Fall 2012

Now is the Perfect Time to "Go Solar" on Your Home!

Why Now?

Today there is a "perfect storm" of **solar systems costing as much as 50% *less* than they did just 5 years ago** combined with the continued presence of substantial financial incentives. But you better hurry because some of the incentives may go away in the next year.

A domestic solar system will reduce your energy costs and add value to your home. Depending on the type and size, a solar system can reduce your energy costs from 50% to 100%. According to The Appraisal Journal, the scholarly journal of real estate valuation, a solar system can increase the value of your home up to 20 times the amount of your annual energy cost savings.

Types of Solar Systems

The two most common domestic solar energy systems are:

- A **solar photovoltaic ("PV") system** uses panels placed on your roof or in a free standing array to convert the sun's *light* (not the heat as many people believe) into electricity. Energy you don't use is credited to you as it passes through your utility meter and out onto the utility grid. In addition to your meter spinning "backwards" (called "net metering") PNM will currently pay you an additional 5 cents per kilowatt-hour (kwh) of solar electricity produced. But that incentive is decreasing over time.

- A **solar thermal system** generally uses roof mounted collectors for water heating or space heating (for boiler-using radiant floor systems) → saving natural gas, propane or electricity depending on your current heating source.

Choosing the size of a solar PV system generally depends on what percent of your electricity use you want to generate from solar and/or your ability or desire to pay for the system outright or finance it via a loan. A two-kilowatt (kw) photovoltaic system can generate about 300-350 kilowatt-hours of electricity during an average month, enough to meet the power requirements of a smaller energy efficient home. For a single story home, the area of your roof is likely large enough to generate over 80% of your annual electric demand,

possibly even 100%. i.e. **The issue is not, "Is my roof big enough?" but rather, what percentage of your annual electric demand do you want your PV to satisfy and what cost of a PV system are you willing/able to pay for or finance?**

The size of a **solar water heating thermal system** should meet at least 50-70% of your hot water consumption. For most homes that means two collectors that are each about 40 square feet. Hot water use varies depending on the number of people in the home and water use habits (i.e. long showers, washing dishes in running water, high volume clothes washing, etc). Solar thermal space heating requirements are specific to each home.

Costs

Solar PV prices have dropped dramatically in the past 5 years. System costs, of course, vary depending on the type of system and its size:

- A **solar PV system** costs (installed) generally around $5000 to $6500 per kilowatt of capacity – meaning that a 2 kw system will cost roughly $10,000-13,000. That's ***before*** taking advantage of a 30% federal and 10% state income tax credit. The after-tax-credit net cost of a $10,000 system is therefore just $6,000.

- A typical **solar water heating system** for a family of four costs from $7,000 to $8,000 including installation BEFORE the 30% federal and 10% state tax credits are applied. Thus the net cost is $4200-4800. Solar thermal space heating systems are quite a bit more expensive than simple water heating systems but still can be financially viable. If you're currently using propane or electricity to heat your water or your home (both being much more expensive than natural gas), solar thermal systems can be extremely cost-effective.

As with most home improvements, it's best to obtain bids from three different contractors. In addition, ask each to generate a "cost-benefit pay-back analyses" and see how the projections compare. Note that both solar PV and solar thermal systems are also exempt from paying the state's 8+% gross receipts "sales" tax.

Is My House Good for Solar? Absolutely!!

Our solar resource is "world class" throughout Santa Fe County! Solar systems work best on south-facing roofs, though east or west oriented roofs may be suitable as well. There should be little or no shading from trees, buildings, chimneys or roof gables on or close to your home. Remember, to check shading in the spring and summer, when there is full foliage. Also, systems can be pole mounted away from the house.

The "1,2,3s" of Solar's Financial Benefit

Solar systems provide 3 primary financial benefits – one immediate (or "short-term") and two long-term. **1) Immediate Benefit:** reduction to your monthly energy bills. An example of the reduction to electric utility bills for a PV system is provided below. If you're financing some or all of the cost of your solar system (via a loan of some form), the reduction to your monthly energy bills may or may not be greater than your monthly loan payments (depends on the interest rate and the length of the loan). **2) Long-term benefit:** Solar systems can

last for 20 years or longer with minor maintenance along the way. Once your loan is paid off, your home's electricity is essentially free because the "fuel" is free! Furthermore, energy (electricity, propane, etc.) prices are likely to increase in the coming years faster than the general rate of inflation. A solar system acts as a price "hedge" against future rate and price increases. **3) Long-term Benefit:** Recent studies have concluded that **PV and solar thermal systems add tangible value to the future sales price of the home**. Appraisers are becoming increasingly savvy about including renewable energy systems' value in their appraisals. When considering the financial advantages of "going solar", it's important to consider both the short-term and long-term benefits.

How Much Will a PV System Reduce My Monthly Electric Bills?

PNM has a 3-tier "increasing block rate" where the more you use per month the more you pay per kwh. The 3 tiers are: 0-450 kwh/month (9 ¢/kwh), 450-900 kwh/month (11.8¢/kwh) and >900 kwh/month (12.8¢/kwh) – September through May. For the higher two blocks, summer rates (June, July and August) are 2-3¢/kwh higher than for the other months. http://www.pnm.com/regulatory/pdf_electricity/schedule_1_a.pdf

Using an average rate of 10¢/kwh, and a 2 kw PV system's 320 kwh/month average generation, the direct monthly bill reduction from "net metering" (the meter spinning backwards) would be $32 or $384 per year. In addition, PNM is currently offering an additional 5¢/kwh "Renewable Energy Certificate" (REC) payment for PV generation as an additional incentive to help PNM to comply with a state law requiring it to have renewable energy in its mix. 320/kwh/month x 5¢/kwh = $16. **Thus the combined electric utility bill benefit is currently $48/month or $576 per year.**

Note: PNM's current 5¢/kwh REC payment incentive is likely to decrease over time. So it's best to *"Go Solar Now!!"* while the incentives are still in place.

For this 2 kw system with an after-tax-credit net cost of $6000, the "simple payback period" is approximately 9.8 years. ($6000/$612 per year).

Financing My Solar System

If you can afford to simply pay for your solar system, that is likely your best financial option. But, of course, many homeowners are not in that financial situation. Financing your solar system is then necessary (personal loan, 2nd mortgage, home equity line of credit, "roll" the cost of the system into the refinancing of your existing mortgage, etc.) In addition to both local and national banks, don't forget to check with local area credit unions for loan opportunities.

First, it's important to be aware of the fact that some solar energy companies are currently offering a one year interest free loan for the amount of the anticipated income tax credits. Using the 2 kW PV system example, such a loan would cover the $4000 of anticipated tax credits. In essence, you never make monthly payments on this loan. You just pay it off once you receive your refunds.

Also, Homewise (983-9473, www.Homewise.org), a local home buying and home improvement lending organization for low and moderate income families, offers 4% loans for

up to 30 years for homeowners that have less than 150% of the "area median gross annual income" – about $104,000 per year for a 4 person household. If you don't qualify for a Homewise loan, consider an FHA-back "PowerSaver Loan" with terms as long as 20 years.

If you're refinancing your existing mortgage or buying an existing home (not a new home), consider a HUD/FHA "203K" mortgage that allows you to make a variety of home improvement s (re-roofing, kitchen and bath remodels, solar systems) and roll the costs into the 30 year mortgage.

Two Financing Examples ($10,000 gross cost, 2 kW PV system)

1) $4000 anticipated tax credit amount covered by the 1 year, interest free loan offer (no payments), $6000 financed at 6.5% for 15 years. Monthly payment: $52. With a $48 monthly utility bill reduction, **you end up "cash positive" by $4/month**!

2) Include the $10,000 cost into a refinance of your home (using the Federal Housing Administration's "203K" loan program). 30 year loan at 4.5%. Payments (on the additional $10,000 portion of the loan) = $49/month. Your net monthly additional outlay is **$1**!!

Remember: Since your monthly loan payments are fixed, your net monthly financial benefit increases as electric, natural gas and/or propane costs increase over time.

How Does Using Solar Energy Help the Environment?

Most of the electricity we use in New Mexico is generated by power plants that burn fossil fuels, mainly coal. The emissions from these power plants contribute to air pollution, public health problems, and global climate disruption. The sun is a clean renewable source of energy that can help us protect our local and global environment and reduce our dependence on fossil fuels.

Questions?

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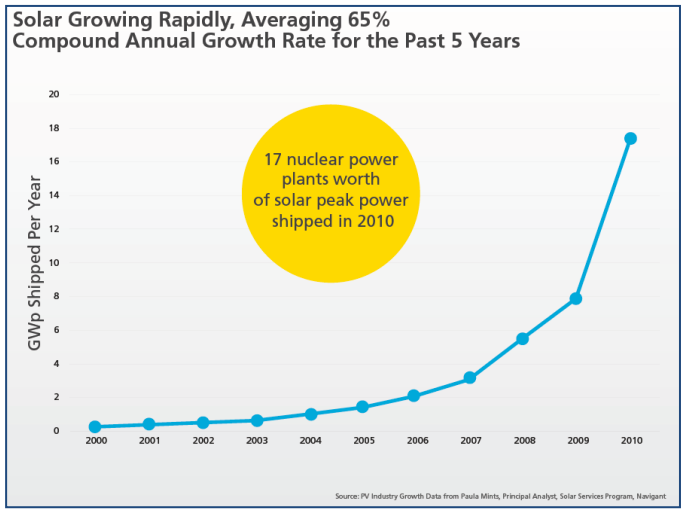

Make a sound investment in your home *and* help prevent global climate disruption!