Absolute power

BY BILL BLEYER

Newsday Staff Writer

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I never thought I'd be looking forward to receiving utility bills. But after shelling out around $27,000 (after rebates and tax credits) to have 42 solar panels installed on my roof, a new state-of-the-art gas burner / hot water heater installed in my basement, and insulation and other energy-savings changes made throughout the house, I couldn't wait to see the impact on my utility bills.

By installing a 5.61-kilowatt solar system at my Bayville house in March, my goal was to reduce to zero my annual payments to the Long Island Power Authority.

The other work was designed to take a big bite out of the gas bills for heat and hot coming from KeySpan.

The initial results look promising, even better than anticipated. And the reduced energy costs and state-of-the-art utilities should boost the value of my home and make it easier to sell. It should also reduce the capital gains if I ever sell the house.

When it comes to real estate, Jean Mansueto, owner of Coast Realty in Bayville, says, "The most important thing is location, location, location." But she likens the energy upgrade to a renovated kitchen or bathroom. Should I ever decide to sell, "it would be a great asset," she says, possibly paying for itself several times over.

Sunny day puts the meter in reverse

After several days of relatively smooth installation - I had to have a tree pruned back as expected, but my satellite TV antenna unexpectedly didn't work when it was moved until I brought in a repairman - my solar power system was ready to go for its first full day of operation in March.

As the sun rose, the green lights on the two inverters in the basement that convert the solar energy from the panels into alternating current blinked on around 6:30 a.m. An hour later I went outside to get the newspapers and detoured to look at my electric meter. That's when I experienced the eureka moment that people who have installed solar panels told me to expect.

The disk in the meter was turning rapidly backwards - my house was generating more electricity than it was consuming.

By the end of the day, the system had generated 20.25 kilowatt hours. I was pleased when I checked my LIPA account online and saw that the previous March I had used about 11 kilowatt hours per day. I had produced almost twice as much power as I had used the year before, so about 9 kwh had been purchased by LIPA, earning me a credit.

The second day brought clouds and rain - the inverter displays read "insufficient solar energy." I took the bad weather as a personal affront - now that it was costing me money.

Over the following months, watching the inverters I named Wallace and Grommit, as well as the meter, became a

spectator sport for my friends and me.

On June 13 I exulted as the system hit a daily record of 32.8 kwh.

I'd gone with a 5.61-kilowatt setup recommended by the contractor I'd hired; it's designed to generate approximately 5,631 kwh per year and break even in a peak sunny year; on a year with a lot of rain or overcast days I would still end up paying LIPA something. In the 12 months before the installation, I had used 5,867 kwh, but that was before I bought a new Energy Star refrigerator and dehumidifier and installed fluorescent lightbulbs.

The system cost $42,900. The $22,440 LIPA rebate went directly to the contractor, so I didn't have to lay out that money. I will be getting a $3,750 state tax credit and $2,000 federal tax credit. With a net cost to me of $14,710 and my LIPA bills the previous year totaling more than $1,100, I estimated the investment will pay for itself in less than 13 years, a lot less if fossil fuel prices continue to rise.

After the installation, I waited for the second eureka moment: getting a LIPA bill that showed the impact of the solar panels.

But the first two bills were estimated. Then LIPA changed my meter May 22 to what it calls a "net-metering" device designed to show how much power was being used or sold to the utility.

While he was there, the technician read the old meter. So I got a bill dated May 24 showing that in the previous 30 days my electrical consumption was zero compared with 399 kwh the year before.

The bill totaled $4.49 - the amount of the monthly connection fee to LIPA's grid, plus tax.

I figured I probably had a credit beyond that, but I still had not yet received a "net-metering" bill that solar customers get showing credits earned. But I found out from LIPA that I had generated $111.57 in credit from late March to mid-May.

And from the installation of the net-metering meter on May 22 until June 27, I also supplied all of my own power and sold the surplus to the utility, earning a credit in the solar bank of 178 kw, which was worth $21.66. For comparison purposes, from May 25, 2005, to June 25, 2005, I used 752 kw, for which I was billed $134.06.

Energy generation credits are not applied to the connection fee, but if there is a net credit after 12 months, LIPA will mail me a check.

So come next March, I'll be watching the mailbox with anticipation.

Insulating himself against energy costs

On a recent visit, Michelle Knaszak, an energy auditor from a Buffalo-based company named GreenHomes America, opened my front door, installed a nylon curtain in the door frame and attached a large exhaust fan, reducing the air pressure in the house.

When she had conducted the same test four months earlier, she detected drafts coming in through the high-hat light fixtures, cracks in the basement walls and underinsulated spaces in the attic. She had returned in June to do a second audit. She wanted to gauge the results of an energy-efficiency project her firm had done in March to reduce the use of gas, for heating and hot water, and electricity, for lighting and appliances. The project was the result of an initial audit conducted as part of LIPA's new Home Performance with Energy Star program.

After adding 1-inch foam insulation boards and blow-in insulation in the attic, filling the cracks in the attic and basement with expandable foam, replacing the high-hat light fixtures with new air-tight models, switching from incandescent to fluorescent bulbs and installing a state-of-the-art tankless gas burner-hot water heater that is more than 90 percent efficient, the energy picture had changed dramatically.

After Knaszak did some calculations, she said, "We reduced the airflow through the house by 40 percent!" More than expected. "You'll really notice the difference, come January." I had already noticed that on windy days the house was less drafty.

Knaszak checked the insulation in the attic and said the house would be much cooler in the summer and warmer in the winter. After her second audit, Knaszak revised upward her estimates of savings from the project. She said the total annual energy savings would be 25 percent, or $696 - $539 in natural gas and $158 in electricity. The original estimate was 25 percent, or $679 in gas and electricity.

The improved estimate reduced the payback period slightly from 17.9 years to 17.4 years.

I did the project because my natural gas burner and water heater were 19 years old, and the woven fiberglass insulation battens installed at the same time were inadequate by today's standards. The work and the cost of any new efficient appliances purchased qualified for a 10 percent Energy Star rebate from LIPA or the Energy Star program. And new this year is a 10 percent federal tax credit, up to a $500 maximum, for heating equipment, insulation and appliances.

The project, not including new appliances, cost $13,500 - minus a $1,350 LIPA rebate - for a total of $12,150. The long payback stems from the fact that I use a coal stove for my primary heating source so my efficient gas burner won't be operating that much to generate heat.

Confirmation the changes were paying off came with my KeySpan bills. In April 2005, I used 320 therms of gas. In April 2006, it was 100 therms, although the average outdoor temperature was warmer than the previous year's. The May-to-June 2005 bill showed 20 therms used, and for that period this year it was 8 therms.

And because the latest bill was based on an actual meter reading following an estimated bill the month before, KeySpan owed me a $21.69 credit.

How to get an audit

Want to find out where your energy dollars are leaking out of your house? Sign up for an energy audit. The program was created last year when the Long Island Power Authority and the New York State Energy Research and Development Authority brought to the region a federal initiative called Home Performance with Energy Star. Those who make any of the suggested improvements receive a LIPA rebate for the audit fee, which can range from $50 to $250. Low-interest financing for loans up to $20,000 is also being made available for qualified applicants. Homeowners who decide not to take a loan may be eligible for a LIPA rebate of up to 10 percent, or a maximum of $3,000, for the completed work.

For further information and a list of program contractors, visit www.GetEnergySmart.org or call toll-free 877-NY-SMART.