

Summer 2012

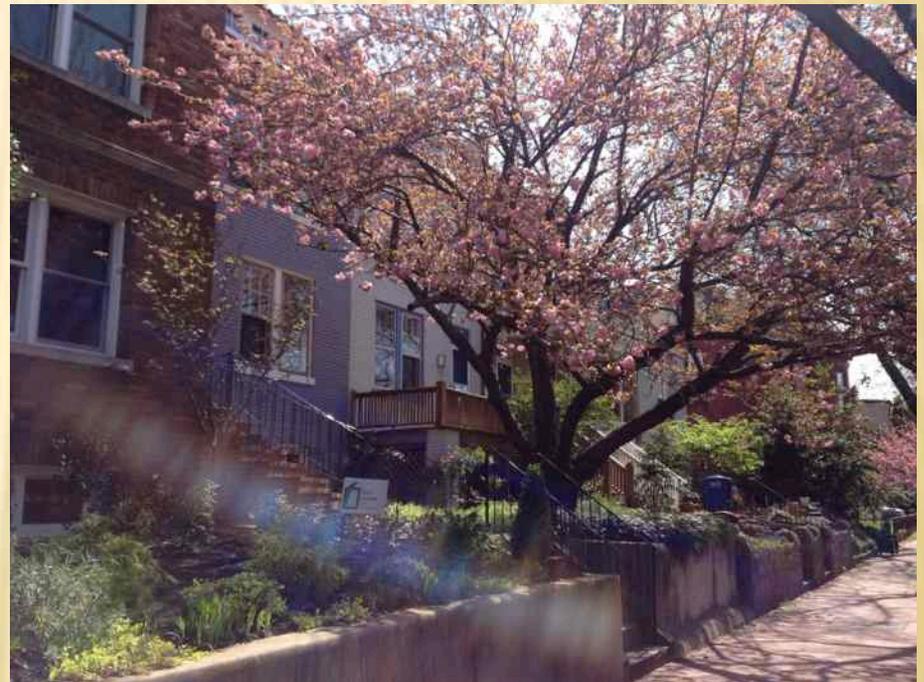
# **FINANCIAL BENEFITS OF RESIDENTIAL SOLAR HOT WATER IN WASHINGTON, DC**

Andy Kerr  
The Larch Company

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# WHY AM I LISTENING TO THIS GUY?

- ✘ Has had 5 solar hot water (SHW) and 4 photovoltaic (PV) systems.
- ✘ Regularly writes for *Home Power* magazine on renewable energy and energy efficiency.
- ✘ Lives with fiancée in Capitol Hill townhouse.



# OUR SOLAR HOT WATER (SHW) SYSTEM

- ✘ Installed by Solar Energy Services
- ✘ 4' x 10' AET Solar Collector
- ✘ 75-gallon Bradford White Solar Storage Tank with Electric Backup
- ✘ Sunnovations Geyser Pump



# SYSTEM COST

- ✘ Paid installer \$8,500.00: 1/3 on signing, 1/3 at starting, 1/3 at finish.
- ✘ This one-panel system designed for 2-person household.



# FEDERAL INCOME TAX CREDIT

- ✘ 30% of system cost (credit may be carried over to future tax years if necessary).
- ✘  $\$8,500 * 30\% = \$2,550$ .
- ✘ System cost reduced to  $\$5,950$ .



# DC INCENTIVE

- ✘ 20% of system cost up to \$5,000 through September 30, 2012.
- ✘  $\$8,500 * 20\% = \$1700$
- ✘ This is taxable income, so the value of the incentive after taxes for us (30% “state” and federal combined) was net \$1190.
- ✘ System cost reduced to \$4,760.



# SOLAR RENEWABLE ENERGY CREDITS (SRECS)

- ✘ 1 SREC = 1,000 kWh of, not electricity, but the environmental benefits associated with solar energy.
- ✘ Can sell SRECs on spot market, 3- or 5-year annuity, or 10- or 20-year upfront contract.
- ✘ We sold 10 years up front for \$1720.
- ✘ System cost reduced to \$3,044.



# WATER HEATER REPLACEMENT FACTOR

- ✘ Life expectancy: 10-13 years for gas; 14 for electric.
- ✘ In determining financial benefits, you need to factor in inevitable replacement of your existing water heater.
- ✘ Tank Replacement Cost: \$1,000-\$1,500
- ✘ If you get a new tank when you install SHW, federal and DC incentives apply to the tank cost.
- ✘ Given age of my tank I estimated \$750.
- ✘ *Final system cost: \$2,290*



# ANNUAL SAVINGS

- ✘ You'll save more if you now heat your water with electricity rather than gas.
- ✘ My estimated savings are \$262/year in electricity *not* bought from PEPCO (tax-free income in effect).



# BOTTOM-LINE FINANCIALS

- ✘ For our SHW System:
  - + Simple payback (SPB): 8 years.
  - + Net Present Value (NPV): \$116 (10-years); \$2,220 (20 years).
  - + Return on Investment: 4.5% (10 years); 7.7% (20 years).
  - + Estimated increased property value: \$2,617-6,543.



**MAKING PV PAY**  
It's Just Good Business Sense  
by Andy Kerr

Investing in renewable energy (RE) certainly makes sense for the planet and for personal quests for sustainability, but being green can *make* green, especially when you use RE to power a business.

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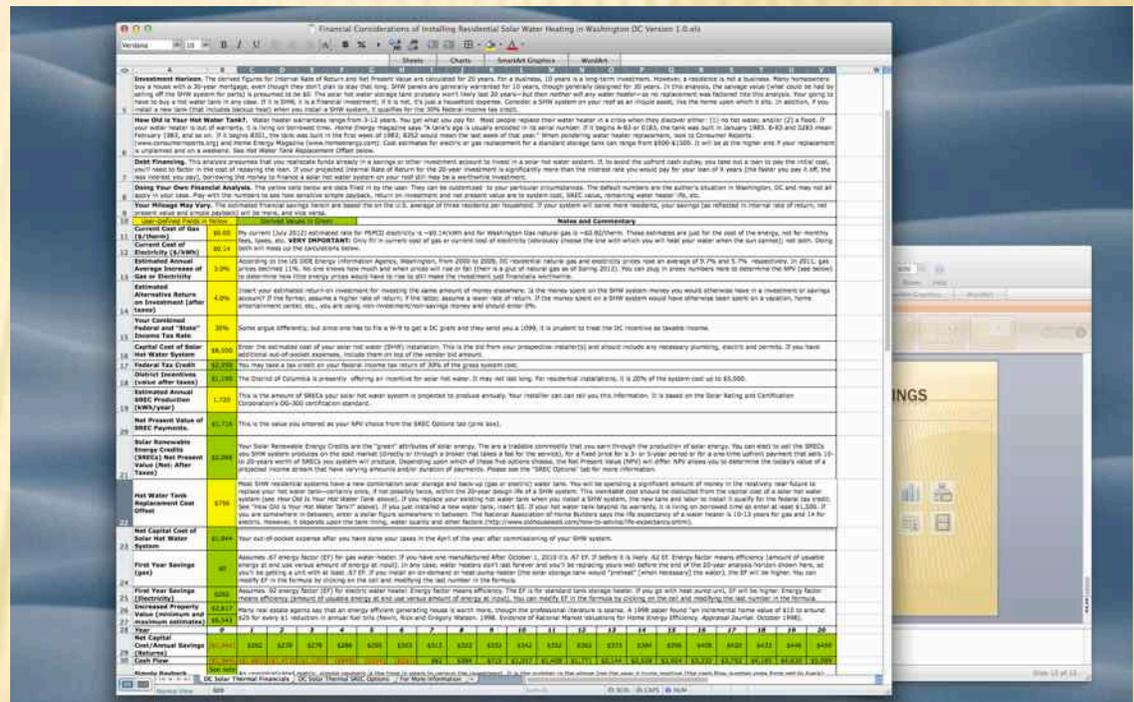
# ANOTHER THOUGHT

- ✘ Sunnovations Geyser Pump System.
- ✘ Obviates need for electronic controller, mechanical pumps and electro-mechanical valves (all moving parts prone to failure).
- ✘ Can use inexpensive and easier-to-install PEX rather than copper piping.
- ✘ Built in heat overload protection.
- ✘ Lower installed cost and less likely to fail.

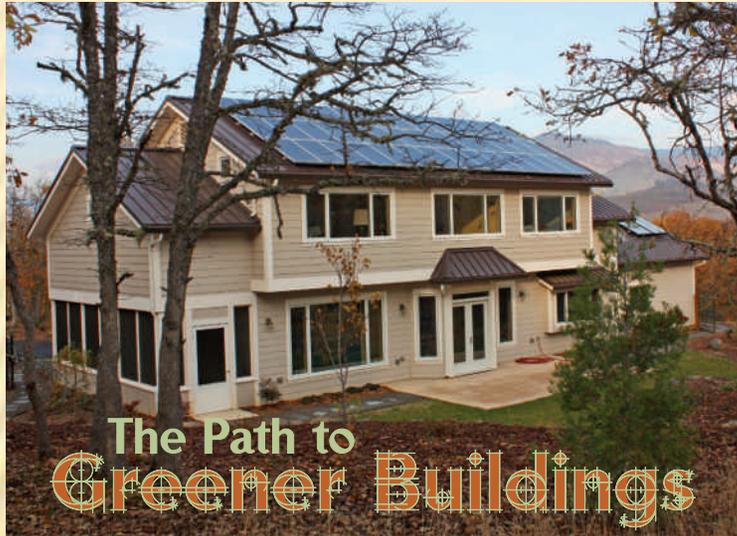


# CALCULATING YOUR OWN SAVINGS

- ✘ “Financial Considerations of Installing Residential Solar Hot Water in Washington, DC” is an Excel workbook I’ve constructed in which you can plug in the data for your own situation to determine SPB, ROI, NPV, and more.



# FOR MORE INFORMATION



by Andy Kerr

Once you decide to build green, don't look back. But before you go this route, know where you're going—and who you'll be bringing along for the ride. Here are some tips for navigating along the ever-evolving path of green building.

Even if you've hired a good architect, designer, and/or builder, it will be helpful to know as much or more about green building than they do. They might know more about basic building design and construction, but you will need to become the green building expert. The more you know, the easier it will be for you to communicate your preferences and priorities effectively—and to observe whether your wishes are being carried out during construction.

#### Research Fully

Once I decided that building "green" was something that interested me, I hit the books and the Web. I read, and I read, and I read some more—probably 50 or more books altogether. (See "Green Building Resources" sidebar.)

However, when it comes to green building, books can fast become outdated, since new materials and designs are revolutionizing green building quickly. The single best investment in my learning process was a \$199 annual subscription to [www.buildinggreen.com](http://www.buildinggreen.com), an independent source for information on green products and news about the green building industry.

Expect to build your green building library before you build your green house.



All Photos: Bob Post

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