



Energy Retrofits for Immediate Payback

Did you know that you can retrofit your home or commercial building and get immediate savings with no out-of-pocket investment? There are hundreds – maybe thousands - of building owners in Nevada County that have taken this approach, and more are going this direction every day!

If you're an accountant or, if you aren't, you know and trust someone who is, they'll explain how this is a "no brainer". There's only one caveat, and that is "it takes money to make money" but the twist in this case is you don't need to spend cash on hand to make it work. The exceptions are the small percentage of folks that don't pay taxes, people that are "upside down" on their mortgage, or people that don't own any real estate at all.

If you're a regular reader of this column you've been introduced to this concept before. And if you're an accountant or investment advisor you know, and can explain to others, why you wouldn't take this approach with most any other investment other than an energy retrofit. Let me briefly explain how it works.

First you need to identify your funding source, which is typically the property you own. Go to several banks (I recently tried four for my own home) and see who will give you the best HELOC (home equity line of credit). Knowing how much you can borrow will help determine which retrofit opportunities will give you the best return on investment and earliest "positive net cash flow". Another option that has been implemented in Placer County (and hopefully Nevada County soon) can loan you the funds you need for efficiency or solar retrofits at 7.25% (<http://www.mpowerplacer.org/>).

Secondly, and long before signing a contract with anyone, you need to educate yourself a bit and shop around to find the retrofit options that will be in your best interests and best fit your needs. I recommend you speak with energy retrofit specialists as well as solar companies because, as I've said before here in "Going Green", a mix is usually best, but exceptions abound. Knowing the costs and benefits (financial and otherwise) of the range of options best suited to your specific situation, given the funds you have access to, is crucial (that's why I've specialized in both efficiency AND solar for over 30 years – one solution does NOT "fit all")! In addition to the Yellow Pages and (best choice) referrals from people you know and trust, here are two resources for finding local specialists.

Energy efficiency - <http://www.energysavvy.com/contractors/>

Solar energy - <http://www.gosolarcalifornia.ca.gov/database/search-new.php>

Now let's look at an example. A residential homeowner came to us asking about solar power. They had already spent tens of thousands of dollars on energy efficiency with several other companies, but still have an average monthly electric bill of almost \$200. A solar electric system capable of completely eliminating their electricity cost would cost \$28,900 after incentives. On the surface, a 12 year "simple payback" (\$28,900 divided by \$2,342/yr savings) doesn't look particularly attractive, but then it doesn't account for the fact that electricity costs will increase about 6% every year either, does

it? It also doesn't account for the 15 year loan at 7% they've got to take out to fund this adventure, but then it all doesn't account for the mortgage interest deduction either! This is where an accountant, investment advisor or energy specialist comes in! While we can share the gory details of all the calculations with you if you like, here's the bottom line. This system will save more, from the first year forward, than it costs (see table). While it only saves a (net) \$4 the first year, it saves more and more in following years because electricity costs keep going up, and the loan payment stays constant while the mortgage interest deduction ("tax effect loan" in table) decreases.

Year	Electric Bill Savings	Loan Payment	Tax Effect: Loan	Net
2010	\$2,342	\$ (3,117)	\$780	\$4
2011	\$2,482	\$ (3,117)	\$747	\$113
2012	\$2,631	\$ (3,117)	\$713	\$227
2013	\$2,789	\$ (3,117)	\$676	\$348
2014	\$2,956	\$ (3,117)	\$637	\$476
2015	\$3,134	\$ (3,117)	\$594	\$611
2016	\$3,322	\$ (3,117)	\$549	\$754
2017	\$3,521	\$ (3,117)	\$500	\$904
2018	\$3,732	\$ (3,117)	\$448	\$1,063
2019	\$3,956	\$ (3,117)	\$392	\$1,231
2020	\$4,194	\$ (3,117)	\$332	\$1,409
2021	\$4,445	\$ (3,117)	\$268	\$1,596
2022	\$4,712	\$ (3,117)	\$199	\$1,794
2023	\$4,995	\$ (3,117)	\$125	\$2,002
2024	\$5,294	\$ (3,117)	\$45	\$2,222
2025	\$5,612	\$0	\$0	\$5,612
2026	\$5,949	\$0	\$0	\$5,949
2027	\$6,305	\$0	\$0	\$6,305
2028	\$6,684	\$0	\$0	\$6,684
2029	\$7,085	\$0	\$0	\$7,085
2030	\$7,510	\$0	\$0	\$7,510
2031	\$7,961	\$0	\$0	\$7,961
2032	\$8,438	\$0	\$0	\$8,438
2033	\$8,944	\$0	\$0	\$8,944
2034	\$9,481	\$0	\$0	\$9,481
2035	\$10,050	\$0	\$0	\$10,050
2036	\$10,653	\$0	\$0	\$10,653
2037	\$11,292	\$0	\$0	\$11,292
2038	\$11,970	\$0	\$0	\$11,970
2039	\$12,688	\$0	\$0	\$12,688

The other way to look at the economics in this case is the "return on investment" which, in this case, is 16.1% over 30 years (stock market returns over the last 30 years have averaged about 7% after taxes). If they had paid cash instead the return would be 14.3%! A smaller system that cost less would have an even higher return. You're probably getting the idea by now – there are even alternative investment opportunities to consider within a single retrofit option such as solar power!

Keep in mind that, while this example is solar power, the same economic analysis approach can – and should be - used for energy efficiency, solar water heating, etc. Using the same approach to calculate the economics for your various alternatives will yield comparable results from which you can make the

best decisions. And whether it's efficiency or solar, the economic benefits can be higher or lower depending on your specific situation. Also keep in mind that many efficiency options have the potential to increase comfort and resolve pre-existing health or safety issues; for example solar electricity won't eliminate unhealthy air leaking into your living space from an attic or crawlspace!

Lastly, this isn't simply a way to make a high return on investment or cut your monthly energy expenditures. This is also a way you can help eliminate our country's trade deficit, reduce our dependence on foreign energy sources, enhance national security, and reduce environmental impacts. In terms of environmental impacts, the solar example above provides the same carbon-removing capacity of over 1.5 acres of trees! A recent study comparing the Gulf oil spill to home energy retrofits (<http://www.energysavvy.com>) found "The energy contained in the biggest oil spill in U.S. history is equal to the energy that just 75,000 homes waste in a single year". So you'll also be helping to reverse the sort of consequences we're seeing in the Gulf from the comfort of your home or business in Nevada County. So be sure to ask about benefits other than just the economic ones to really get the Big Picture!

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