



Solar panel mounted on rooftop

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Installing solar panels on your roof can both save you energy costs and reduce your home's environmental impact. Even though there are some DIY solar panel options, installing them is a highly complex project, and you'll still need assistance from an experienced professional. Join This Old House energy expert Ross Trethewey and solar power installer Anukene Warda for a look into the installation process.

Before you begin the installation process, properly plan your solar panel system. This involves assessing your roof's suitability, determining the number of panels you need, and obtaining the necessary permits.

The first step in planning your solar panel installation is to evaluate your roof's condition and suitability. In the Northern Hemisphere, a south-facing roof pitched between 30 and 45 degrees is considered ideal for solar panels.

Your roof should be in good condition and able to support the additional weight. You should also identify obstructions, such as nearby trees or buildings, that could cast shadows on your panels.

Once you've assessed your roof, you must calculate how many solar panels you need and determine how to arrange them. A solar contractor will recommend the best layouts based on your energy consumption, available space, and budget constraints.

Before installation, your contractor must secure the necessary permits and approvals. You may need building permits from your city government, electrical permits, and approval from an HOA if you're part of one. You'll also need to get your utility company's signoff to connect the solar panels to the power grid, which may let you sell the energy you don't use in exchange for incentives.

First, the installer will find the rafters beneath your roof shingles. They'll either use a stud finder or measure from the roof's edge to find the rafters, typically spaced 16-24 inches apart.

Then, it's time to install the stanchions for a strong hold on the panels. Essentially, says Warda, what they are is a lag bolt that goes straight into your roof rafters for a good, strong connection, a big flashing that keeps everything watertight, and a stanchion that goes about 6 inches off the roof. Your solar contractor should use roofing sealant around the holes in addition to flashing for the best seal possible.

Trethewey and Warda use aluminum rails for their project, securing them to the stanchions with stainless steel bolts. The bolts should be tight enough to stay secure in tough weather conditions.



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First, Warda runs conduit from the roof to the home's main electrical panel according to local codes. The necessary wiring will run through them to connect the panels to the electrical system.

Since solar panels generate DC power, you'll need to use an inverter to convert the energy to AC power for your home. Some systems use a central inverter, but these have a major drawback: if one panel malfunctions, the rest of the array can also go down.

Trethewey and Warda use microinverters under each panel to preserve the system's efficiency. Finally, they use six-gauge copper wire to ground the entire system, including the rails.

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