CAN YOUR ROOF HANDLE THE WEIGHT OF SOLAR PANELS?

A couple of years ago, in this area, storms piled so much snow on roofs that a few roofs actually collapsed. People were taking shovels up onto their roofs and shoveling the snow to alleviate the weight. What does this mean to you as you consider putting solar panels up on your roof? Do you need to worry about the weight?

Rest assured, the answer is, No. You don't have to worry about the weight of solar panels on your roof.

Solar panels, including all the mounting equipment, weigh about 2- to 4-pounds per square foot. That's the one-square-foot equivalent of putting one of the following up on your roof:

- pineapple
- small cat
- two-liter bottle of soda
- one-quart carton of soy milk
- medium pumpkin
- Pomeranian
- two-slice toaster
- bowling pin

You can put any of these items up on your roof and not worry, even for a moment, that they might plunge through the roof. But, how much weight can your roof hold? Of course, a solar energy array weighs more than a pineapple. But, the weight is distributed or should be.

According to the Insurance Institute for Business & Home Safety (IBHS), your roof should be able to support 20-pounds of snow, per square foot, before the roof is 'stressed.' The IBHS goes on to explain that "10-12 inches of snow is equal to … about 5 lbs. per square foot." However, if you have "2 feet of old snow and 2 feet of new snow" (4-feet total or 60 pounds per square foot), you could have a problem since the old snow is packed and heavier. But, when is the last time you saw 4 feet of snow on your roof?

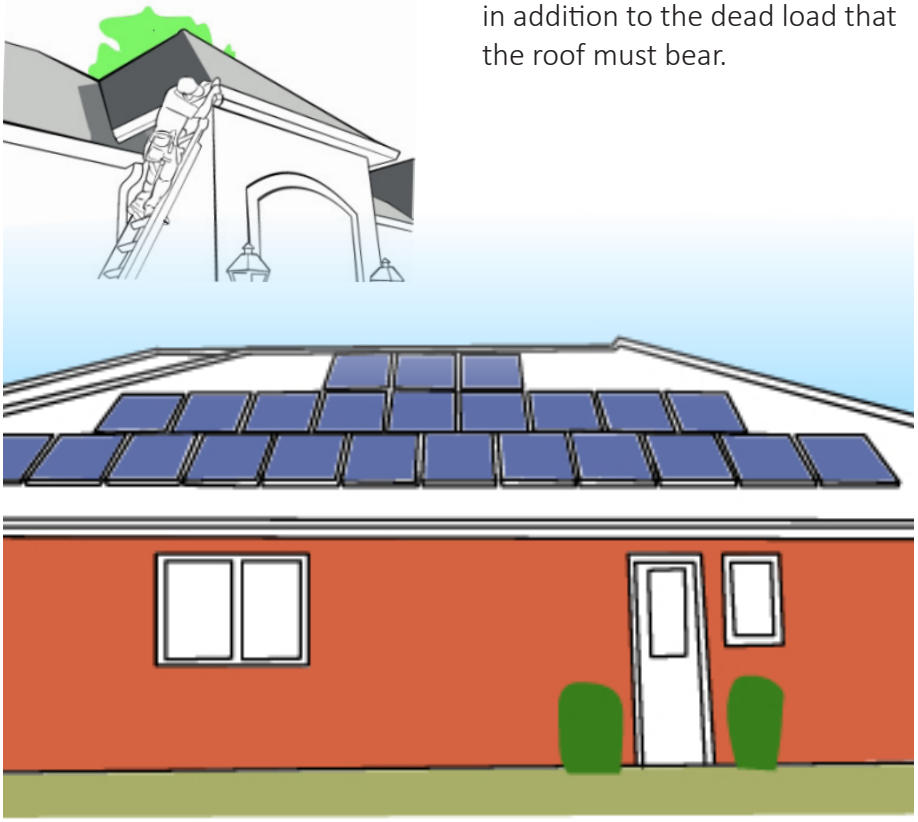
Since you don't have to worry about the weight of your solar panels, it's nice to know that the Office of Energy Efficiency & Renewable Energy says that snow can actually help to clean your solar panels (rain does the same thing).

WANT TO KNOW EVEN MORE MORE?....

LOAD LIMITS ON THE ROOF OF A BUILDING

DEAD LOADS

The dead load on a roof is the weight of the roof structure itself, along with any permanently attached materials or structures on the roof, so it must be designed, first of all, to support itself. The dead load of a typical asphalt-shingled, wood-framed roof is about 15 pounds per square foot. The load increases with the use of heavier roofing material. A clay-tiled roof may have a dead load of as much as 27 psf.



LIVE LOADS

The live load on a roof is the weight of any temporary objects on the roof. Where snow isn't a problem, the live load can come from people working on the roof and any equipment they take on to the roof with them. The roof must be able to support the sum of its dead load and any anticipated live load, so the roof has to be designed with a load limit that takes into account both of these loads. A typical roof is expected to support a live load of 20 psf; this minimum live load is in addition to the dead load that the roof must bear.

UPLIFT LOAD

When wind hits the exterior wall of a building, the wind's energy disperses upward and downward along the wall. The upward movement of the wind exerts an uplift load on the roof, and the roof must be able to resist this uplift. A typical uplift load limit assumes a maximum wind speed of about 90 miles per hour and expects a load of about 20 psf. Most of this load will be resisted by the roof's downward-pushing dead load.

SLOPE CORRECTION

Load limit calculations assume loads are pushing downward uniformly on the roof's horizontal surface area. On a steeply sloped roof, more weight is pushing downward on a relatively smaller horizontal surface, so the roof's load limits must be adjusted to take this difference into account. On a roof with a slope greater than 4 to 12, the live load limit is typically adjusted downward from 20 psf to 15 psf to allow for the relatively greater dead load on the steeper roof.