



# Can solar energy generate electricity by absorbing heat

How does the Sun generate electricity?

Most technologies for harnessing the sun's energy capture the light itself, which is turned into electricity using photovoltaic materials. Others use the sun's thermal energy, usually concentrating the sunlight with mirrors to generate enough heat to boil water and turn a generating turbine.

Can solar energy be used to heat a high-temperature material?

Credit: John Freidah A new approach to harvesting solar energy, developed by MIT researchers, could improve efficiency by using sunlight to heat a high-temperature material whose infrared radiation would then be collected by a conventional photovoltaic cell.

Can a solar device absorb a lot of heat?

"What I'm looking at is an alternative to that paradigm," Bermel says, by "concentrating the sunlight thermally": capturing it and reflecting it back into the material. The result, he says, is that the device can absorb as much heat as a standard black object, but "in practice, we can get it extremely hot, and not reradiate much of that heat."

How does solar work?

The amount of sunlight that strikes the earth's surface in an hour and a half is enough to handle the entire world's energy consumption for a full year. Solar technologies convert sunlight into electrical energy either through photovoltaic (PV) panels or through mirrors that concentrate solar radiation.

How can MIT use sunlight to generate electricity?

An MIT team has developed a novel system for capturing and storing the sun's heat so it can be used to generate electricity whenever it's needed. The new system is simple, durable, and inexpensive. Mirrors mounted on a hillside reflect sunlight directly into a large tank of molten salt, which absorbs the heat throughout its depth.

How do solar photovoltaic cells work?

Solar photovoltaic cells are grouped in panels, and panels can be grouped into arrays of different sizes to power water pumps, power individual homes, or provide utility-scale electricity generation. Source: National Renewable Energy Laboratory (copyrighted)

1 ¶ Solar thermal energy captures heat from the sun. Photovoltaic panels convert sunlight into electricity. Concentrated solar energy systems focus sunlight for power generation. Each of these types plays a unique role in the ...

The heat engine is a thermophotovoltaic (TPV) cell, similar to a solar panel's photovoltaic cells, that passively



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captures high-energy photons from a white-hot heat source and converts them into electricity. The team's design ...

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