A Complete Guide To Payback Periods For Solar Panels

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Switching to solar energy is a major financial commitment and, if you're like most homeowners, you'll want to know how long it will take to recoup your investment. This average recovery time, called the solar panel payback period, typically ranges from six to 10 years, depending on a handful of factors. However, in some states, the payback period can be as short as five years or as long as 15.

In this guide, we'll help you calculate your solar panel payback period to decide if investing in solar panels is worth it for your home.

What Is a Solar Payback Period?

The payback period for solar panels is the time it takes for you to break even and start saving money after you pay for your solar system.

Simply, you keep track of how much you save each month on electricity, and when these savings add up to what you paid for the solar panels, you've reached your payback period. After this point, any savings on your electricity bills are extra gains.

What Is Considered a Good Solar Payback Period?

Although the typical payback period for solar panels averages six to 10 years, this is a broad range because so many factors need to be considered to establish your payback period. For example, investing in a larger solar power system will incur a higher upfront cost, but it can lead to more substantial monthly savings.

Additionally, if the cost of electricity from your local utility company increases significantly, this enhances your long-term savings and improves your payback period.

Modern photovoltaic (PV) solar panels are designed for longevity, maintaining at least 80% efficiency over a minimum lifespan of 25 years. Some solar panels can even last up to 35 years, according to the Department of Energy. So, if it takes 10 years to recover the cost of your solar panels, you can still expect savings on your electric bills for another 15 years, which is an excellent investment.

Solar companies can provide you with an estimate of your payback period. Make sure to get a few quotes to find your best option. Getting the best price for comparable quality solar panels will influence your savings.

How to Calculate Your Solar Payback Period

To calculate the solar panel payback, follow these five steps.

1. Tally the Total System Expenses

Begin by adding up all the initial costs associated with your solar setup, including the solar panels, installation and any additional accessories and fees.

2. Deduct Solar Incentives

Subtract any financial incentives you're eligible for from the total cost. This includes the federal solar tax credit, local tax breaks and rebates. We'll skip the long-term benefits of net metering, as these can vary greatly and are not available in all states.

3. Add Solar Financing Costs

If you opt for a solar loan, remember to add in any extra expenses related to your loan, such as interest over the life of your loan. You won't need to factor in your down payment since it won't incur interest fees.

4, Estimate Yearly Electricity Savings

Look at your electric bills and calculate how much you spend annually. Solar energy savings are higher in areas where electricity rates are high. Also, factor in expected utility rate increases based on former yearly bills.

5. Determine Your Solar Payback Period

Divide the net cost of your solar system (after subtracting incentives) by your annual electricity bill savings. This calculation will give you the estimated time for your solar investment to pay for itself, known as the payback period or break-even point.

The following example illustrates how to calculate a solar payback period for a system with a total cost of **$20,000**, including solar panels, installation, inverters and batteries. You can follow the same formula to calculate your own payback period.

- **Add solar incentives**: Assume you qualify for a federal solar tax credit of 26 percent, which would be **$5,200 ($20,000** x 0.26). Let's say you are also eligible for local rebates and tax incentives amounting to **$2,000**. Your total incentives would equal **$7,200** (**$5,200** + **$2,000 = $7,200**).
- **Determine cost after incentives**: Subtract the total incentives from the system cost: **$20,000 – $7,200 = $12,800**.
- **Tally up yearly electric bill savings**: If your annual electricity bill was **$1,500**, and the solar system is expected to cover 80 percent of your electricity needs, your yearly savings would be **$1,200** (**$1,500** x 0.80).
- **Calculate the payback period**: Now, divide the total cost of your system after incentives (**$12,800**) by your yearly savings (**$1,200**) by your annual savings to arrive at your payback period: (**$12,800 / $1,200**) = 10.67 years.

Using this example, it would take approximately 10.67 years to break even on a solar investment, at which time a homeowner would generate free electricity for the life of their system. But if your electric bills are higher, it would shorten the break-even period.

Get quotes from the best solar panel companies near you and calculate when your solar system will have paid for itself.

Factors That Can Impact Your Solar Payback Period

The solar payback is influenced by several factors, including solar panel costs, financing, installer rates, credits and rebate incentives, solar renewable energy certificates (SRECs), electricity consumption and rates. We'll delve into each one so you understand its impact on the payback period.

Initial Costs of Your Solar System

The overall cost of your solar setup is determined by the equipment and components purchased for your solar system. These might include the following.

- Solar panels
- Roofing racking systems
- Ground mounts
- Inverters
- Solar battery storage systems
- Performance monitoring and tracking systems

Financing Methods

Paying in cash means you'll invest more money upfront, but it offers the highest return on your investment and a faster recovery time. On the other hand, taking out a solar loan reduces initial costs, but the interest you pay raises the total amount you pay. Both options are eligible for solar incentives that cut down your installation costs.

Another financing option is a solar PPA, an option to lease your solar system from the installer. Since you don't own your system, there won't be a payback period.

Solar Installer Rates

Costs vary among installers depending on several factors. These typically include the equipment the company uses, the services it provides and local labor rates that fluctuate state by state, depending on the cost of living. As a given, labor costs in metropolitan areas tend to be higher than in rural locations.

Solar Incentives and Tax Breaks

Homeowners can take advantage of federal, state and local incentives and rebates when they pay for their system out-of-pocket or with a solar loan. In 2023, the federal tax incentive is 26 percent, a healthy chunk of the total system price, accelerating the payback period. State and local-level incentives include state exemptions and property taxes.

You can find an extensive list of financial incentives by state in the American Council for an Energy-Efficient Economy (ACEEE) database.

Net Metering

Net-metering programs offer the opportunity to sell your unused energy back to the grid. These are earned and sold in what's known as Solar Renewable Energy Certificates (SRECs). Keep in mind that SREC

value fluctuates according to market demand. These benefits vary by location. Some states don't participate in net metering.

Monthly Electric Expenses and Consumption

The amount of electricity your household uses monthly, as well as the cost of electricity in your area significantly influences your solar payback period. The higher your electric bill, the greater the savings and the faster you'll reach your payback period. Homeowners in regions with higher-than-average rates benefit more from solar energy than residents with lower rates, which experience fewer savings and extended payback periods.