

# Could “Plug-and-Play” Solar Be the Next Clean Energy Wave in the U.S.?



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By Derek Markham | [Treehugger](#)

**In addition to investing in energy efficient home appliances, perhaps we should also be thinking about energy-generating appliances. Plug-and-play solar systems could be an effective clean energy investment for US homes, if only the regulations and paperwork weren't so burdensome.**

Although the US has seen massive growth recently in the adoption of solar electric systems, both for residential homes and for utility-scale power plants, there's still a long way to go before the average citizen has easy access to clean energy. The price of a residential solar array, while continuing to drop every year, is still a significant amount

of money, even after tax credits, and it isn't a good fit for those who live in multi-unit buildings and don't own their own roof, or those who rent their home.

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There are a few renewable energy options out there for the non-homeowners and those unable or unwilling to finance a full home-sized solar array, such as community solar and clean energy purchase programs through certain utilities, or a solar lease, but there's also a less-known approach to going solar at home that could be an effective entry-level option. Plug-and-play solar systems, which are self-contained modular units that don't require any technical expertise to install, might be a solution for more Americans, if it weren't for the hodgepodge of different regulations across the country that either disallow plug-and-play solar, or are difficult to navigate in order to get utility approval for their use.

Plug-and-play solar systems are designed to be as simple to install as plugging them into a home outlet, where they can directly offset some of the electricity used in the home, and because they can be purchased individually (versus buying an entire solar array at once), could provide more people with a gateway to clean energy. But because these systems also allow anyone to feed electricity back onto the grid, they aren't allowed to be used in many parts of the US, which severely limits their potential.

According to [Michigan Technological University's Joshua Pearce](#), an associate professor of materials science and engineering, "plug and play systems could generate more than four times the amount of electricity generated from all of US solar last year." A recent study completed by Pearce and two other researchers at the university found that plug-and-play solar could provide a capacity of up to 57 gigawatts of clean energy in the US, and deliver an energy cost savings of up to

\$13 billion per year. And not only that, but the study, [\*U.S. Market for Solar Photovoltaic Plug-and-Play Systems\*](#), also found that “plug and play PV systems are economic throughout the U.S. already,” and could be a sound investment for many homes.

“If a household in Michigan is considered having purchased a plug and play PV system at the highest rate (\$1.25/W, which amounts to \$1,250 for a 1 kW system). With a conservative estimate of four 1 sun hours per day on average, the system will create 1460kWh/year, which is worth over \$292/year for those living in the upper peninsula of Michigan. A simple payback results in the system paying for itself comfortably under 5 years and creating a high double digit return that would challenge even those residents with substantial credit card debt as a sound investment.”

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But what about those regulations and technical requirements that prohibit the installation of plug-and-play solar systems for both residential and small commercial applications? It turns out that perhaps most of those are overkill, and that with today’s solar PV and microinverter technology, systems of less than 1 kW could be safely added to many homes without the need for a costly AC disconnect switch and other barriers to entry. Another study from Pearce and researchers, “[\*A Review of Technical Requirements for Plug-and-Play Solar Photovoltaic Microinverter Systems in the United States\*](#),” acknowledges that while safety procedures still need to be followed, currently available solar technology could be installed and commissioned “without the need for significant permitting, inspection and interconnection processes.”

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