

- 1) Solar is best installed on a roof in good condition because the solar panels must be removed when you reroof. About 100 square feet (10ft x 10ft) is needed for a kilowatt of energy produced. Thin film PV needs more space.
- 2) The optimal order for selecting the best roof direction is South, South West, South East then West.
- 3) Interview three solar installers and get three bids for comparison. The installers should provide a detailed statement of the components of the system and where they will be installed as well as a schedule for payments.
- 4) Ask for the bids to include the estimated AC output used for the California Energy Commission rebate. This will provide close to real world peak AC output numbers for the completed system. (DC ratings will be 5% to 15% higher and don't reflect the usable energy from the combined panels and inverter.)
- 5) The installer should do a shading analysis that tells you the percentage of annual solar energy blocked by shade.
- 6) \$1,000 is the maximum down payment by law. Don't pay more until you receive the panels and work begins.
- 7) Withhold a significant percentage of the payment until the job is done and signed off by PG&E.
- 8) The installer should manage state rebate, city permit, inspection process and working with PG&E for final signoff.
- 9) Installers should have state contractor's license & liability insurance. NABCEP solar certification is a plus.
- 10) Consider upgrading your utility meter to a Time-of Use (TOU) meter to maximize the price for your solar generated electricity unless you use extensive air conditioning or you choose a system that covers less than 25% of your annual usage. See TOU chart. PG&E installs the meter which costs around \$230.
- 11) Check other customer experience from people you trust and from web sites including:
  - a. [www.solar-estimate.org](http://www.solar-estimate.org) free – helps find installer in the area with detailed information provided by the installer
  - b. [www.yelp.com](http://www.yelp.com) free- some homeowner feedback on local installers
  - c. [www.sanjose.bbb.org](http://www.sanjose.bbb.org) – Silicon Valley Better Business Bureau to check on business reliability rating & license
  - d. [www.diamondcertified.com](http://www.diamondcertified.com) (free - but only highlights three vendors per area)
  - e. [www.angieslist.com](http://www.angieslist.com) (\$40-\$50 membership required) they have more reviews than yelp, but it's not extensive

## Other considerations:

- Even with solar installed, there is a monthly fee of about \$6 to connect to your utility. However you get a monthly statement for electricity, but only pay at the end of a full year of operation. This is called a true-up bill.
- If you only have a 100 Amp electrical service or less, you may need an upgrade at additional cost.
- Solar PV systems are virtually maintenance free although the inverter may need to replace after 10+ years. And hosing off solar panels occasionally increases solar output about 5% after cleaning.
- Get warranties for panels, inverter & installation in writing & ask if it provides full replacement versus prorated.
- Leasing can be a good option if you plan to stay in your home. Typically if your average monthly electric bill is over \$130, you can break even with a lease. However you should understand the potential costs if you want to sell your home along with your leased solar system.

## Other resources:

[www.roofray.com](http://www.roofray.com) for excellent solar calculator integrated with googlemaps that sizes a solar array for any home

[www.norcal solar.com](http://www.norcal solar.com) for general information on solar energy

[www.pge.com/solar](http://www.pge.com/solar) for PG&E specific information relating to solar (excellent information)

[www.csi-trigger.com](http://www.csi-trigger.com) for California solar rebate information

[www.consumerenergycenter.org](http://www.consumerenergycenter.org) for clean power financial calculator

## Financial info:

- The Federal tax credit is 30% of the net system cost with no maximum. You enter the credit on your tax return.
- State rebate managed by PG&E is currently \$1100 per Kilowatt; this was reduced in August 2009.
- PG&E currently will not write you a check at year end even if you produce more energy than you use. So don't install more than you use. Also consider changes in future energy use needs.

## Solar System Financial Examples

Ave. monthly electric bill	System size KW AC	Cost after rebate & tax credit	First year savings \$ per year	% of Electricity generated by solar	Payback in years	Tax Free Rate of Return over 30 yr life
\$100	2	\$9,730	\$680	45%	14	11%
\$100	3	\$14,600	\$903	68%	16	10%
\$100	4	\$19,460	\$1,116	91%	18	9%
\$150	2	\$9,730	\$925	36%	10	16%
\$150	3	\$14,600	\$1,211	54%	12	14%
\$150	4	\$19,460	\$1,451	72%	13	12%
\$200	2	\$9,730	\$1,084	30%	8	19%
\$200	3	\$14,600	\$1,491	45%	9	17%
\$200	4	\$19,460	\$1,779	60%	11	15%
\$200	5	\$24,330	\$2,025	76%	12	14%
\$250	2	\$9,730	\$1,234	27%	8	21%
\$250	3	\$14,600	\$1,671	41%	8	19%
\$250	4	\$19,460	\$2,067	54%	9	18%
\$250	5	\$24,330	\$2,353	68%	10	16%
\$250	6	\$29,200	\$2,606	82%	11	15%

### Assumptions

- \$8 per AC watt system cost
- \$1100/AC KW state rebate and 30% unlimited Federal tax credit
- 5% annual increase in electricity prices
- South facing, 30 degree slope, no shading issues
- Time of Use benefit not included (typically increases savings by 10% each year)
- Does not include inverter replacement during 30 year life
- Based on Clean Power Estimator at

<http://www.consumerenergycenter.org/renewables/estimator/index.html>

**Lease Option - Can create net reduction in payments starting at \$130/mo electric bill for 3 to 4kW system**

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## Solar System Financial Examples

Ave. monthly electric bill	System size KW AC	Cost after rebate & tax credit	First year savings \$ per year	% of Electricity generated by solar	Payback in years	Tax Free Rate of Return over 30 yr life
\$300	4	\$19,460	\$2,500	51%	7.7	20%
\$300	5	\$24,330	\$2,840	64%	8.5	19%
\$300	6	\$29,000	\$3,100	76%	9.3	17%
\$300	7	\$33,800	\$3,370	89%	10	16%
\$300	8	\$38,600	\$3,550	100%	10.9	15%
\$400	4	\$19,460	\$2,900	43%	6.6	24%
\$400	5	\$24,330	\$3,460	53%	7	22%
\$400	6	\$29,000	\$3,800	64%	7.6	21%
\$400	7	\$33,800	\$4,100	75%	8.2	19%
\$400	8	\$38,600	\$4,400	85%	8.8	18%
\$400	9	\$43,500	\$4,660	96%	9.3	17%

### Assumptions

- \$8 per AC watt system cost
- \$1100/AC KW state rebate and 30% unlimited Federal tax credit
- 5% annual increase in electricity prices
- South facing, 30 degree slope, no shading issues
- Time of Use benefit not included (typically increases savings by 10% each year)
- Does not include inverter replacement during 30 year life
- Based on Clean Power Estimator

[www.consumerenergycenter.org/renewables/estimator/index.html](http://www.consumerenergycenter.org/renewables/estimator/index.html)

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