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Solar Power – An Economic “No Brainer”

In past columns of Going Green I've given examples of the cost-effectiveness of going solar. Today the details have changed but the answer is still the same. While rebate levels have dropped, so have prices, so solar power is still an economic “no brainer” for most people. Let's look at an example to see why.

Let's assume you have an average monthly electricity bill of \$125/month or \$1,500/yr. In this case solar would save you more every month than it cost. Secondly, it would give you a return on investment of about 16.6%. Try finding any other investment with no risk at anything close to that return! If your electricity costs average more than this, your investment would be even more attractive (I'll give another example later). And lastly, the solar would add far more value to your home than you paid for it if you decide to sell. Let's take a look at the details to see why this is all true, verifiable and bankable!

OK, you're thinking, there's got to be a “catch”. Well, you're right, like any other investment the first rule of investing is “it takes money to make money”. But the great news in this case, unlike any other I can think of, is it pencils out with borrowed money. Secondly, you've got to have a sunny location.

The size of your electric bill is another factor; if your average bill is lower the economics won't be as attractive, but if your average bill is higher it'll look more attractive. Keep in mind this is but one example. Every home is different when it comes to things like say a partially shaded roof, a roof that doesn't face true south, the cost of installation, the equipment you choose, etc. But that's where companies like ours and other local companies come to the rescue with free site visits and proposals. The cost of installation and the quality of the installation will vary, but it definitely pays off and it only requires a few hours of your time to shop around.

Our example assumes a system consisting of 24, 205 watt solar panels, a 5,000 watt inverter and that you have a south facing roof with an 18 degree slope. The initial cost of the system in this case is assumed to be \$24,600, or an even \$5/watt. This is a little higher than what our systems have actually been costing lately, but it's a nice round number. Additionally, we typically carry the rebate and that would take \$1,377 right off the top.

So let's assume you have the ability – and willingness - to borrow the remaining \$23,153 against your home for 15 years at 7%. When you file your taxes you would get the 30% Federal tax credit (\$6,946), so your total cost would be reduced to \$16,207. Your annual electricity bill in the first year is now \$124 instead of \$1,500. But in addition to the tax credit, you'll also get a \$387 tax deduction at the end of the year for interest paid on your loan. So after adding up all the costs (\$1,748 for the loan) and savings (\$1,377 on electricity and the \$387 tax deduction) you've saved a total of \$16 for the year. But that's just the first year. In subsequent years your savings will continue to rise (see table).

Your savings increase because we're guessing PG&E rates will increase an average of 6%/yr in the future. This is a conservative guess given electric rates in California have actually increased 6.7%/yr on average over the past 30 years. It's more likely they'll increase at a higher rate over the next 30 years (the period covered in the table). As you'll also notice from the table the mortgage interest deduction ("tax effect loan") goes down over time, reflecting the fact that you're paying less interest as the loan is paid off. So the net effect of this solar investment example is a continuous drop in your

annual household operation costs and a better return on investment than you'll find anywhere else.

Year	Electric Bill Savings	Loan Payment	Tax Effect: Loan	Net
2011	\$1,377	\$(1,748)	\$387	\$16
2012	\$1,460	\$(1,748)	\$371	\$83
2013	\$1,547	\$(1,748)	\$354	\$153
2014	\$1,640	\$(1,748)	\$335	\$228
2015	\$1,739	\$(1,748)	\$316	\$307
2016	\$1,843	\$(1,748)	\$295	\$390
2017	\$1,954	\$(1,748)	\$272	\$478
2018	\$2,071	\$(1,748)	\$248	\$571
2019	\$2,195	\$(1,748)	\$222	\$669
2020	\$2,327	\$(1,748)	\$194	\$773
2021	\$2,466	\$(1,748)	\$165	\$883
2022	\$2,614	\$(1,748)	\$133	\$999
2023	\$2,771	\$(1,748)	\$98	\$1,122
2024	\$2,938	\$(1,748)	\$62	\$1,251
2025	\$3,114	\$(1,748)	\$22	\$1,388
2026	\$3,301	\$0	\$0	\$3,301
2027	\$3,499	\$0	\$0	\$3,499
2028	\$3,709	\$0	\$0	\$3,709
2029	\$3,931	\$0	\$0	\$3,931
2030	\$4,167	\$0	\$0	\$4,167
2031	\$4,417	\$0	\$0	\$4,417
2032	\$4,682	\$0	\$0	\$4,682
2033	\$4,963	\$0	\$0	\$4,963
2034	\$5,261	\$0	\$0	\$5,261
2035	\$5,576	\$0	\$0	\$5,576
2036	\$5,911	\$0	\$0	\$5,911
2037	\$6,266	\$0	\$0	\$6,266
2038	\$6,642	\$0	\$0	\$6,642
2039	\$7,040	\$0	\$0	\$7,040
2040	\$7,462	\$0	\$0	\$7,462

I should point out that a lower electricity bill wouldn't look as attractive and, conversely, a higher bill would look more attractive. For example a solar system to offset a \$250/month average bill would save you \$778 in the first year and give you a return of 21.2%. The bottom line is we have a choice these days – either send increasingly more and more of our money each year to PG&E, or send less and less by going solar!

This example shows how Solar Power saves MORE than it costs, with increasing savings every year, and that it pencils out even in the case of a relatively small electric bill!

Let's take a look at what the value of your solar system might be down the road, should you decide to sell your home. A major new study of nearly 2000 California

solar homes that sold recently found the solar added an average of \$5.50/watt to the resale value (note: the cost after the rebate and tax credit in our example is \$3.29/watt). It also found the resale value ranged from 14:1 and 22:1 times the estimated annual electricity cost savings; in this example that's at least \$19,278 for a system that cost \$16,207 after incentives (at 14 times \$1,377/yr savings). A 2-page summary of the report's key findings can be found at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-4476e-rs.pdf>

The full report can be downloaded from: <http://eetd.lbl.gov/ea/emp/reports/lbnl-4476e.pdf>

So if you're one of those folks that have been waiting for the right time to invest in solar let me be the first one to ask you "what have you been waiting for?". The sooner you invest the sooner you'll start saving!

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