

## Going Solar Without Capital Costs:

# The Dawning of Power Purchase Agreements

**T**he U.S. demand for solar power continued its meteoric climb in 2006, growing an astounding 20% over the previous



year and making the American market one of the fastest growing in the world. Look around. Solar photo-voltaic arrays are increasingly appearing on rooftops, garages, and parking lots all across the country. Surprisingly, it's commercial buildings that are driving the American boom, not the residential market as in Germany and Japan. For those of us who thought on-site solar power was never a viable option for hard-nosed businesses – much less hospitals – it's time to revisit our assumptions about this rapidly developing market.

The biggest barrier to on-site solar power has always been its price. Historically, cheap grid-supplied energy made payback periods of solar upgrades uneconomical to all but the most affluent. Today, improvements in manufacturing, economies of scale, and new government incentives make solar more affordable than ever before. In fact, the cost of solar is dropping so fast, the DOE predicts it will be cost-competitive in the U.S. with coal generated electricity by 2015. But as good as these recent developments are for mainstreaming solar power, perhaps the biggest transformation of the solar market will come from how it has been traditionally delivered. A new commercial delivery model called the Power Purchase Agreement (PPA) promises to not only make solar more affordable to businesses, but less risky as well.

### Solar Service, Not Solar Products

Under the old “cash buy” model, transaction costs are high because of a steep learning curve. End-users have to line up financing, purchase solar products, hire

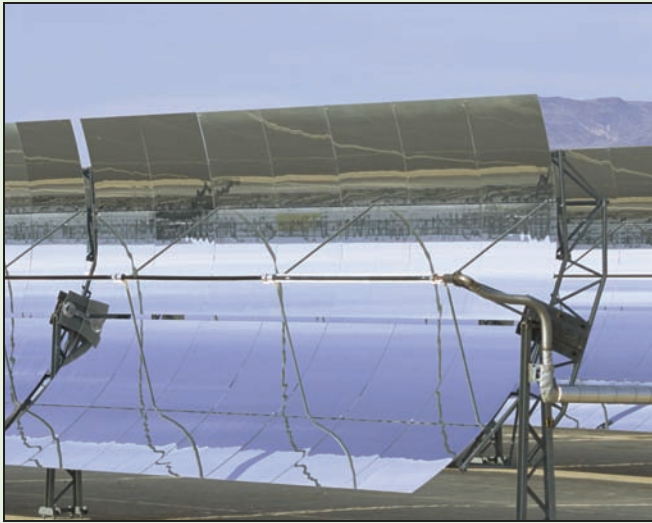
installers, and apply for possible government subsidies and utility incentives. The upfront cash payment, along with associated risks like under- or non-

performance, maintenance, and financial feasibility is born by the end-user.

Under the new “PPA” model, there are no upfront or capital costs to acquire solar power because the end-user does not own the solar panels. The end-users (also known as “host customers”) buy solar power as a service much like they do grid-based energy from a utility. At the end of the month, host customers pay only for the solar energy produced on site and purchase the remaining energy they need from their utility. A solar energy services firm assumes all performance and economic risks because it owns and maintains the equipment on the host customer's site.

### Predictable Long-Term Pricing

Host customers typically enter into a ten, fifteen, or twenty-year contract with the solar energy services firm, paying starting rates that are equal to or below existing utility prices. Escalation rates are fixed and can be as low as 2% a year, which is often much lower than the typical cost increases experienced by U.S. hospitals. A 2006 survey of over 700 hospitals by *HFM magazine* reported that 56% of respondents noted an increase in energy costs (all energy, not just electric) of at least 6% in 2005-06, while 15% of those saw prices climb more than 25%. Such dramatic price increases reflect the continued volatility of grid based electricity, stemming from deregulation, congestion, or increasing scarcity of natural gas and other petroleum-based generation fuels. Not so with solar. Once the collectors are in place, solar “fuel” costs nothing to procure. It remains immune from



supply shortages, processing requirements, labor strikes, congestion, or other disruptions that commonly increase the price of fossil fuels.

Organizations employing PPAs see immediate gains in cash flow because there is no up-front investment, and the solar energy price is set below the cost of grid power. In contrast, organizations that purchase their own solar equipment will have to wait years before the investment is paid off and savings are realized.

### PPA Friendly Locations

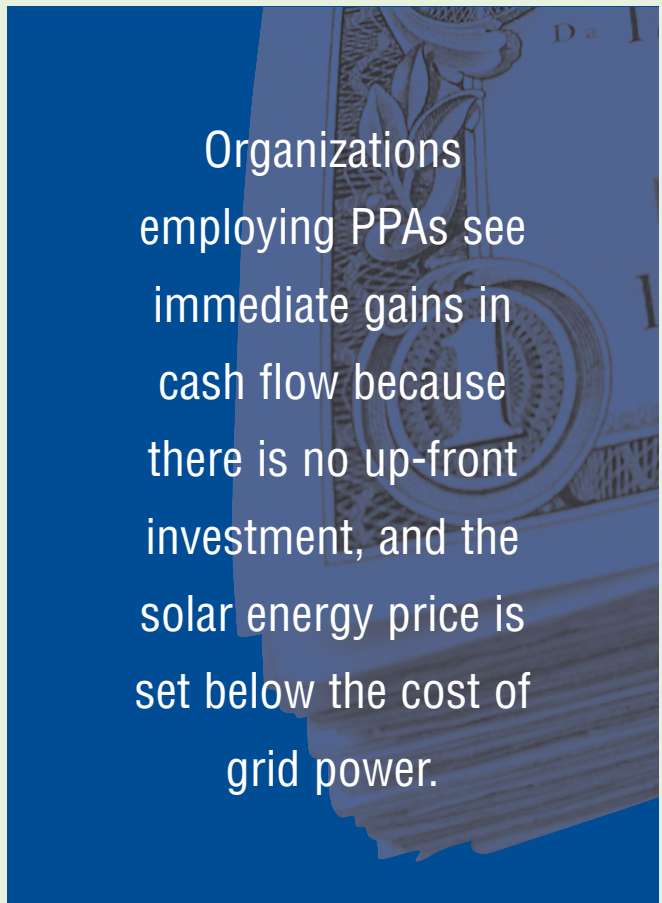
Solar energy service firms are offering PPAs to their clients in a limited but growing number of states. These states – which include California, Connecticut, New Jersey, Colorado, Oregon, New York, Maryland, and Hawaii, among others – have favorable conditions that allow PPAs to thrive. For instance, all have solar rebates or tax incentives from their state or local utility. All have net metering laws which allow the host customer to interconnect to the grid as a power producer. Because excess solar energy is routed back on to the grid and consumed by neighboring buildings, solarized facilities in these states receive credit for any excess energy they produce. Moreover, many of these states require that the full retail value of the electricity produced be credited to the owner, a condition that maximizes the value of the power. Without this provision, many utilities would reimburse at the much cheaper wholesale or “avoided cost” rate. Finally, these states do not have excessively low caps (e.g. below 1 Megawatt) that restrict the number of solar power producers allowed to hook up to the grid.

Readers may wonder why some “sun-challenged” states listed above even considered promoting solar power. We are used to thinking solar power is only viable in intensely sunny locations like California, but in truth many states are sunny enough for solar power to

be practical. It’s actually more important for the right infrastructure to be in place than a climate where the sun shines every day. Case in point: Germany is the largest solar power producer in the world. It also gets the same amount of sun in ballpark figures as Seattle. The list of states favorable to PPAs will likely expand in 2008 and beyond. If you are considering a PPA for your hospital, don’t dismiss it based on your climate alone. Search the Internet for solar energy service firms offering PPAs in your area.

### Solar Energy Service Firms

While the risks of the “cash buy” model are lessened with purchase power agreements, the PPA model is not without jeopardy. As in all business, let the buyer beware. Some firms are structured to provide one-stop shopping. One firm will develop, design, construct, service/maintain, and finance the solar arrays from start to finish. This allows the power user to hold one firm responsible at all times. Other solar energy service firms are joint ventures where the responsibility is shared at different times between independent parties. Some firms may be owned by manufacturers of solar products which will then exclusively use their products in the design. Each type of firm has its own inherent advantages and risks and it will be up to the customer to research the market and find the right fit.




### **The Ideal Client**

Solar energy service firms are going after the biggest customers first – and there are a lot of them so the more kilowatts you can put on the table, the more attractive your hospital or healthcare system will be. Potential electricity production is dependent on the amount of unobstructed roof, ground, or parking lot space. Solar energy service firms sometimes allow customers to bundle capacity to meet minimum requirements so healthcare systems have some advantages as clients compared to single stand-alone hospitals. Increasing the energy efficiency of facilities – while not a requirement – certainly makes economic sense before installing solar because doing so will save money and maximize the proportion of clean power that comes from the sun.

### **Negotiate for Green Credits**

Many hospitals may be interested in using PPAs to claim clean power credits under green building rating systems like Leadership in Energy and Environmental Design or the Green Guide for Health Care. Even though the facility is being partially (or maybe even fully) powered by solar energy, the market actually recognizes two

economic values of clean renewable energy. The first value is strictly the market value of the electricity produced. The second value recognizes the higher quality of the power based upon its clean origins. Technically, the solar energy services firm sells you - the host customer - only the first value but legally still owns the second value, which may be sold as a renewable energy certificate in the green tags market as another source of revenue. To claim a clean power credit under a PPA, it would be wise to ask that your contract with the solar energy services firm acknowledge your organization as having legal ownership of that clean value, too. You may be asked to pay a slightly higher premium for it as well.

With the dawning of the PPA in a handful of states, solar power is now within reach of nearly any business that resides there. Higher energy prices and climate change are making solar power the economic hedge and the environmental choice of increasing numbers of businesses everywhere. The power purchase agreement promises to make solar more affordable and even more convenient than it ever has been before. Who will be the first healthcare institutions to realize it in your state? 

# Buyers' Questions for Solar PPA Firms

- How strong is the financial backing they bring to the table?
- Do they build their own projects or do they subcontract?
- Do they operate and maintain their own projects, or do they subcontract?
- Does the firm offer sophisticated monitoring systems and services to optimize system production?
- What is their capability with new technologies?
- How many PPAs have they signed?
- What is their overall balance of PPAs to Cash-sales?
- Can I talk to their existing clients?
- How long have they been in business?
- How strong is their supply chain, given global PV shortages?

*Clark Reed is the National Healthcare Manager for ENERGY STAR at the U.S. EPA. To join, visit ENERGY STAR's website or contact the author at the U.S. Environmental Protection Agency - MC 6202J, 1200 Pennsylvania Ave NW, Washington, D.C. 20460. Email: reed.clark@epa.gov. Phone: 202-343-9146.*