

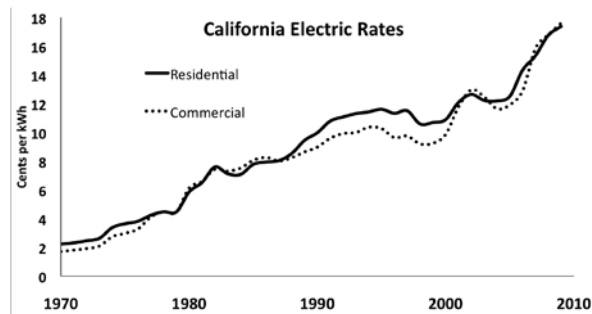
Financial Return of a Photovoltaic System

There is no other investment out there that can touch the return of a PV system. Let's consider a residential example. We'll discuss commercial PV systems further down in the document. (Remember that every system is different, and this is just one example.)

There are great rebates and tax credits for the installation of PV systems. The State of California offers a California Solar Initiative rebate, which is paid directly to the customer up front. And the Federal government offers a 30% tax credit. This tax credit is not a deduction, but a true, dollar-for-dollar tax credit, with no dollar cap.

Suppose your household uses about 1,300 kWh per month. This is about a \$350 per month electric bill. You could install an 8 kW PV system costing about \$52,000, and have a zero bill as long as you live in the house. After California rebate and Federal tax credit, your net cost for the system would be about \$35,000.

So in year 1 you save \$350 per month, or about \$4,200 per year. Electric rates tend to go up over time, and the average rate of increase from 1970 to 2000 was 5.4% per year, as shown in the chart below. Since 2000, rates have risen more steeply. But let's use the 5.4% per year figure, to be conservative.



Sources: Energy Information Administration, PG&E

In year 2 you will save $\$4,200 \times 1.054 = \$4,427$. In year 3 you will save \$4,666, and so on. After about 6.7 years, your PV system has paid for itself.

Since you have a 25 year power output warranty on your solar panels, you have lots of years left to make a great profit on your PV system. In this example, over 25 years, you save \$225,000 on your PG&E bill. And remember, every dollar of this profit is tax-free.

If you figure out the simple return of this \$225,000 on your investment of \$35,000, it is a 20% per year return. That's a pretty good ROI (Return on Investment)! Consider that other tax-free investments, such as muni bonds and Treasury bills, are returning between 1% and 3% per year.

Suppose you don't have \$35,000 to invest in a PV system? You can finance your PV system with a Home Equity Line of Credit, and you make almost as much money as paying cash. In this example, suppose you have a line of credit at 5.75%, and you use it to purchase your PV system, and pay it off over 15 years. Your PV system is cash flow positive from the day it is turned on. In year 1, the system generates \$1,770 in cash. In year 2 it generates \$1,930 in cash, so now you are ahead by \$3,700. Over 25 years, the system generates \$177,000 in tax-free cash, and you didn't take a penny out of your pocket. Now that's a good investment.

The PV system also adds value to your home. These days, homes with PV systems are desirable, especially if the PV system is well installed, looks good, and is designed with high quality, nice, all-black solar panels, such as SunPower. In the example above, the system adds \$89K to the value of your home.

And finally, this is not even considering RECs (Renewable Energy Credits). Some people call these carbon credits. RECs are not yet active in California, so we don't know what the rate per kWh will be, but they are coming. In other states where RECs are active today, RECs are trading for up to \$0.65 per kWh generated. In the above example, this translates to an additional \$8,000 of income per year, for the life of the system.

If you are considering a commercial PV system, you also may depreciate (write off) your system using MACRS (Modified Accelerated Cost Recovery System). This is an accelerated writeoff offered by the Federal government, as well as by California, to encourage the adoption of PV systems. Even though the PV system has a 25 year life, you can depreciate the system in just 6 years. And the rate at which you depreciate the system is front-end loaded, with 60% of the writeoff in Year 1, 16% in Year 2, 9.6% in Year 3, 5.76% in Year 4, 5.76% in Year 5, and 2.88% in Year 6.

And in certain specific circumstances, the Federal government lets you write off the full 100% of the basis in Year 1.

So in summary, PV systems are an incredible investment.

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