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SUN SHINE IN



The solar cells of Tesla's Solar Roof tiles collect energy during daylight hours, which can be used as needed.

ACCORDING TO TESLA, “the sun provides more than enough energy in just one hour to supply our planet’s energy needs for an entire year. Your home can capture this free, abundant energy source through rooftop solar tiles, turning sunlight into electricity for immediate use or storage in a Powerwall battery.”

Such is the premise for the company’s recent introduction of its much-anticipated Solar Roof, which is marketed as a lifetime-warranted roof and features glass tiles as an alternative to rooftop photovoltaic (PV)

BY BEN IKENSON

panels, which use semiconducting materials to convert light into electricity. “Solar Roof combines roofing and PV into one product,” the company says. “In this way, it’s different from other products that integrate photovoltaic roofing with existing tiles or shingles. Solar Roof replaces the existing rooftop with materials that allow the roof itself to produce electricity.”

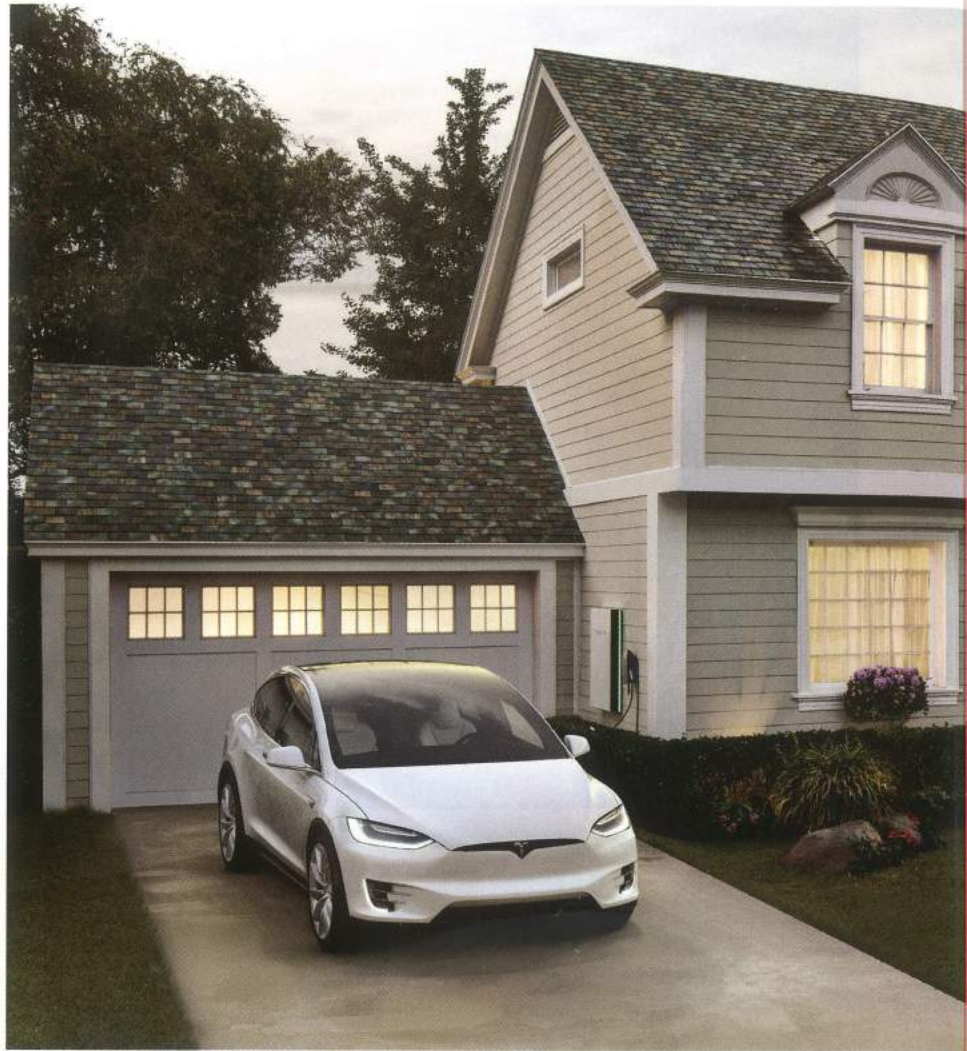
Basically, the surface consists of tempered glass tiles that are three times stronger than traditional roofing tiles. Some tiles are “solar” with photovoltaic cells

and hidden wiring, and homeowners can determine the amount of electricity they want to produce through customizing their roof with these tiles. The system employs an integrated Powerwall battery, which enables homeowners to use solar energy when they choose to as well as maintain power during electrical outages.

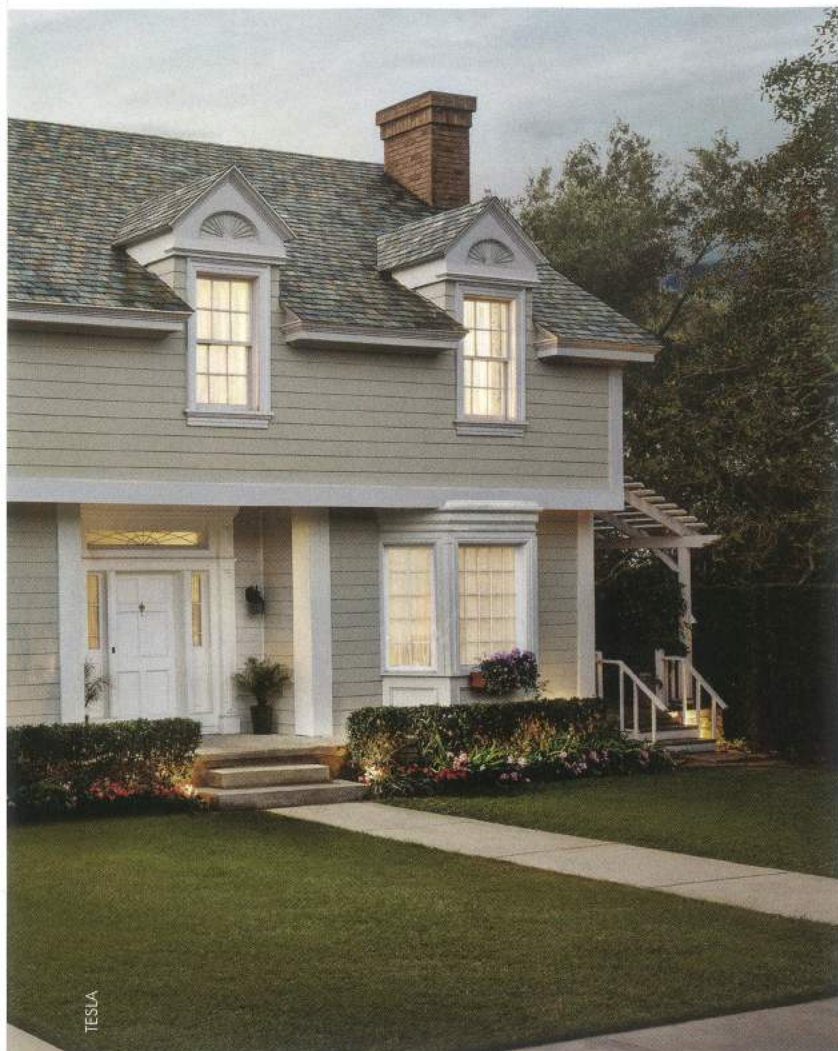
When asked if it expects tiles will eventually replace solar panels, a representative of Tesla says, “Both products will have a place in the market. Solar Roof is a great consideration for homeowners who are ready to replace their existing roof or are completing new construction; traditional PV panels can be installed quickly on virtually any roof, provided the location makes sense economically with solar output.”

Most green builders see the introduction of a new product that has the potential to augment renewable energy production at the home as a step forward. And it is of special interest to builders in Arizona, the third largest state to be solar-powered, with some 3,463 megawatts of solar energy now powering the state, according to a new report by GTM Research and the Solar Energy Industries Association

“There is definitely a demand for a cost-effective, robust, and aesthetically pleasing integrated solar electric array solution,” says sustainability program manager Jeremy Meek, whose Scottsdale-based Desert Star Construction has created a couple dozen LEED-certified residential projects and installed a few hundred kilowatts worth of solar arrays. “Whether Tesla’s



ABOVE AND FAR LEFT Tesla’s Solar Roof tiles, shown here in slate, are designed to complement a home’s architecture. **LEFT** LEED for Homes-accredited professional Jeremy Meek.



"Success will largely depend on whether or not Tesla can deliver an effective and aesthetically pleasing product at a cost-efficient price point."

—JEREMY MEEK, sustainability programs manager,
Desert Star Construction

Solar Roof will be a success or not will largely depend on if Tesla can deliver an effective and aesthetically pleasing product at a cost-efficient price point. The 'cost-efficient' part of that last statement will likely be largely dependent on what federal and local incentives are available at the time the system becomes available to the mass market."

In terms of cost, Tesla reports, "It's true that Solar Roof is generally more expensive upfront than traditional PV panels; however, thanks to the warranty, available tax credits and the two types of roofing tiles—one solar, one non-solar—that allow customers to scale up or down, costs can be minimized." (To see an estimate of potential costs and savings, enter your address at tesla.com/solarroof.)

As Elektrek, an electric transportation news site, has reported, "Tesla started taking orders with a \$1,000 deposit for the first versions of its solar roof tiles in May 2017, and the product was sold out 'well into 2018' within the first few weeks." But, "The rollout of Tesla's new solar roof tiles has been slower than anticipated."

Tesla, reports that installations of its Solar Roof are "happening now through the end of year in California," and "will continue to scale beyond that in 2019."

Considering the fact that there isn't much yet in terms of available performance data on the product, many in green building circles are waiting in anticipation to see more solid information.

"From a purely environmental perspective, it will be interesting to see if Tesla releases the life cycle analysis and embodied energy data on their solar roof product to determine if it is actually a net benefit to the environment or just a sexy business solution being brought to market," says Meek. "For example, a typical mass market solar electric panel takes two to three years in operation before it becomes carbon neutral (i.e., it produces enough clean energy to offset the amount of energy used to manufacture it originally). If Tesla can accomplish all the above cost, aesthetic and durability parameters plus improve their carbon neutrality figures relative to other panels on the market—then I can see this Tesla product being a raging success."