

Pros and Cons of Solar Energy

F forbes.com/home-improvement/solar/solar-energy-pros-and-cons

Chauncey Crail

July 25, 2022



Table of Contents

- [What Is Solar Energy?](#)
- [Pros and Cons of Solar Energy](#)
- [Advantages of Solar Energy](#)
- [Disadvantages of Solar Energy](#)
- [How Sustainable Is Solar Energy?](#)
- [Who Should Use Solar Energy?](#)
- [Is Solar Energy Worth the Cost?](#)
- [Future Outlook for Solar Energy](#)

Solar technology's recent prevalence has seen both large organizations and individual consumers choose to integrate solar power into commercial facilities and homes nearly everywhere. Solar power's renewable, eco-friendly supply of energy isn't the only factor to consider when deciding to transition your household to a solar system, though. While the [best solar companies](#) simplify the solar panel installation process, it is still a lengthy, complex process with many factors and variables to consider.

If you're thinking about offsetting both your environmental impact and power bill by adding solar power to your home or business, our guide on solar energy's pros and cons can help you decide if it'll be a sustainable option for you.

Key Takeaways

- Some of the solar energy pros are: renewable energy, reduced electric bill, energy independence, increased home resale value, long term savings, low maintenance.
- Some of the cons of solar energy are: the cost of adding solar, depends on sunlight, space constraints, solar energy storage is expensive, installation can be difficult and environmental impact of manufacturing and disposing panels.
- Solar panels last 25 to 30 years.

What Is Solar Energy?

Solar energy is electrical or thermal energy harvested from sunlight. Solar panels contain photovoltaic (PV) cells made up of semiconductor materials (such as silicon) to absorb elemental particles from the sun called photons. When absorbed by the panel, the photons release electrons from the atoms of the semiconductor material and the flow of these electrons within the cell creates an electric current we can direct to our circuits.

Solar panels can be placed anywhere with an abundance of sunlight, such as open fields or rooftops. The more light the panels sit exposed to, the more electricity production potential.

The sun's constant barrage of energy in the form of photons can be collected, transformed and used to power our world—but for you, the question may be more about cost-effectiveness. Is solar efficient enough to power your home or business? Below are the pros and cons of this process and what solar's availability and cost mean for consumers.

For the average consumer, there are many pros and cons of using solar energy in your home or business. Whether your concerns are with saving money on your bills, helping the environment, or becoming energy-independent, here's a list of advantages and disadvantages that should be of concern to you.

Advantages of Solar Energy

Renewable Energy Source

Fossil fuel remains a resource in declining supply that, when burned to create energy, releases harmful byproducts into our atmosphere. Solar power has the potential to help us minimize our use of fossil fuels and the impact we have on the environment.

Reduces Electric Bill

Solar energy can help most consumers power their homes as an alternative or supplement to purchasing electricity from a grid. With power prices on the rise, consumers stand to save a considerable amount on monthly power bills by switching to solar.

Energy Independence

A home reliant entirely on solar power features the capacity to function entirely off-grid, especially when supplemented with a [solar battery system](#) to maintain power during non-daylight hours. These battery systems can also turn solar systems into emergency backups during power outages.

Solar Panels Increase Home Values

According to the [National Renewable Energy Laboratory](#), every dollar a solar panel saves you on your electrical bills increases the value of your home by **\$20**. Also, homes with solar panels sell for four percent higher than those without them. If a home has solar panels, its owners will be saving money in the long run, increasing its appeal and value.

Long-Term Savings

The start-up costs for a solar system represent a significant expense, but the costs are usually mitigated by savings on the electric bill. Consumers can often break even on the investment—usually within six to 10 years—and then start reaping the benefits well before the system needs replacement or considerable maintenance.

Low-Maintenance Costs

Once installed, a solar system requires little maintenance as long as it remains unaffected by environmental factors. If panels are kept clean and free of debris, they should continue to function without any additional action by the consumer for many years.

Regarding maintenance, professional service for your panels can cost between **\$140 to \$180**, while an annual inspection or cleaning can cost about **\$150**. However, solar panel warranties typically cover them with performance guarantees.

Benefits the Community

A process known as net metering allows consumers to sell excess electricity their panels produce back to the utility company, further reducing utility bills. This often reduces a community's reliance on fossil fuels, as well.

Diverse Uses

Solar energy is extremely versatile, and can provide power not only to our homes and appliances but to places where channeling power from a grid is impractical or impossible, such as remote, off-grid regions, satellites and boats.

Rising Power Prices

The price of electricity has been on the rise for the past ten years and remains unlikely to decrease in the near future. Solar power can help the consumer keep bills low and with net metering, many consumers can even sell extra energy back to the utility company to turn rising electricity prices to their advantage.

Technology Is Improving and Prices Are Decreasing

Technology has improved tremendously since the early days of solar power and advancements continue to be made every day. Better yet, despite these advancements, solar's ubiquity appears to have driven its cost down, making solar more accessible to more consumers. Many [state incentive programs](#) and a [federal tax credit](#) can also help consumers minimize the out-of-pocket amount they spend on a new solar system.

Disadvantages of Solar Energy

High Cost of Solar Panels

Despite decreases in the [cost of solar panels](#) over the past ten years, a complete solar installation still requires significant investment. On average, a consumer can expect to pay around **\$18,000** on a complete solar setup for a home before accounting for any incentives and the [federal solar tax credit](#).

Sunlight Dependent

Without sunlight, a system reliant on solar energy cannot produce power. This can pose a problem for consumers in areas with less-than-ideal levels of sun exposure or poor weather. Solar batteries to store excess energy can help mitigate this issue and even under constant-clouds the [best solar panels](#) will still remain cost and energy efficient enough to be worth the installation.

Installation Can Be Difficult

Although most of the components in installing solar panels are relatively simple, if you're not a fan of being on a roof or not comfortable working with electricity, solar panel installation can be complicated. For instance, tying the panel wiring into the home can be complex for the average DIYer and should be left to the professionals.

Space Constraints

Solar panels and the associated wiring take up space. Depending on the number of solar panels needed, finding enough space with adequate exposure can be difficult, especially in less-spacious residential areas.

Solar Energy Storage Is Expensive

Since solar batteries store the excess energy generated by your solar panels, they are essential to your solar panel system. However, they can be costly depending on the type and size of the battery. For instance, a single lead-acid battery can cost between **\$200 and \$800**, while a residential lithium-ion solar system can cost **\$7,000 to \$14,000**.

Environmental Impact of Manufacturing

The production of solar technology has its environmental downsides, as the mining of materials and manufacturing of solar panels creates a considerable amount of greenhouse gas. The Office of Energy Efficiency & Renewable Energy issued a report revealing that solar panels pay for themselves in terms of greenhouse gas emissions within one to four years of use, so while certainly still a downside, much of the issue can be mitigated.

Difficulty With Relocation

Uninstalling a solar system and moving it can be difficult, time-consuming and expensive, so the semi-permanence of the structures means panels are not often something you'll take with you from house to house. They're often best considered an investment in the structure or property they're added to.

Scarcity of Materials

Sunlight may be unlimited, but the materials required to manufacture solar technology are not. The availability of the raw materials required to produce solar products may not be sufficient to meet future demand and the options for mining these materials can have a significant environmental impact.

Disposal or Recycling Options

Solar technology contains some of the same environmentally-harmful substances in many consumer and industrial electronics, so proper disposal is critical. At present, recycling options for solar panels remain limited.

How Sustainable Is Solar Energy?

Solar energy certainly remains more sustainable than fossil fuels, which are limited in supply and release harmful greenhouse gasses into the atmosphere when burned. The limiting factor in the sustainability of solar energy overall primarily comes from a scarcity in the raw

materials required to produce solar technology, the greenhouse gasses emitted during manufacturing, and the impact of panel disposal on the environment.

The use of solar power in lieu of grid power, however, offsets the emissions and carbon footprint of production within four years of use. Additionally, solar panels are ultimately recyclable, as they're made from glass, metal and silicon. At present, we lack adequate infrastructure to collect and facilitate the recycling process on a large scale.

Who Should Use Solar Energy?

Solar energy is now accessible to both large-scale industry and individual consumers. Any consumer with the substantial means to invest in a solar system installation can benefit from the pros of solar energy, and the long-term savings mentioned above. [Solar loans](#) also may offer solutions to those without the hefty capital required.

Is Solar Energy Worth the Cost?

Typically, yes, [solar energy is worth the cost](#). But whether or not it's right for you depends on many variables you'll need to investigate for yourself, including your location, tax rebates and incentives and net metering availability among others. While pros of solar energy significantly outweigh cons, the feasibility of a solar venture will vary based on the consumer's financial means, living situation and space constraints.

Bottom Line

The pros of solar energy considerably outweigh the cons. It may take several years, but purchasing and installing a solar system can eventually result in major savings on electricity for the consumer in addition to benefits for our environment.

Future Outlook for Solar Energy

The sun is a powerful force, one of Earth's most reliable and plentiful energy sources. As a result, solar energy is experiencing a remarkable surge in growth, and it is expected to remain a prominent player in the energy landscape for the foreseeable future.

In the past few years, solar power has been steadily increasing in popularity, which is expected to continue. This exponential growth is driven by several key factors, including the reduction in the cost of solar panels, which has made harnessing the sun's power more affordable than ever. Additionally, advancements in solar technology have increased its efficiency, making solar energy systems even more attractive to both residential and commercial owners. This combination of cost-effectiveness and efficiency will certainly drive the continued adoption of solar energy across the United States.

