HOMEOWNER'S GUIDE TO SOLAR ENERGY

Developed by
A Climate to Thrive

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ACTT
A Climate to Thrive

Owning solar versus purchasing electricity from Versant Power is comparable to the difference between renting and buying a home.

When you purchase a solar array, each monthly payment builds equity, unlike your monthly utility bills.

In many cases, you can finance your array so that your monthly payments are lower than your average monthly electricity bills would be (creating immediate savings).

The price of electricity through the utility is volatile and uncertain, as we have seen through multiple rate increases in Maine over the last several years. Maine currently has the second highest electricity costs in the country, second only to Hawaii. Owning your electricity supply insulates you from future electricity rate hikes. **When you purchase a solar array, your electricity cost is fixed for the lifetime of the system (25+ years).** For these reasons, solar ownership is a great way to take control of your long-term energy costs.

How does solar work?

Solar panels are installed on your roof and connect directly with your home's electrical system. When the sun is out, the solar panels generate electricity that flows directly into your home. The solar electricity flows to your electrical loads (heat pump, heat pump water heater, EV charger, etc.). If you generate more power than you need at any given time, the excess power is sent to the utility grid and supplies your neighbors with power.

How will solar impact my electric bill?

Because of Maine's 2019 legislation allowing for net metering, also known as **net energy billing**, you earn credit for the energy you export onto the grid. At the end of each month, Versant Power compares how much power you export to the grid with how much power you import, and the net energy billing credits are then applied to your bill. **If you generate more than you use in any given month, the credits are banked and can be applied to your next utility bill or bills for up to 12 months.**

How do I know what size system I need?

In our region, **1kW of solar will conservatively produce about 1,200-kilowatt-hours each year**. The residential rate of electricity in Versant Power territory is $.28 per kWh as of February 2022. If you have an average bill of $200 then your calculation looks like this:

$200 ÷ $.28/kWh = 714.29 kWh per month
714.29 kWh/month * 12 months = 8571.43 kWh per year
8571.43 kWh ÷ 1,200kWh= 7.2 kW solar array

How much will the system cost?

The cost of solar depends on the size of the system and how you choose to finance your project. In Maine, the current average cost of rooftop solar is between $3,400 and $4,000 per kW. The average system in Maine is between 5-9kWs and the total cost ranges between $17,000-$36,000. **Homeowners can take advantage of the federal solar Investment Tax Credit (ITC), which was recently increased to 30%**, and will remain in place through the end of 2032. Using the calculation above for an 7.2 kW solar array, here is how you would calculate your cost:

Your cost **before** applying the 30% tax credit would be 7.2kW*$3,700/kW= $26,640.
Your cost **after** accounting for the 30% Investment Tax Credit would be $26,640*.7= **$18,648.**

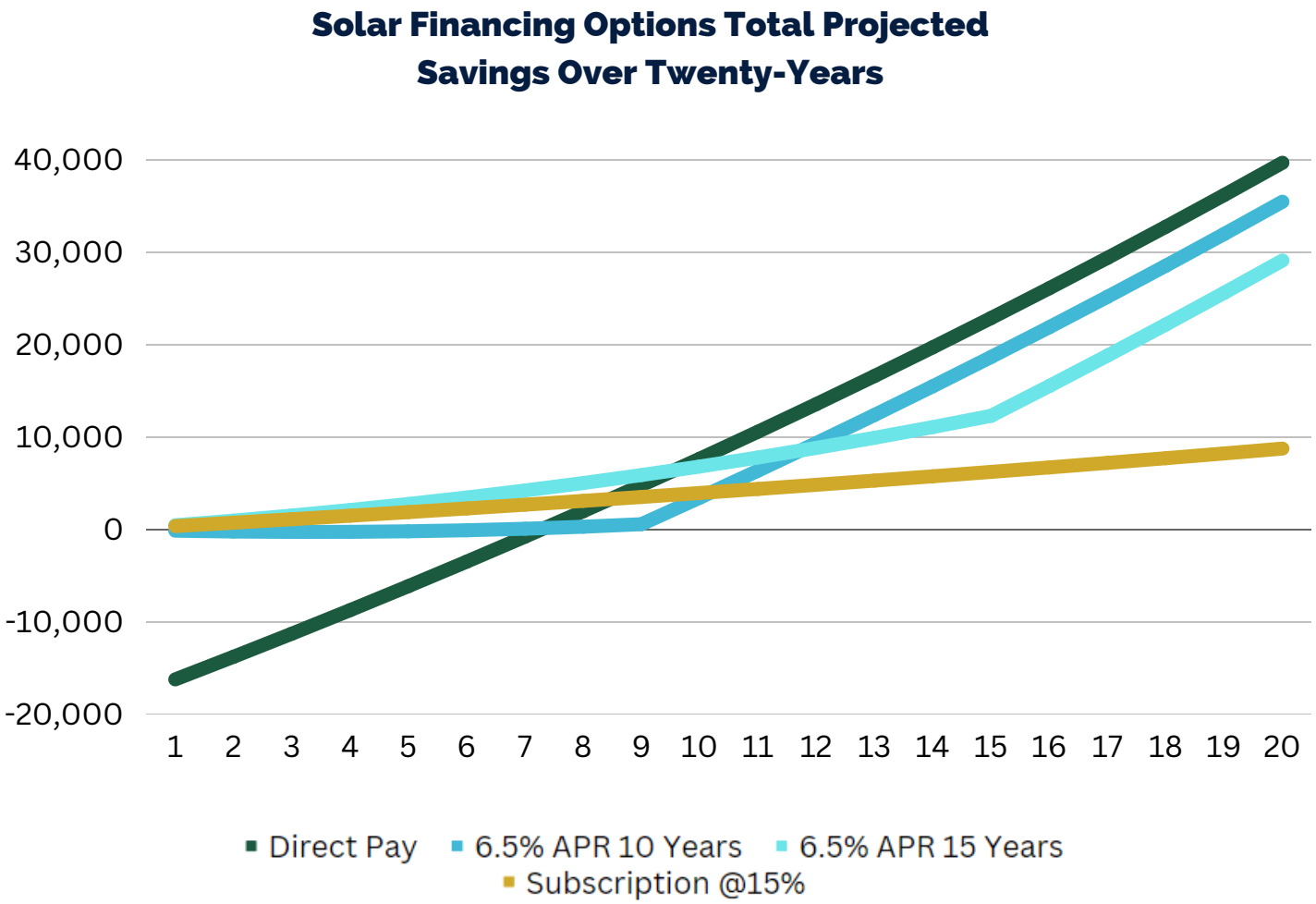
Comprehensive approach tip:

However, in addition to your current electricity use, consider the electricity loads you plan to add in the future. For example, do you plan to add an electric vehicle or heat pump? If so, consider sizing your solar array to accommodate anticipated future needs.

Financing Your Solar Array and Calculating Savings

Not everyone can afford to pay cash for a new solar array. Home equity loans typically offer the best interest rate for community members, however, local installers may have solar financing options available. Be sure to compare the length of the financing agreement and interest rates, as both will impact the payback period.

Solar offers consistent long-term savings on electricity over the lifetime of your system, regardless of utility rate hikes. Below is a graph that demonstrates the savings generated from a 7.2 kW system based on individual financing methods.



In this example, over a 20-year period the homeowner would save $39,720 by paying for the array outright; $35,500 by taking out a 10 year 6.5% interest loan; or $29,100 by taking out a 15 year 6.5% interest loan.

Similar to mortgages, a longer loan term allows for lower monthly payments but you'll pay more in interest over time. A shorter loan term will allow you to pay off the array faster, but the payments will be higher. However, the faster the array is paid off, the more substantial your long term savings will be.

You can use a loan calculator to find out what your monthly payments will look like based on the interest rate and length of the loan. This tool will allow you to compare your expected electricity savings to your anticipated monthly payments.

Year One Savings Calculation: (Expected annual electricity savings) - (Monthly loan payment*12 months)= Net Savings for year one*

For a 15-year loan for $18,648 with a 6.5% interest rate, the calculation for year-one savings is:

$2,400 (annual electricity costs without solar ownership) - $162.44 (monthly loan payment)*12 = $450.72 Year One Net Savings

Notice that in this example, **even while paying off the loan, the monthly payment is lower than the monthly electricity bills would have been, so the savings are immediate.**

*Note that each year these calculations will shift slightly based on the price of electricity and an annual 0.5% loss in solar panel efficiency.

What about community solar subscriptions?

You have likely received solicitations in the mail selling subscriptions to solar farms. While these solicitations often call this option "community solar", it is important to understand that these large-scale solar arrays are owned by investors, often located outside of the community, and do not build long-term local equity. For this reason, ACTT refers to this option as the "investor-owned subscription model".

Through the investor-owned subscription model, net energy billing credits produced by the large-scale arrays are sold to homeowners. The subscribing homeowner receives a small discount on their monthly energy bill, typically between 10-15%.

If you are interested in solar to reduce your greenhouse gas emissions, it's important to understand that the **power you purchase from a community solar farm is not technically "clean energy."** Community solar farms in Maine sell the "renewable energy certificates", or greenness of the power, separately. The Renewable Energy Certificates (RECs) from the solar farm are sold to a third party who use the RECs to claim that their electricity is "clean." Utilities often purchase RECs to comply with requirements for the minimum amount of renewable energy they are required to supply their customers. By purchasing Renewable Energy Credits, these utilities are able to continue generating electricity through polluting sources (such as natural gas and coal) while still meeting their clean energy requirements. Because of this system, **the energy you purchase through a community solar farm does not necessarily have lower greenhouse gas emissions.** You can read more about Renewable Energy Credits in this Maine Monitor article.

Community solar subscriptions

However, if solar ownership is not an option, solar subscriptions can be a viable option for renters or as a stop-gap way to support solar development while waiting for the opportunity to own an array. **Long term, owning a rooftop array is the most financially beneficial and transparent solar option**. For those who are unable to site solar on their own property, true community solar farms, or those that offer actual ownership to homeowners, are the next best option.

There are many companies selling subscription solar to Maine homeowners, including NextAmp, PowerMarket, and Ampion. For those for whom subscription is the best way to go solar, ACTT tends to recommend NextAmp or PowerMarket as both develop their own arrays and manage subscribers, while others act as middlemen between solar developers and subscribers.

If you are considering entering into a solar subscription agreement, here are some important questions to ask:

1. **When will I begin receiving my net energy billing credits?**
2. **How much notice do I need to give before I can cancel?**
3. **Where is the solar array located?**
4. **Has the solar array been interconnected with Versant Power's grid?** If not, when do you realistically expect the array to be interconnected? Overpromising on interconnection speed is not uncommon and many larger arrays are experiencing significant wait times for interconnection.