating ducts (where ducts go through the attic)
- Shared walls between apartments



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Source: GAF Materials Corp.

Tim Summers / The Detroit News

Other common, but less obvious, bypasses include:

- Places where electrical wires, electrical boxes and fan housings penetrate into the attic
- Improperly vented bathroom fans and/or kitchen range hood fans (vented into the attic rather than outside)
- Ceiling light and/or ceiling fan fixtures
- Dropped ceilings (above kitchen cabinets, bathtubs or closets, or the slanted ceiling above a stairwell)
- Gaps at the top of interior walls
- Knee walls (short walls between the ceiling and floor, common in story-and-a-half houses)



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Look at the roofs in your neighborhood a day or two after a snowfall. The snow will be melting off some roofs (top) while others will still be snow-covered (bottom). The snow-covered roofs are a sign of good insulation and air sealing, which protect against ice dams.



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HOW TO PREVENT ICE DAMS

The most effective way to prevent ice dams is to keep the roof cold. Ensuring that you have adequate attic insulation (at least R-38) and finding and sealing the places where air leaks into the attic are the first steps. Adequate roof ventilation is also important.

The ideal time to eliminate or prevent air from leaking into the attic is when the home is constructed. It is more difficult to reach attic bypasses once construction is complete. Yet sealing these bypasses is essential to keeping the roof cold. Technicians using diagnostic equipment such as blower doors and infrared scanners can locate major leaks and determine the best approach for sealing them. Contact Focus on Energy for more information about Home Performance with ENERGY STAR®, the program offering diagnostic services to existing homes in Wisconsin.

Remodeling or repair projects, such as replacing the roof or siding, offer opportunities for sealing air leaks and upgrading insulation. Because the repair or remodeling project provides access to enclosed spaces that would otherwise be hard to reach, sealing air leaks and upgrading insulation should be incorporated into the project.

DEALING WITH ICE DAMS

Once a house or apartment building has ice dams the short-term solutions have the potential to damage the roof and/or injure the homeowner. Working on or below a roof during winter is dangerous. Chopping the ice or using a roof rake to remove the snow can damage the roof. If you have ice buildup along the roof edge, call a roofing professional to take care of it.

The most effective way to deal with ice dams is to prevent them from forming in the first place. Finding and sealing the air leaks that cause ice dams is a big task. For help, contact a consultant partnering with Home Performance. These consultants are experts in diagnosing and solving difficult problems like ice dams. To learn more about the Home Performance with ENERGY STAR Program, contact Focus on Energy.

Preventing ice dams will save you money in the long run because your roof will last longer. Addressing air leaks also ensures that your insulation can work effectively, thereby making your home more comfortable, safe, durable and energy efficient.



LEARN MORE

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Contact Focus on Energy to learn more about smart energy choices. Focus on Energy's Home Performance with ENERGY STAR Program can help you prevent ice dams while increasing your home's comfort, safety and durability. Focus on Energy also helps landlords and tenants through a variety of services. To identify energy saving opportunities, or for more information, call 800.762.7077.

energystar.gov/homeimprovement

The Environmental Protection Agency offers a variety of tips and analysis tools that will help you increase your home's energy efficiency.

www.state.mn.us

Learn from a series of Energy Guides on ice dams, attic bypasses, home moisture, indoor ventilation and more. These guides are available on the internet from the Minnesota Department of Commerce, Energy Information Center.