Photovoltaic roof tiles

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Harnessing the power of solar energy is not only good for the environment, but it"s also good for your wallet. While roof panels are what often come to mind, solar shingles are another option for homeowners seeking to add value to their properties.

Solar shingles, or solar roof tiles, are made of slim photovoltaic (PV) sheets that either overlay or replace the existing shingles on a roof. They absorb sunlight and convert it into electricity. By relying on this method of energy as opposed to electricity, for example, homeowners will save money on monthly bills and eventually recoup their initial investments.

Like regular roof shingles, solar shingles protect your home from the weather and other elements. These shingles are not only energy-efficient, but they also offer a more attractive aesthetic to a home than do the large, bulky panels normally associated with solar-powered energy.

Solar shingles work in a similar way to solar panels--they both absorb the sun"s rays, converting the light to thermal or electrical energy. However, there are a few important differences between solar panels and shingles that you should know about when determining your home"s solar energy needs:

Solar shingles are about the same size as traditional roofing shingles, with the average size being about 12 inches wide by 86 inches long, and weighing about 13 pounds per square foot. The thin tiles are less than an inch in thickness. It takes about 350 tiles to complete a typical solar roof installation.

Solar shingles are typically made from copper indium gallium selenide, which is what allows them to be so flexible and thin. This semiconductor is an ideal material as it results in a high conversion efficiency rate, which is about 10% to 12% on average. Some shingles, instead, use monocrystalline silicon, which is also used to fabricate computer chips. While these are more expensive, they are worth the extra price as they have a higher efficiency rate of around 15% to 20%.

As the primary goal is to lower energy costs, this is a major consideration with solar installation. The majority of shingles will produce anywhere between 13 and 63 watts of power. The number of tiles in a typical home roof installation can lower the utility bill by 40% to 70%; by adding more tiles, you can increase the energy output.

While both solar shingles and solar panels convert the sun"s rays into energy, there are a number of differences that will help you decide between the two options:

Since solar shingles blend right into the roofing materials, such as concrete or asphalt, many prefer this aesthetic rather than large black panels attached to the roof. In general, solar shingles create a sleeker aesthetic

than do bulky solar panels, particularly since only parts of the roof, like the edging, might be covered in shingles to be efficient.

Both solar panels and shingles have long life spans, typically upwards of 20 years. However, the longevity of solar shingles varies by the manufacturer and the installation. Warranties also vary; when you purchase solar shingles, be sure that you note the difference between power warranties. Solar shingle warranties can last for a couple of decades based on their production, while durability warranties that cover the shingles themselves can span the lifetime of the home.

Solar shingles can take as much as a week to install--and that"s if your existing roof is in good shape. If you are building or redoing your roof before adding solar shingles, it can take even longer. Some solar tile manufacturers, like Tesla, will take two or more weeks to install.This is in sharp comparison to solar panels, which can be installed within a day.

Solar shingles have one major advantage to panels: They are more durable. Unlike panels, which sit atop the roof, solar roof tiles are actually part of the roof. As such, they are more resilient and can stand up to harsh weather conditions and fallen debris. Additionally, solar shingles are fire-resistant, a feature that is not inherent in solar panels. (It should be noted, however, that the risk for fire with solar panels is very low.)

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