

Don't go broke going green!

Do it right, and build a college fund doing it

By V. Rory Jones and Steve Malloy | October, 2009



Few people realize that it is possible to go green at home – AND make lots of money doing it. The irony is, if you are in the PG&E service area in California, the amount of wealth you can make for yourself rises disproportionately with the size of your utility bill. For those with average monthly energy bills of \$300 or more, there is a great likelihood that you can create a nest egg of \$40,000 or more for yourself with relatively little effort in just 10 years. That's enough to pay for the average college education!

So, how can you make this work for you – reducing your carbon footprint by hundreds of tons while creating a sizable college or retirement fund? Surprisingly, it needs only a little investigation, some thinking, and the conviction that you want to do the right thing. This article looks at how this phenomenon has come about, and what you need to do.

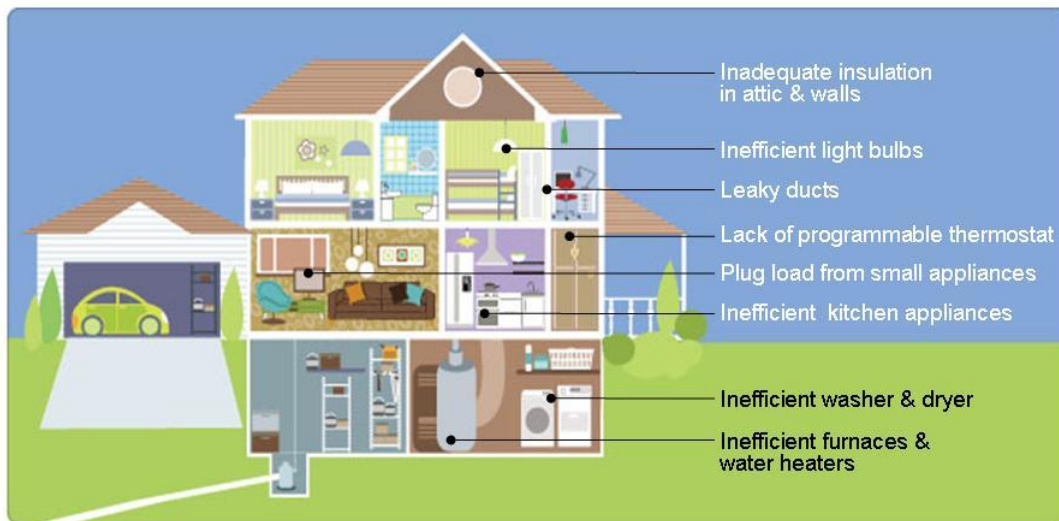
How it's possible to go green AND create a nest egg too!

The underlying factor driving this is simply that 40% of the energy entering the average home in the United States is lost. It just goes up the flue, or finds some other way to leak out unused. Moreover, most houses that are larger, have more than two occupants, and are older than ten years actually have relatively worse performance characteristics, and have waste factors well above 50%! In short, big households have much, much more to gain by acting.

And that's where it gets tricky for the householder. Despite the fact that these households have \$20,000 to over \$50,000 worth of energy-related systems in them, from hot water heaters to attic insulation, very few homeowners know the first thing about how to operate them, let alone how to optimize their performance. Further, although homeowners use local vendors, like HVAC contractors and the like to do some of the maintenance and management for them, there is an immense amount of distrust for the contracting industry. Just about all homeowners have a horror story or two about furnace installation that they later found to be excessively over-priced, or solar panel installation gone wrong.

Without trusting a professional, there is very little chance ANY homeowner is going to navigate the alternatives to undertake just those upgrades that reduce energy-related spending (including equipment, installation and financing costs, and applicable rebates), while avoiding those other upgrades that actually increase energy-related spending. And that is at the root of the trickiness; every house is unique, and it takes just a *little of the right thinking* to figure out what actions will actually deliver you the maximum net reduction in energy-related spending. Take a look at this picture and see how confident you might be in prioritizing which parts of your system you should upgrade to get a net reduction in overall energy-related spending:

Key elements of residential energy-related systems



Most homeowners don't want to end up with more overall spending, which is a very real possibility if the wrong actions are taken; like buying lots of solar panels to get your electric bill to zero, but then being stuck with lease payments that far exceed the original electric bill. You wouldn't be the first to have gotten into that position.

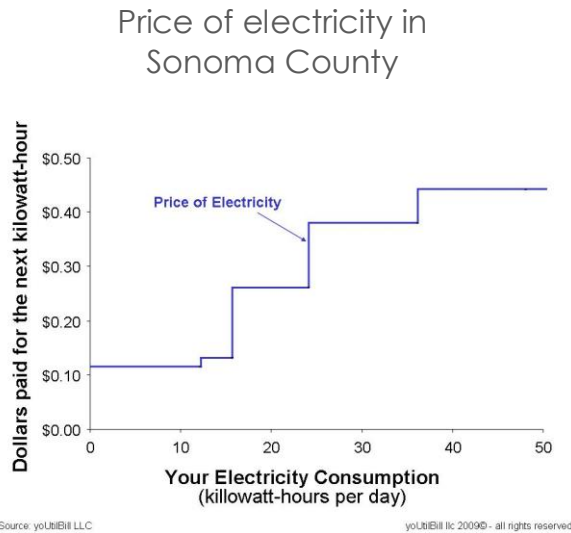
[Einstein explains how moderate savings delivers huge nest-eggs](#)

At this point we should bear in mind an observation most folks attribute to Einstein, “the most powerful force in the universe is compounding interest;” where interest payments from savings of one period get re-invested, and so earn interest themselves in the following period. Well, in the hundreds of houses we have analyzed to date, we have found that those with monthly gas and electric bills of over \$300 have, on average, an opportunity to save an average of \$1,000 to \$2,000 annually, net of costs! Using Einstein's observation, an annual stream of \$2,000 with reinvested annual returns of 10% (which is less than the post-war average equity market yield) becomes \$37,000 *in just ten years*. Of course, that one-fifth of Sonoma County with bills higher than \$300 monthly could save disproportionately more, some \$5,000 per year and more – giving \$93,000 in ten years!

[How those with big bills end up with much, much larger nest-eggs](#)

How is it households with large gas and electric bills can get disproportionately greater savings by taking action? The answer has two parts. The first involves a little known fact about

electricity prices in California; households with relative high energy consumption are paying higher prices, much higher in the case of electricity, as set out in this chart:



The blue line reflects the price PG&E charges for electricity. The first 12 kilowatt-hours (“kwhs”) consumed in a day are charged at 11¢ each; the next 4 are charged at 12¢, and so on; daily consumption over 36 kwhs are charged at the highest rate, 44¢.

A house consuming less than 12 kilowatt-hours (“kwh”) of energy per day is paying only 11¢ for each kwh. Conversely, a house consuming over 36 kwh per day is paying 44¢ for additional kwh they consume – four times the price!

The implications are hugely significant; high consuming households get to keep four times more money than low consuming households when they save, and so they can invest much more to reduce consumption and still receive a net savings in money. For them, many more energy-saving investments, like swapping the heater/furnace for an efficient one, are much more likely to be economically sensible.

The second reason high energy consuming households get disproportionately greater savings is that they have more waste, and so there are more opportunities for efficiency savings. For example, larger houses have more wall space through which heat and cool will be lost; households with more occupants open outside doors more (and kids leave the fridge door open more!), and so on. The net result is that wall insulation is more important, as are efficient heaters and air conditioners, and refrigerators and many other appliances.

How to get your nest-egg

So that leaves us with figuring out how to get your nest egg. There are two steps in the process. The first is to compile a set of specific actions, like installing energy-efficient lights or blowing insulation into the attic, even installing solar generation on the roof, that need the smallest amount of spending from you, but will drive down your overall energy-related spending the most. The second step, just as critical, gets it all paid in a way that ensures the homeowner retains flexibility and minimizes risk. We discuss both steps below, in turn:

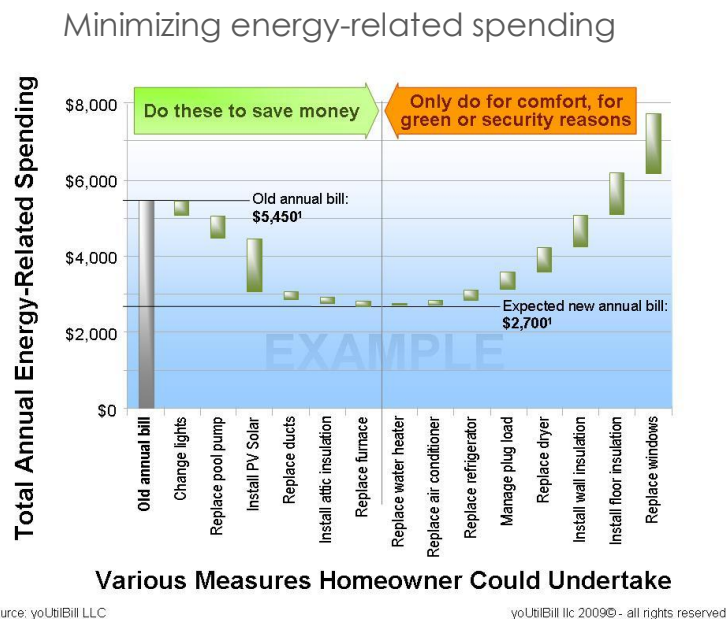
1) Figure out what actions will drive down energy-related spending in your home

We chose the words “energy-related spending” very carefully, as it is important that you, the homeowner, gets a *net* saving when you undertake adjustments to your energy systems. For example, it is no good reducing your electric bill \$1,000 annually if it costs you \$2,000 in financing repayments to achieve it. Therefore, your adjustments to your energy systems will only be economically justifiable if they include *all* factors. Your evaluation needs to go beyond savings due to lower fuel consumption (such as gas/propane and electricity), to include equipment and installation costs, less rebates, financing costs (like interest payments on a loan, or account for interest you lost by cashing in some savings), tax breaks and such. *You must expect to come out ahead after all these costs* before you undertake an efficiency

measure – unless you are doing it for other reasons, like upgrading the duct system to make the guest room warmer or installing solar panel generators because they get you off the fossil fuel-based generation system.

This is where the bad news comes. While the calculation above is quite simple, it actually gets very complex very quickly – to a point where most homeowners need help. There are hundreds of parts of your home's energy system (from cell phone chargers to attic insulation), each with their own energy characteristics, rebates and economics, and each with many energy saving alternatives to consider. Moreover, those few homeowners who are able to do the analysis needed simply don't do it, as the time needed to collect equipment performance information, develop mathematical models and understand/forecast fuel price dynamics is far too prohibitive.

In the face of there being no solution for homeowners, we created a service to help homeowners find and get the nest egg that belongs to them – we call it yoUtilBill. We recognized homeowners are not equipped to navigate the calculations needed and are hesitant to pay someone to do the calculation for them (they are very uncertain about the savings potential, on one hand, but are very used to cutting checks to PG&E year-in-year-out, on the other). So yoUtilBill delivers a proposition aimed at delivering the greatest possible nest-egg for homeowners, and it starts by evaluating homes and crafting energy optimization plans FREE OF CHARGE, and with almost no intrusion or inconvenience to homeowners. The following illustrates how this economic review works:



In the example in the chart opposite, the homeowner has an annual fuel bill (gas/propane and electricity, primarily) of \$5,450. yoUtilBill goes to work to understand the composition of that bill, and then evaluates each of the many ways those energy systems could be improved – always looking for a configuration that will minimize overall energy-related spending (including the costs of making the changes). In this case, six actions reduce the homeowner's annual energy-related spending to \$2,700; that's a reduction of \$2,750 every year!

Of course, the yoUtilBill service works collaboratively with homeowners. There are always many non-economic factors to include in efficiency planning, and homeowners always have plans in mind of work they'd like done. yoUtilBill's role is simply to help deliver an assessment of the economics – which always means incorporating homeowner comfort issues (such as the cold guest room), security issues (such as a desire to be shielded from rising electricity prices), carbon footprint issues, or repair or expansion plans (such as replacing an ageing roof).

Once the homeowner has settled on what works for them, we hook them up with pre-vetted service providers to get the efficiency work done at market rates (with a price-match promise). All this is geared to deliver homeowners several thousands of dollars *each year*, leading to a respectable nest egg in ten years, and a huge one in twenty!

2) Make sure you get it financed without taking on a long-term obligation

Sounds like a contradiction? Borrow to pay for the upgrades – but don't take on a long-term obligation? Well, it turns out our government realized homeowners don't undertake energy-efficiency investments with multi-year paybacks because they want to keep the flexibility to move home, perhaps at short notice in an emergency, and they don't want to be locked into paying for equipment in a house they no longer live in. So the California legislature passed Assembly Bill 811 ("AB811") which empowers local governments to lend money for energy-efficiency upgrades and get repaid through the existing biannual assessment tax. This is a dramatic break-through for homeowners where the program is available, as in Sonoma County, who can now pay for upgrades comforted by the knowledge that subsequent homeowners will take on repayments if the current homeowner needs to move away.

Of course, looking at it from a purely economic viewpoint, it only makes sense taking on an AB811-funded project if you get a net savings in energy-related spending; that is, if the increase in your assessment taxes is more than equaled by what you save in lower electricity or gas bills. (Note there are exceptions to this. For example at the end of the life of energy equipment, like a furnace or a roof, that you will replace anyway it makes sense to use the AB811 program then too – even if it does increase overall spending.) The key is to figure out what investments will deliver a net reduction in overall energy-related spending.

In the end, all four parties benefit in a collective win-win-win-win. Homeowners get a very nice nest-egg, together with a lower carbon-footprint and a more comfortable house, contractors get back to work, yoUtilBill delivers an appreciated service, and society edges back a lot further from its dependence on fossil fuels.

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Rory has operated as an advisor to leaders in large- and mid-cap businesses for over 20 years, and has helped create billions in cash flow and business value. Rory was Partner at PricewaterhouseCoopers Strategy Consulting, where he led the US Shareholder Value advisory practice. Rory co-founded Business Value Associates; consultants specializing in value growth, and has served leaders in today's most successful businesses; Diageo, Encyclopedia Britannica, HP, Liberty, IBM and others. Rory earned his MBA from the University of Chicago, and his BSc from London's City University. He is widely published and speaks regularly, and is quoted regularly in the media. Rory also sits on several boards, including the Association for Strategic Planning. His book, *Boosting Cash Flow & Shareholder Value* is published by John Wiley & Sons.

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Steve's 20 year career spans strategy consulting and leadership at technology companies. Immediately prior to yoUtilBill Steve was a serial entrepreneur, founding and leading several technology-driven ventures (including Cachet Solutions, a Financial Services software play, and several renewable energy investments). Steve was a Principal in PricewaterhouseCoopers Strategy Consulting, where he advised leaders at Ameritech, Motorola, Samsung and elsewhere. Steve earned his MBA from the University of Chicago, and his BA from Carleton College. Steve serves on several boards, and speaks and writes on renewable energy market issues.