

May 27, 2011

Daily Herald

One of state's largest solar electrical systems powers Palatine home



By Jean Murphy

Peter and Susan Gorr of Palatine would like to debunk a myth about solar energy. It is actually beneficial to a homeowner's bottom line.

But, they acknowledge, it does require a large, initial outlay of funds that may be difficult for many people to produce.

The Gorrs recently installed one of the largest residential solar electrical systems — almost 7 kilowatts — in Illinois and paid \$47,378 for the system and all permits and connections. But, thanks to state and federal tax credits and rebates, their true out-of-pocket cost for the system will only be approximately \$19,000 for this system with a 25-year warranty.

"We have always been interested in the environment, but we weren't active in the movement," Peter Gorr said. "But now that I am retired, I had more time to look into it and now that I am a grandfather, I find myself getting more serious about preserving the environment for our grandson.

"Even though I knew that installing a solar energy system would cost me, I felt it was important enough to investigate and what I found is that the economics of such a system are actually very favorable," he said.

He also found that purchasing a solar system has other benefits. It is good for our economy because it creates jobs all along the supply line in the United States, as long as you specify that all of the components for your system must be made domestically. It also strengthens our national security because solar energy-users don't have to worry about an interruption of their power supply or using fuel obtained from hostile nations that could, at any time, withhold it.

Gorr is also certain that the system added to the value of his 3,300-square-foot home and that he will be able to garner a better price for it when he eventually decides to sell. But, under state law, he said, his property taxes may not be raised because of the system's installation.

The Gorrs purchased their 28-panel system from Solar Service Inc. of Niles (solarserviceinc.com), which has been installing renewable energy systems since 1977.

"They were great," Gorr said. "I didn't know anything and they held my hand through the whole process, giving me the right papers to sign for a building permit and to hook up to ComEd and now I am a mini power plant here."

"The Gorrs have one of the larger residential solar electricity systems we have installed," Brandon Leavitt, president of Solar Service, acknowledged. "Their system is capable of producing about 700 kwh each month. This is an equivalent of planting 12 trees per year over the next ten years (according to EPA's Greenhouse Gas Equivalency calculator)."

Such systems can even be put on very old houses. Solar Service installed one on Arlington Heights' oldest home, which predates the Civil War, he said.

Roof angle, direction and shading are the only concerns when choosing to install such a system, according to Gorr. "My roof was situated well, facing south, and I didn't need any special racks or anything, so it was a pretty straightforward installation."

Solar electric systems like the Gorrs' prefer roofs that face south and have a pitch of 45 degrees or less because they are trying to catch the summer sun. Almost all can be installed flush to the roof.

Solar thermal systems that heat water need a minimum pitch of 45 degrees because they are trying to catch the winter sun, which is low in the sky, Leavitt explained, and they are the systems that often need special racks that are not flush to the roof.

"But roofs that don't have the optimum pitch can always be made to work, even if we have to add an additional solar panel to make up for any loss of performance because of roof pitch," he said.

"This is free energy, offered to us by nature. Why not harvest it?" Leavitt asked.

Hail is not a concern with the panels since both the thermal and electric types are made of tempered glass and stronger than a car's windshield, he added.

And while the rules governing solar panels vary from municipality to municipality, Leavitt said that across the board, towns' biggest concern is aesthetics. Many do not allow such panels on the front of a house. Others do not allow them if they can be seen from a street. Some require special variances or plats of survey, even though the footprint of a house never changes with solar panel installation.

"But most towns just require a simple building permit and mandate that a licensed electrician make the electrical connection to the home or that a licensed plumber make the potable water connection for a solar thermal system," he said.

The Gorrs' installation took four days and in the first month it was up and running, it generated 770 kilowatt hours of electricity, which would cost a homeowner between \$85 and \$100 to buy from the electric company, Gorr said.

Since they did not purchase storage batteries, the Gorrs feed any excess energy they generate back into ComEd's grid and their electric meter goes backward. Then when they need more electricity than they are producing, at night or on very overcast days, they will pull electricity from the grid as usual.

"I pay the net difference, if there is one, at the end of the month," Gorr said. "But if I have delivered more electricity than I have used, these credits roll over to the next month."

Another added benefit is one the Gorrs didn't know about until they were well along in the process. For every megawatt of energy they produce, they are given a certificate for one Renewable Energy Credit (REC) that is tied to the environmental benefits of such a system.

"You might call them the 'bragging rights' to clean energy," Gorr explained. "If someone who is trying to meet renewable energy mandates or goals wants to secure their claim without having a renewable energy system, they can buy RECs."

It is expected that these RECs might some day sell for between \$200 and \$300 each on the open market to businesses trying to meet mandates.

Gorr is able to be sure that he is getting all of the savings and credits he is due because his system came with software that allows him to monitor his system's performance in real time from any personal computer.

"I used to pay several hundred dollars per month for heating and cooling and my wife and I kept our use to a minimum because we were very conscious of not wanting to draw too much power," Gorr said. "It was really a liberating moment a few weeks ago when my wife came home from teaching in an un-air conditioned classroom all day and I was able to flip on our air conditioning without feeling any guilt about pollution and emissions."

Over the 25-year life of the system, figuring in depreciation, the Gorrs estimate that they will save \$950 per year in electricity costs and will earn \$1,600 per year by selling renewable energy credits. Even with an annual depreciation of \$1,848 on the system, he estimates that he will come out \$702 to the positive each year.

"Taking all the value, cost, rebates, tax credits, revenue and savings results in an estimated net worth growth of \$27,003 in the first year," Gorr said. "Over succeeding years, assuming a certain level of electricity price inflation, continued REC sales, etc., my net worth inches up even more than the system depreciation takes away, keeping me attractively positive throughout the life of the system."

"I estimate the contribution to my net worth in Year 10 will be \$36,409 and the system would still have 15 years of warranty remaining. Also, to be as thorough as possible, I take into account the potential growth, estimated at 5 percent, of my initial \$19,000 if I had invested it somewhere else," he continued.

"Everything about this is positive except that part about having to come up with a lot of cash at the beginning and I

just see this as a better investment than betting that money on the stock market," Gorr said.

"We are so excited about this. We keep wondering why we didn't do it sooner," he admitted. "Oil and coal energy seems like horse-and-buggy days compared to what we have now. I hope that soon new homebuilders offer solar energy as an option on new homes so that people can just bundle this cost into their mortgage from the beginning."

"I envision a day when my children and grandchildren won't have to worry about energy. It will be a nonissue," Gorr said. He is even planning to buy an electric car in the next few years and is already calculating how much money he will save if he plugs that car into his free source of electric energy and never needs to buy gasoline again.



Solar Service installer performs last hook ups to the photovoltaic panels.



This electronic meter displays kilowatt hours used, along with other system data.



Shown here are various components of the PV solar system that monitor usage and production.



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