Solar Electric System Investment Considerations

1) Do you have a sunny roof or locale? If not forget it. If partially sunny, then use a solar pathfinder tool to determine shading, sizing and placement for optimum solar energy production.

2) Does your monthly electric bill exceed $65? If not, your payback time may exceed 15 years. Is your planet worth it anyway? Yea, as environmental issues are important…proceed if you agree…

3) Do you own your own home? If so, what shape is your roof in?

4) Do you have the means to invest at least $11, 000 (cash or access to a home loan)? The market price of a professionally installed PV system (before rebates & tax credits) is between $9 to $10 per AC watt.

5) Do an electrical load analysis for a one-year period (to determine annual energy use). PG&E can be contacted anytime to get historical power usage: 1-800-743-5000 (ask for "billing").

6) Reduce electricity loads via efficiency and conservation measures (tip: each dollar spent on energy efficiency on average saves $3 in avoided solar costs and conservation is always free).

7) Do you know others who have installed a photovoltaic (PV) system? If so how do they like it?

8) Grid-tied PV system inverters automatically shut down in the event of a power outage, as required by law, and automatically restart 5 minutes after grid power is restored. Battery back-up systems can be installed to keep power on. A dedicated uninterruptible power supply system (battery bank) or fossil fuel powered generator may be inexpensive ways to keep power on during outages.

9) Design a PV system to net out the average annual electric usage (environmentally preferable) or size the system to shave off the pricey electric use above baseline (financially beneficial). A system sized to cover 60% to 80% of the annual electric load will zero out the electric bill with time-of-use net metering using PG&E's residential E-7 or E-6 rate schedules respectively.

10) In some cases it is financially best to select a "time-of-use" billing plan with your utility, as afternoon peak week day hours in the summer generate lots of valuable electricity credits.

11) Your utility must be notified and an interconnection agreement signed.

12) A building permit must be obtained in order to qualify for the rebates.

13) PG&E and City of Palo Alto Utilities have solar electric rebates and forms must be submitted to. The rebate level is up to $2.50 per AC watt as of January 1, 2007 for PG&E customers and $3 per AC watt for CPAU customers. It is smart to sign an agreement with a solar installer and submit rebate paperwork promptly, as rebates are reserved first come, first serve basis.

14) Consider having your solar contractor accept the rebate as partial payment to avoid Federal tax.

15) Get a quote from an experienced solar contractor and go for it soon, as rebates decline over time!

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Solar Electric Payback & Info

The Energy payback of photovoltaic (PV) systems is typically between 2 to 4 years. In other words the energy used to manufacture the solar panels is recouped in solar electric output within few years.

Size a PV system to match electric load, via a simple formula (assumes south facing array in S.F. Bay Area, CA):

PV system size (AC watts) = Avg daily electric load (kWh per day) ÷ 4.4 (example 20 kWh/day ÷ 4.4 = 4.5 kW)

To size a PV system to zero out the electric bill using a time-of-use meter (E-7 rates) in PG&E territory:

PV system size (AC watts) = Avg daily electric load (kWh per day) ÷ 7 (example 20 kWh/day ÷ 7 = 2.9 kW)

The financial payback of a solar electric system varies between 7 to 30 years. Typical simple payback periods for residential energy users in PG&E territory range from 8 to 16 years. Ask your solar contractor for a financial analysis that is relevant for your situation.

The realized value of a solar electric investment appreciates over time as the price of electricity rises. PV solar is a conservative financial investment that belongs to a very elite category of products that can actually pay for themselves. What other products can you think of that can do this?

PV solar is an environmentally benign form of generating electricity.

Owning a PV system that generates your own power is analogous to buying a house vs. renting one.

Solar insolation ("sun fall") in the Bay Area is excellent and averages 5.4 peak sun hours a day.

Used working refrigerators over 10 cubic feet in size may qualify for $35 and be hauled off and recycled for free. Call 1-800-299-7573 to learn if this applies to you.

Grid-tied solar electric systems earn credits at the retail rate for electricity and increase in value as electric rates rise over time. Summer credits can be applied to winter electric use. Time-of-use billing favors solar generators by a 3 to 1 ratio during peak times (noon thru 6 PM, Monday thru Friday).

Simple payback formula is: investment ÷ annual savings = payback in years

Solar power is a responsible investment for the long-term health of the earth's inhabitants and optimal usage of solar energy is required for the future success of the human species and to curb global warming.

Recommended solar web sites:

California Solar Center	gosolarcalifornia.org
Horizon Energy Systems	gosolarnow.com
Northern California Solar Energy Association	norcalsolar.org
California Solar Energy Industry Association	calseia.org
Solar Electric Power Association	solarelectricpower.org
Home Power Magazine	homepower.com
Sierra Club Solar Permit Fee Study Update	lomaprieta.sierraclub.org/global_warming/fee_study.htm

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