

# Solar Leasing for Colorado Homes

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Consumer Series | Energy

by C. Weiner\*

A residential solar lease is a contractual agreement between a homeowner and a solar provider in which the homeowner leases solar photovoltaic (PV) panels from the provider for generating electricity. Under the terms of the lease, the homeowner is typically responsible for making monthly payments to the solar provider in exchange for the installation of and electricity generated by the panels and the insurance and necessary repairs of the PV system. The PV system is tied into the utility grid in order for the solar provider (and ultimately the homeowner) to take full advantage of financial incentives.

## Lease or Own?

One of the most attractive features of a solar lease is that a homeowner can put as little as zero money down on the system. On the other hand, purchasing a system even with a bank loan usually requires at least some down payment. Some homeowners are adverse to or unable to get a bank loan for this purpose. In addition, a 10-year bank loan can result in relatively high monthly payments for a system that lasts 20 years or more. Purchasing a solar PV system with cash can require upwards of \$10,000.

Another attractive feature of a solar lease is that the contract usually holds the solar provider responsible for performing any required maintenance on the system including replacing inverters and other parts. The solar provider has an incentive to make sure the system is operating well because they guarantee a minimum annual level of electricity generation and pay the homeowner a pre-determined price for every kilowatt-hour below that minimum should it not be reached. The solar provider also covers insurance for the system.

Table 2 at the end of this fact sheet provides a fuller list of considerations that will help you decide if leasing or owning is right for you.

## Analyzing Lease Costs

Costs associated with a solar lease contract can be broken into four parts:

1. Initial payment—Solar providers usually will not require any minimum down payment. Monthly payments will decrease as initial down payments increase. Those looking to pay less than their current monthly electric bill starting in the first month of the lease contract may have to put at least some money down.
2. Monthly payment—The monthly payment is the amount you will pay the solar provider every month for the first year of the contract. If there is no annual rate increase, this is also the amount that will be paid to the solar provider for the remainder of the contract (usually 20 years).
3. Annual rate increase—Some contracts will include an annual rate increase to the homeowner's monthly payments. Leases that include annual rate increases often start with lower monthly payments in year one when compared to leases with no rate increase. Even small annual rate increases (i.e. 3%) can result in large cumulative increases in lease payments in the latter half of a contract. Locking in a fixed monthly payment over the life of a 20-year lease can give you a certain peace of mind even if initial monthly payments end up greater than what you're currently paying per month for utility-provided electricity. Note that average electricity prices in Colorado have risen 7.25% per year



## Quick Facts

- Solar leasing has made solar photovoltaics (PV) more financially feasible for homeowners who are unable to or uninterested in getting a traditional bank loan.
- Under the terms of a solar lease, a homeowner is typically responsible for making monthly payments to a solar provider in exchange for the installation of and electricity generated by the panels and the insurance and necessary repairs of the PV system.
- Before signing a contract, make sure you feel comfortable with all the terms of the lease. Common, significant elements cover system performance, transfer and termination of the lease, purchase of the system, liability, environmental attributes, and amendments.
- The PV system is tied into the utility grid in order for the solar provider (and ultimately the homeowner) to take full advantage of financial incentives.

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Figure 1. Residential Solar PV

from 2007 – 2011 according to data from the U.S. Energy Information Administration.

4. Upgrades as necessary—Some homes will need to have structural or electrical improvements before solar PV panels can be installed. For example, attic trusses may need to be reinforced in order to accommodate the weight of the panels on the roof. Such costs may be “rolled in” to the lease if the upgrades are performed by the solar provider. If not, a homeowner would have to pay for the necessary upgrades out-of-pocket.

It is important to note that if a system is mounted to the roof and the roof needs to be replaced during the life of the lease, having the solar provider remove and then replace the PV system for the roof replacement can cost \$2,000 or more. For this reason it is best to install roof-mounted solar PV systems on newer roofs in good condition and/or to plan for this cost before entering into an agreement.

## Understanding Common Lease Clauses

Before signing on the dotted line, make sure you feel comfortable with all the terms of the lease. Common, significant elements of most solar leases cover system performance, transfer and termination of the lease, purchase of the system, liability, environmental attributes, and amendments.

Considering performance, it is important to compare the level of production guaranteed by the solar provider in the lease proposal to an estimate from an independent third party. The National Renewable Energy Laboratory offers an online tool called PV Watts which can be used for this purpose. To use PV Watts, be prepared to know the approximate tilt (i.e. 30 degrees), azimuth

(i.e. 180 degrees or true south), and size (i.e. 3.5 kW DC) of the proposed system. If your system would receive significant shading, this should be manually accounted for in PV Watts’s ‘derate factor’.

The guaranteed minimum electricity generated should be relatively close to the production estimated by PV Watts. Homeowners are typically responsible for trimming trees or preventing other obstructions from blocking the panels if they could affect the guaranteed minimum. Homeowners are typically responsible for the occasional cleaning of the panels to maximize electrical output.

Also note that solar PV systems generate more electricity at the beginning of their life than at the end. It is wise to assume a loss of production of about 0.5% per year when comparing the solar provider’s production estimates to your own.

Considering the status of the lease should the homeowner sell the home, a few options exist. One option is to simply transfer the lease to the incoming homeowner assuming that homeowner meets the credit requirements of the solar provider. To be eligible for a solar lease, homeowners may need a credit score of 700 or higher. A common second option is to prepay all remaining lease payments and add the value of the system to the asking price of the home. Some solar providers may even let you move the system to your new home, assuming you pay all associated costs. Another option offered by some solar providers is for the new buyer to purchase the system.

Even if the house isn’t for sale, many solar providers allow homeowners to purchase the system at the end of the lease (some will also allow for purchase of the system before the end of the lease term). The purchase prices will typically be fair market value as determined by a third party appraiser. Other options once the end of the lease term is reached include having the solar provider remove the system at no cost or extending the term of the lease.

Homeowners are generally not held liable for damage to or theft of the system unless there is gross negligence or harm is intentionally done to the system.

With respect to environmental attributes such as renewable energy certificates (RECs), the solar provider retains these rights. This means that homeowners who lease cannot later sell their RECs as some owners of solar PV systems have done. See this U.S.

Environmental Protection Agency website for more information about RECs: [www.epa.gov/greenpower/gpmarket/rec.htm](http://www.epa.gov/greenpower/gpmarket/rec.htm).

It is also important to know whether the contract can be amended and if so in what way(s). There have been cases of solar providers amending the contract to raise rates, leaving the homeowners with no recourse and financial instability.

## Other Things to Watch For

Aside from reading the fine print of a lease proposal, it is important for homeowners to feel comfortable making the long-term commitment associated with a solar lease. Questions to ask of your prospective solar provider include:

- Will the solar provider make a site visit before the lease is finalized? Some solar providers offer a turnkey service that doesn’t always include site visits prior to the final agreement and that can result in unexpected costs to the homeowner once a site visit is made.
- How do I know if my electrical system can accommodate the panels without an upgrade?
- How do I know if my roof is capable of supporting the panels?
- How long has the provider been in business and how many leases have been sold? Has the provider been active in Colorado? For how long?
- What happens to my lease should the provider go out of business?
- Who will be installing and repairing my system—is it a local solar company or other sub-contractor? Are they certified by the North American Board of Certified Energy Practitioners (NABCEP)?

## Sample Scenario

To give you a better idea of the costs and benefits associated with solar leasing vs. purchasing, a sample scenario in which homeowners are considering a typical residential 5kW solar PV system is outlined in Table 1.

In this example, the financial benefits of the solar lease option greatly exceed those of the purchase option over a 20 year period. It should be noted, however, that utility and state rebates were not factored into the purchase option and that these

may be available at the time of purchase. In addition, this simple example does not account for any value added to the home from the purchase of a system, the future value of money (due to inflation), and the possibility that the owned system lifetime could exceed 20 years. Should a homeowner own a solar PV system for 25 years, for instance, an additional \$10,795 in savings would accrue using the set of assumptions in the example. Conversely, the purchase of a new inverter (often requiring replacement after 10 years) was not factored into the solar purchase scenario.

It is also important to note that the figures used in this example were based off of recent quotations and discussions with those in the solar industry. Xcel Energy, Colorado's largest electric utility, currently

has a financial incentive system for solar leases that gets less attractive as more people sign up for leases. The highly volatile world of financial incentives can change the lease vs. purchase equation almost overnight.

Colorado State University Extension's [solar lease calculator](#) can be used to assist homeowners considering a solar lease, while our [solar PV feasibility calculator](#) can be helpful in conducting an economic analysis for ownership of a system.

## Conclusion

Solar leasing has made solar PV more financially feasible for homeowners who are unable to or uninterested in getting a traditional bank loan. Depending on the lease proposal, homeowners in Colorado

can start saving money as early as the first month of the lease, whereas most of the savings from the purchase of a solar PV system are reaped after the loan is paid off. Conveniences of leasing, such as solar provider-insurance and repair, need to be weighed against potential complications. These could include what might happen during the sale of the home and the uncertain ability of relatively new solar providers to stay in business throughout the course of the lease term.

Before entering into a solar lease, it is important to understand the specific terms offered by the solar provider and to conduct a sound, up-to-date financial analysis of one's options for solar energy. Table 2 summarizes the differences between owning and leasing for homeowners who would like to use solar PV.

**Table 1. 20 Year Financial Comparison of Leasing vs. Owning a 5kW Solar PV System**

VARIABLE	PURCHASE	LEASE
Total installed cost	\$25,000	-
Cost net federal tax credits	\$17,500	-
Down payment	\$5,000	\$500
Loan amount	\$12,500	-
Financing term	10 years	20 years
Interest rate	5%	-
Monthly payment	\$133	\$65
Annual rate increase	-	-
Total payments	\$20,910	\$15,600
20 year savings*	\$21,903	\$21,903
Net 20 year savings	\$993	\$6,303
First year of savings	Year 11	Year 4
Payback period	20 years	9 years
*Assumes 7,000 kWh offset and an electric rate of \$0.10/kWh in Year 1, a 0.5% annual electricity production decrease, and a 5% annual rate increase		

**Table 2. Factors to Consider for Leasing vs. Owning Solar PV**

Leasing Solar PV Might Be Right For You If...	Owning Solar PV Might Be Right For You If...
You have little or no money to put down	You can pay for a system in cash or you don't mind taking out a loan
You don't want to take out or don't qualify for a loan	
Your income tax liability is not large enough for you to take advantage of federal tax credits over a reasonable time frame	Your income tax liability is large enough for you to take advantage of federal tax credits over a reasonable time frame
The economics of a lease are better than the economics of purchasing	The economics of purchasing are better than the economics of a lease
You don't want to spend time on system maintenance (even though it's limited)	You don't mind performing or arranging for limited system maintenance
You feel confident in a leasing company's ability to provide services over the full course of the lease	You'd rather not rely on a leasing company for services related to your system
You are willing to risk having to purchase the system at fair market value if you decide to sell your home and cannot transfer the lease to your buyer	You don't want to risk a potential complication over the sale of your home due to a solar lease