

# Consider Residential Solar Leases Carefully [www.solar-estimate.org](http://www.solar-estimate.org)

A "Solar Lease" is when someone else owns the solar energy equipment (usually the leasing company). You pay a monthly payment to lease it for the lease term (usually 15-20 years). Often the lease payment escalates (increases) over time. These lease payments may be wholly or partially balanced by lower electric utility bills. A solar electric (PV) system produces electricity to help lower your electric bills, usually through net metering.

**How you save with a Solar Lease:** When the lease payment is less than the utility bill savings from the leased solar electric production, then you are saving money. But this situation can change, and over time lease payments can be more than the utility bill savings, costing you more money.

**If you are offered a Lease:** The single most important factor is the **utility inflation rate assumed in the lease model**. The lease model may be skewed in the leasing company's favor. And never accept a Lease with a Payment Escalator that is more than a couple percent -- it should be 0% escalation so your energy costs become "fixed", and do not continue to inflate over time.

**What a Solar Lease is Not:** A Lease is not an "investment" -- with a lease you do not have ownership of the solar assets. A solar lease is a financial commitment to a long stream of lease payments. For this reason a Lease adds no value to your property (property appreciation), and may actually reduce property value and/or be a hindrance when trying to sell your home.

## **If you are offered a Solar Lease please make sure you::**

1. understand what utility inflation rate was assumed in your sales pitch
2. understand how any Payment Escalator works
3. understand how, and under what circumstances, you can terminate the lease and/or transfer it to anyone who may want to buy your home at a later date
4. understand how any operating and performance warranties work
5. understand what final payment you are obligated to make at the end of the Lease (to own the, then old, system).
6. Ask why would you be better off with a Lease compared to a purchase with cash or a well structured loan. Why would you agree to a lease?

## **Solar Lease vs Buy with Cash or a Loan?**

**Think like an Investor:** It is usually more appropriate and advantageous to treat a solar (PV) energy system as an investment. A solar energy system is an asset. If you lease, then you do not have this asset on your balance sheet (it has not increased your wealth). Rather, a lease is just another expense you pay to use someone else's asset.

Installing a solar energy system will help lower your utility bills. Those utility savings can help offset lease payments, possibly lowering your overall monthly expenses. But in most cases you may be better off owning the solar energy system, even if you use a loan to procure the system.

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When you own the solar energy system it is your investment, and utility savings act like dividends; earnings on your investment. And with ownership you gain wealth through property appreciation: a solar energy system is an investment in your home which increases your property value. Also, with ownership you may realize additional "windfall" profits via carbon credits (SRECs), performance-based incentives and income tax advantages. Choose a lease and you only get utility savings, and a lease may actually diminish (hurt) your property value.

**In today's market, solar energy systems can be one of the best long-term investments you can make.** It's more like investing in a Bond, rather than a Stock. And a "bond" that can provide great, long-term dividends and earnings -- potentially as secure as a AAA corporate bond but with higher yields (profit). Equate an investment in a solar energy system to a AAA bond because in most cases the risk of ownership is very low (like a AAA bond): your homeowners insurance should cover the potential for damage and generous (typically 25 year) equipment warranties should cover the risk of any major equipment failure.

In contrast, a lease is **not** an investment. A lease is another expense and one that may climb (inflate) over time.

Tip: The Internal Rate of Return (IRR) used in our estimators is equivalent to the yield to maturity of a bond. The IRR on an investment is the annualized effective compounded rate of return that can be earned on the invested capital.

**Ask yourself this basic question:** Do you use a lease to procure other investments like stocks or bonds or real estate?

Solar energy system prices have come down, tremendously, over the past few years. But if a cash purchase is not practical then it may make sense to use debt (loans) to procure a solar energy system. However using a lease to install a solar energy system is often not an efficient or wise way to use your investment money.

For some investments, like real estate, you may use a loan (mortgage or other debt finance) to purchase that investment. But usually you use debt (loans) to purchase such investments because they are too expensive for cash purchases to be practical. And, because you believe the mortgaged investment will provide you a valuable asset and returns on your investment (appreciating property value).

If you lease real estate you are making a decision to rent -- not a decision to invest in an asset. So also ask yourself under what conditions you rent (lease) a home rather than own the home. And keep in mind a Solar Lease is a long-term, 15-20 year, commitment. A Solar Lease is not like a property rental agreement that provides you the flexibility to change your situation monthly or annually. So also consider when, if ever, you would legally and financially commit yourself to rent a home for 15-20 years? If you lease a solar energy system that is what you are doing.

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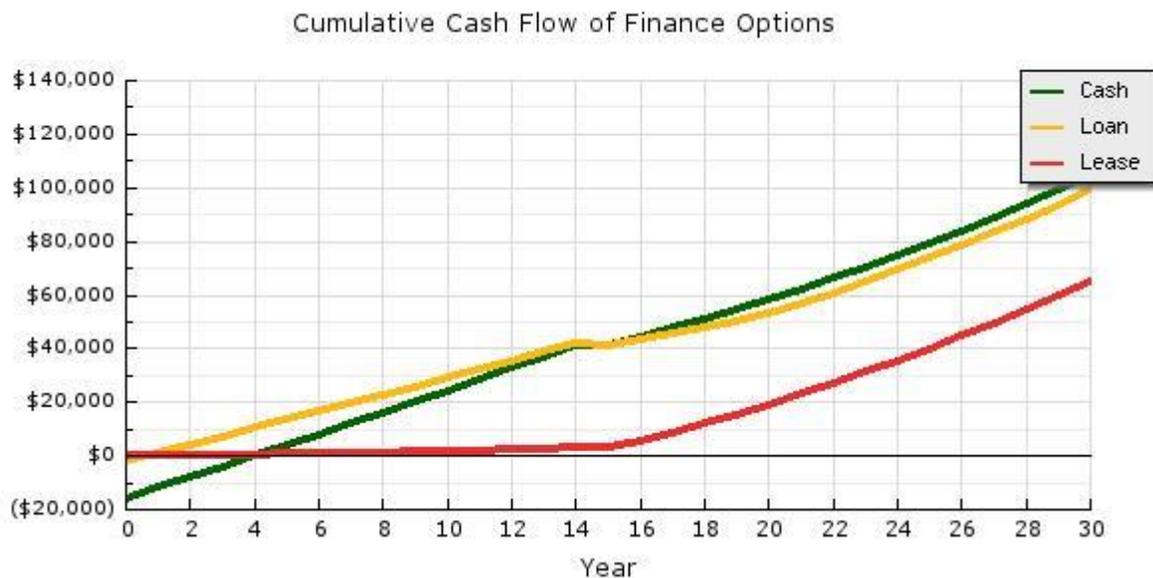
Leasing companies make generous profits. These are profits that are moved from you to the leasing company when you sign a solar lease. A lease is a long-term financial obligation that limits your ability to realize capital gains (profits) and limits your ability to use your real estate assets to your best advantage. Leases strap you, and your property, into a long stream of payments, from which the leasing company ("Wall street") makes significant profits, often at your expense.

## Pay Now or Pay More Later

Many leases are promoted as "no money down" methods to go solar. And the prospect of installing solar for "no money down" may be enticing. But be aware of the lease costs and liabilities that could come back to bite you -- a solar lease may limit or negate any financial advantages you could have gained by investing in a solar energy system with your own cash or a well-structured loan.

## Invest in Solar and Accumulate More Wealth, as Compared to a Solar Lease

**Cash flow Comparison** (typical): The following graph shows the significant wealth that can be created by investing in a solar electric (PV) system via cash and/or a loan. In this comparison committing to a solar lease results in a 40% reduction in cash gained. A solar lease drops accumulated cash savings from over \$100,000 to about \$60,000 over the life of the solar electric (PV) system. That's money moved away from you to the leasing company's pocket ("Wall street"). It is the leasing company that made the "investment", not you. By signing a lease you become the source of the leasing company's profits.



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Here is a summary of residential finance options, with typical effects of cash, loan and lease methods. Of course everyone's particular situation varies. But if you are being promoted a solar lease please consider these factors as they may apply to your particular situation:

|  | Cash                            | Loan   | Lease   |
|--|---------------------------------|--|---|
| <b>Return on Investment (typical)</b>        | Excellent                       | Good   | It's not an investment<br>It's a different expense  |
| <b>"Fixes" Your Energy Costs</b>             | Yes                             | Yes  | No, or probably not   |
| <b>Cost of Capital</b>                       | None                            | 2% - 8%<br>equivalent to<br>secured loan<br>interest rates, like a<br>mortgage | 8% - 20%<br>equivalent to unsecured<br>loan interest rates, like<br>credit cards  |
| <b>Ability to Gain Income Tax Advantages</b> | Yes                             | Yes  | No, or probably not   |
| <b>Ability to Realize "Windfall" Profits</b> | Yes                             | Yes  | No, or probably not   |
| <b>Ability to Sell your Home</b>             | Unhindered                      | Unhindered   | Limited by lease liabilities  |
| <b>Property Appreciation</b>                 | Yes                             | Yes  | Not expected.<br>May reduce your property value   |
| <b>"Fairness" &amp; Independence</b>         | You own & control an investment | You own & control an investment  | Profits shift to "Wall street".<br>Instead of making an investment you are creating a different expense - one tied more to Wall street, less to your utility. |
| <b>System Maintenance</b>                    | Under your control              | Under your control   | Beware  |

**Return on Investment:** Leases limit your ability to realize profits from utility savings. Often solar leases have annual "escalators" that cause your lease payments to increase over time (i.e. your electric costs

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continue to climb). Unless utility rates rise faster than your solar lease payments you will realize diminishing returns with a solar lease. Leasing company profits are "built in" to a lease - this is profit shifted from you to the leasing company.

**"Fix" Your Energy Costs - Leases and Lease Escalators work against you:** If you purchase your solar electric (PV) system with cash and/or a loan your payments for that investment are "fixed". This means the cost of producing solar electricity does not change over the life of the solar energy system. With a Lease escalator, the cost of your solar electricity is rising over time. Therefore lease payment escalators work against you: the cost (expense) of your solar electricity is rising over time with a lease. This diminishes your cost advantages and becomes more like the utility energy you are trying to displace with solar energy.

Historically utility rates have inflated at or slightly above general inflation rates (3%-4% average over 10 years), and in many markets utility rates have actually had DEflation (gone down). If you sign a solar lease this is long-term financial commitment. So ask yourself, how likely is it that utility rates will rise significantly faster than lease payments over those many years of lease payments (typically 15-20 years). For a benchmark comparison, think about the upper fringes of what consumers tolerate -- medical expenses have risen at about 5%-6% (annual average) over the past decade (about twice that of consumer price inflation). So how likely (or unlikely) is it that utility rates will rise faster than this? or faster than historical averages of 3-4%? Always check the assumptions used by the lease salesperson to see if they are reasonable: **The single most important factor is the utility inflation rate assumed in the lease model.** If it is more than about 4%, do some homework: the [Energy Information Agency](#) and [Bureau of Labor Statistics](#) provide independent reports on energy prices and inflation rates. Your utility company will also have data detailing how their electric rates have changed over the past decade, or longer. Use this as a guide: solar is a long-term investment, so reference long-term rate inflation trends, not short-term spikes.

Sometimes a lease company will offer a utility bill savings "guarantee". But any savings that may be guaranteed in a lease are usually less than you would realize if you owned the solar energy system. A rising lease payment is virtually the same as having utility energy rates that inflate -- not what a solar energy system is supposed to do for you. Purchasing a solar electric (PV) system should be considered an investment that "fixes" your energy prices, not continues to inflate your energy costs.

**Cost of Capital:** Leases can be expensive. If you were to get a loan equivalent to a Lease you could be paying 8% - 20% interest, typically.

**Ability to Gain Income Tax Advantages:** If you purchase your solar energy system with a loan, that loan interest is usually tax deductible (mortgage interest deduction). Lease payments, on the other hand, are expenses that are not tax deductible. And the money you will save on your electric bills is money "in your pocket" that could be invested in a tax-deferred account (like an IRA) -- those utility bill savings are usually higher if you own the solar energy system rather than lease.

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**Ability to Realize "Windfall" Profits:** If you own your solar energy system, this is an asset (an investment) you control. New markets are developing which allow you to sell "carbon credits" (sometimes called SRECs) realized by producing renewable energy. There are also "Performance-based Incentives" (PBIs and Feed-in Tariffs) available which may allow you to earn income from your solar production. However if you sign a solar lease, the leasing company (not you) will most likely be the recipient of any such benefits to earn additional profits from the solar electric production.

**Ability to Sell your Home & Property Appreciation:** Leases are long-term financial liabilities. If you want to sell your home during the lease term the buyer will need to assume those lease payments. This may be a hindrance, and perhaps a deal breaker, when trying to sell your home. For this reason, the presence of a solar lease may actually lower the value of your home. On the other hand, if you purchase your solar energy system, it is then an asset that can improve your property value (property appreciation).

**About System Maintenance:** During the term of an operating lease, the leasing company is supposed to insure the system operates properly. However this is a benefit of little value (modern solar systems are largely "maintenance free"), and may actually be a liability in the longer term: The leasing company "operates" the solar energy system for 15-20 years (or whatever is the lease term). However the likelihood of solar equipment failing during that term is negligible. Yet for a lease company to maximize its profits, they will minimize the cost of equipment and labor to install and maintain the system. This may mean "cheaper" equipment is being installed. Hopefully this is not the case, but that motivation is there for the leasing company. When the lease term ends, you may be on the hook for that equipment and the leasing company walks away (after you pay more to the leasing company to buy the system at the end of the lease). On the other hand if you purchase your own solar energy system then you have total control over the selection of the equipment (i.e. you can pick reputable brands and installers) which may help insure long, reliable system operation, thereby maximizing your profits and financial returns.

**Ability to Realize Savings from future Energy Efficiency Investments:** Once you sign a solar lease your home energy bills are largely fixed for the term of the lease (in the form of lease payments). If you later decide to improve your home's energy efficiency, you will lower your energy use. But with a solar lease your lease payments will not be reduced. So why invest in energy efficiency if you will realize limited, or no, reduction in monthly payments for saving energy? Energy efficiency improvements are one of the best ways to reduce your energy costs, and leases may work against you here. Learn more about [Energy Efficiency](#) improvements. Also, a more minor point, but if you go away (perhaps vacation) your electric use should go down significantly while you are away, but you will still need to pay that lease payment.

If you own the system any loan payments you make are made toward your investment (which increases your home equity and owning the system appreciates property value). Also, by owning the system (not leasing), you should find you have more control over modifications to your system, so that its size (production) best matches any changes in energy appetite. For example, you could start with a smaller system and then expand it as may become desired, or invest in energy efficiency measures to reduce your overall electric usage, further enhancing the value of your solar investment. Also, by purchasing

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your solar energy system, be it with cash and/or a loan, you should have a greater profit margin and thereby find yourself with greater overall control (and financial assets) to meet your changing needs whatever they may become.

### When does a Solar Lease make sense?

For residential consumers that want to "go solar" without making any up-front investment -- a "no money down" approach -- a solar lease might make some sense. However you can also achieve this with a well-structured loan and get the benefits of ownership.

There are "pre-paid" leases where you pay an up-front lump sum and then have no monthly lease payments thereafter, for the term of the lease. This is somewhat like buying a system in that it requires an up-front expenditure of cash, but actually what you are buying is pre-paid electricity. It is still a lease and therefore you do not own the system or realize any of the advantages of ownership, but still have most of the disadvantages of a lease.

Perhaps you want a solar (PV) system but do not have the necessary cash or limited access to well-structured loans. Or perhaps you cannot take advantage of solar-related tax credits or tax deductions because you do not make enough money/profit to use tax credits and deductions (or you are a nonprofit organization). Then maybe a solar lease is the only way you can make it happen now (i.e. afford it now).

If you want to install solar for largely **non**-financial (investment) reasons then a solar lease may make sense for you. "Non-financial" reasons could include such things as the desire for energy independence (from the utility), or you want to "be green", or you want to "keep up with the Jones" (i.e. enhance your "image").

Or, perhaps you do not have the time or patience and just want someone else to "take care of it all" for you. That may be a rather unwise and hasty position to be in when confronting such a significant and important investment. Solar energy systems typically have 25-30 year operating lives with little or no maintenance required. What little effort it may take you to gain ownership pales in comparison to the long, relatively effortless life of this investment. Ownership has its rewards.

A lease may help minimize up-front capital needs, tasks and decisions. But remember, it is a choice to "pay now, or pay (more) later".

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This general and brief summary is applicable to residential solar leases. It is based upon typical scenarios (does not cover all scenarios) and other factors may influence your decision. For non-residential (commercial) lease programs other factors may apply.