

Solar Investment Primed For 2008

Solar companies have successfully raised significant amounts of capital to fund capacity expansion and tech development.

■ Adam E. Bergman & Jeffrey H. Lipton

Clean technology was one of the top-performing areas in 2007, and it is likely that in 2008, it will again be a sector to watch - with both private and public investors anticipating signs of which technologies will be the next to challenge the dominance of fossil fuels. But although clean technology will continue to be a hot area of investment, certain segments will find it more difficult to attract funding due to concerns over the ability to achieve grid parity and how far away that goal remains, as well as limitations to widespread use of the technology.

In contrast, this year will again show the preeminence of solar and wind technologies, which continue to exhibit positive signs as viable alternatives to fossil fuels. Solar technology in particular has made great strides and is projected by many observers to be one of the largest sources of renewable energy in America by 2020.

The North American solar power sector has experienced tremendous growth over the past couple of years,

as five key items have brought it to the forefront in the minds of consumers, investors and government agencies.

The first factor behind solar's growth is rising energy prices and worries about long-term supply - a concern made more pressing when oil recently topped \$100 a barrel for the first time ever. Moreover, there are concerns about declining reserves and the increased cost associated with extraction in deeper, more remote ocean locations, as well as in politically unstable regions or through significantly more energy-intensive extraction processes.

The second point is the growing levels of federal, state and local government incentives. While the U.S. federal government has provided incentives for renewable energy with the passage of 2005 and 2007 energy bills, it is state governments that are taking the lead through the use of renewable portfolio standards and the work on projects such as the Million Solar Roofs plan in California.

Over the past few years, energy security has become fundamental to any discussion of renewable energy, with risks surrounding traditional energy supplies, particularly following threats made by Russia, Iran and Venezuela, as well as continued instability throughout the Middle East and Africa.

These concerns are based on projections stating that the percentage of

oil the U.S. receives from friendly and stable countries in North America and Western Europe will decline to 18% in 2030 - from 30% in 1990, according to the Energy Information Agency.

Fourthly, with the implementation of the Kyoto Accords, many U.S. companies with global footprints can see that it makes good business sense to be proactive on climate change and other environmental issues. Additionally, consumers are becoming more vocal on this issue, with sales of hybrid vehicles in the U.S. projected to rise 290% to approximately 390,000 vehicles in 2015 from just 100,000 in 2007, says Frost & Sullivan.

The final - and potentially most important - factor is the increasing demand for energy from China, India and other developing countries. In fact, according to the Energy Information Agency, China is poised to surpass Europe in 2014 in total energy consumption and overtake the U.S. as the largest energy consumer by 2030. India is also expected to become a leading energy consumer, growing at 2.8% annually - more than twice as fast as the U.S. and four times faster than Europe.

Investor participation

To meet the rising demand for solar energy, solar companies have raised significant amounts of capital to fund capacity expansion and the

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development of next-generation technologies.

Over the past three years, North American solar companies have raised a total of \$7.2 billion through 137 transactions. In 2007 alone, 79 financings were completed in North

million. But just two years later, these figures jumped to 49 private investments worth \$1.0 billion - increases of 250% and 434%, respectively.

As a comparison, 18 public solar companies raised a total of \$892 million in 2005. By 2007, however, this

expand production capacity in order to meet rising global demand or commercialize next-generation, disruptive technologies, and the strong return potential that the sector holds for investors who back the long-term winners in the industry.

Moreover, as private companies begin commercial development, their capital needs will continue to expand, making it likely that average transaction size will be even higher in 2008.

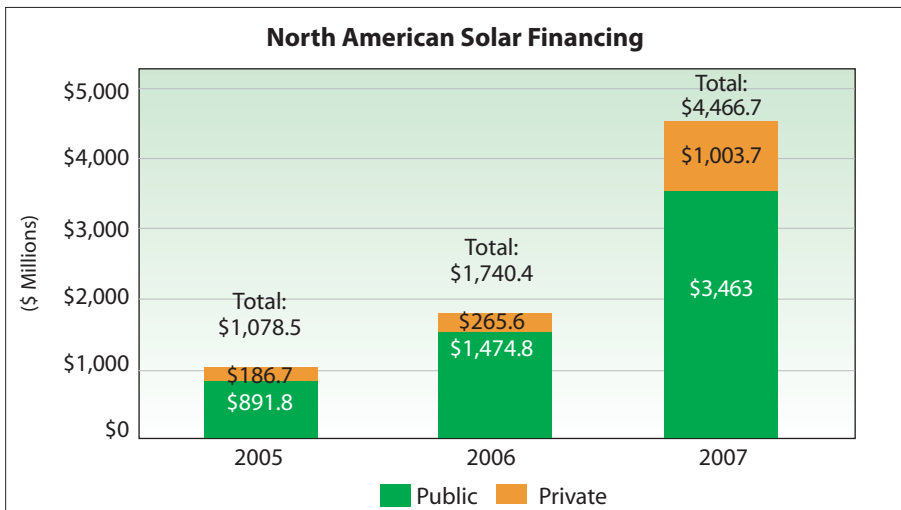
Shifting product focus

If we dig deeper into the financing data, a major difference appears in the types of companies receiving investment from public-market sources versus private investors. Whereas the public markets have tended to fund global capacity expansion for traditional crystalline-silicon companies, most private financings were focused on developing next-generation technologies, including thin film, concentrators and solar thermal.

Since 2005, over 65% of the capital raised by public solar companies has been for manufacturers of crystalline-silicon technology. On the other hand, just under 30% of this capital was raised by companies focused on thin-film technologies, concentrators and solar thermal*.

However, we will begin to see a shift in late 2008 or early 2009 - with more thin-film, concentrator and solar-thermal companies increasingly tapping into the public markets as their businesses mature and they transition from product development to commercialization.

With private investors' main focus on next-generation products, thin-film, concentrator and solar-thermal manufacturers have received 62% of the capital, whereas companies that use crystalline-silicon technology have attracted little more than 20%*. This funding disparity between first- and second-generation technologies is an indication that private investors have shifted their attention



Source: Bloomberg, Capital IQ, Factiva, Jefferies, New Energy Finance

America, raising a total of more than \$4.5 billion - a 317% increase over the \$1.1 billion raised in 2005.

Although investor interest in the clean-technology sector as a whole has intensified over the past three years, growing by almost 120%, the growth of solar investment has been particularly pronounced: It accounted for over 45% of all clean-technology investments in 2007 - up from less than 25% in 2005.

Solar companies were also helped by the downturn in the biofuels sector, which received 60% more funding than the solar sector in 2006 but, due to investor fears of overcapacity and rising feedstock costs, received 40% less capital than solar in 2007*.

While transactions for public solar companies have generated the most press coverage, the growth in the number and value of private investments has, in fact, been even more impressive and is likely to surpass public companies' figures in 2008. In 2005, investors funded 14 private solar companies to the tune of \$187

figure had almost doubled to 30 public companies, which raised almost four times as much capital at \$3.5 billion*.

This rapid increase in financing is a sign that the sector is set to build on the strong investor support it has received to date. Indeed, with this enormous potential, the global solar market is projected to grow by 30% annually through the next decade, meaning that 2008 could be the best year yet for solar companies looking to raise capital.

Not only have solar companies been completing more transactions, but they are also raising more capital in each transaction. In 2005, the average public investment was under \$50 million. But by 2007, this figure had increased to almost \$120 million. Private solar investments have enjoyed similar success, with an average size in 2005 of \$13.3 million climbing to \$20.5 million in 2007*.

This dramatic growth is propelled by two factors: the enormous capital needs faced by companies looking to

away from the traditional crystalline-silicon technologies to those companies that have a higher potential to reach grid parity by 2015.

Because private investors are unsure which next-generation technologies will win, and many expect multiple technologies to be competitive over the long term, there has been significant investment in all three areas, although thin-film companies have received most of the press and a majority of the investment dollars to date.

At the same time, financial support for concentrators and solar thermal increased rapidly in 2007, reflecting many investors' belief that these technologies can garner a dominant position for utility-scale solar installations. Thus, funding in these two areas is likely to be significantly larger in 2008.

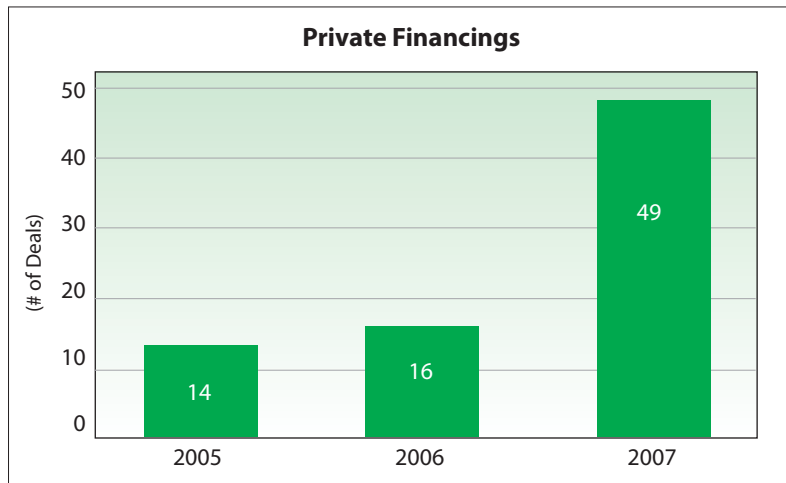
Our company created its own clean-technology index in 2006 in order to track the clean-technology sector more effectively. According to the index, while the overall clean-technology sector was up by 88% in 2007, the solar sector was the best performer - up nearly 252% during this same period.

The likely reason for the bullish investment sentiment toward solar companies was the strong stock market performance of the sector. Although virtually all public solar companies experienced gains during the year, a few high-fliers stood out.

First Solar, the largest of the public thin-film companies, was the best-performing North American solar stock in 2007. Despite the turbulence of the financial markets in 2007, First Solar's share price increased to \$267.14 from \$29.84 -

almost a 10-fold increase.

Much of this increase was attributed to the company's announcement that it was manufacturing solar panels at approximately \$1.20 per watt, which was about half the cost of its crystalline-silicon competitors. Another factor was some large orders the company received for 685 MW



Source: Bloomberg, Capital IQ, Factiva, Jefferies, New Energy Finance

from EDF Energies Nouvelles, Sechilienne-Sidec, RIO Energie GmbH and SunEdison due to its position as the lowest-cost producer.

The other top performer of 2007 was crystalline-silicon industry leader SunPower, which was up 251% after benefiting from strong financial performance, a positive response to its PowerLight acquisition, and its announcement of large customer orders.

Market results

Not all solar companies, however, performed as well as the aforementioned. Underperformers included thin-film producer Energy Conversion Devices, whose share price declined 1% during 2007 after it failed not only to start its second production line on schedule, but also to meet Wall Street's financial expectations.

Other laggards included China Sunergy and LDK Solar, which both went public during the first half of 2007 but suffered from rising polysil-

icon feedstock costs, which cut into margins and significantly harmed their financial performance. These firms' shares were up only 38% and 68%, respectively.

In 2008, there will likely be a much more pronounced deviation in stock price performance, because investors have more solar investment choices and are beginning to differentiate between industry leaders (which have strong growth prospects and the highest margins) and the "me-too" players that are struggling to grow in line with their sector and may start to experience margin compression.

Also, according to our index, although the solar sector has undoubtedly had tremendous upward momentum, there was one area where even solar could not overcome the impact of the volatility in the equity markets.

The initial public offering (IPO) market for solar companies had been showing decent signs of progress, albeit from a very low level, tripling to six IPOs in 2007 from just two public listings in 2005*. However, as 2007 progressed, the financial markets became significantly more fickle, and no solar companies went public on Nasdaq or the New York Stock Exchange (NYSE) during the second half of 2007.

Therefore, it won't be surprising if 2008 is flat, or even down, with regard to solar IPOs on the major U.S. exchanges. It is likely that any crystalline-silicon producer looking to execute a public listing will be highly scrutinized and will need to show growth and margin potential similar to that of sector leaders.

But on a brighter note, thin-film, concentrator and solar-thermal com-

panies should have the ability to execute offerings if they can convince investors that they have a different value proposition that will provide substantially higher returns, as First Solar did.

Alternatives to public listings

As private solar companies with commercial products look to scale up manufacturing capacity, their need for capital will be enormous. Thus, denied the prospect of executing a successful public listing, these firms will have no choice but to pursue other avenues to raise the funds.

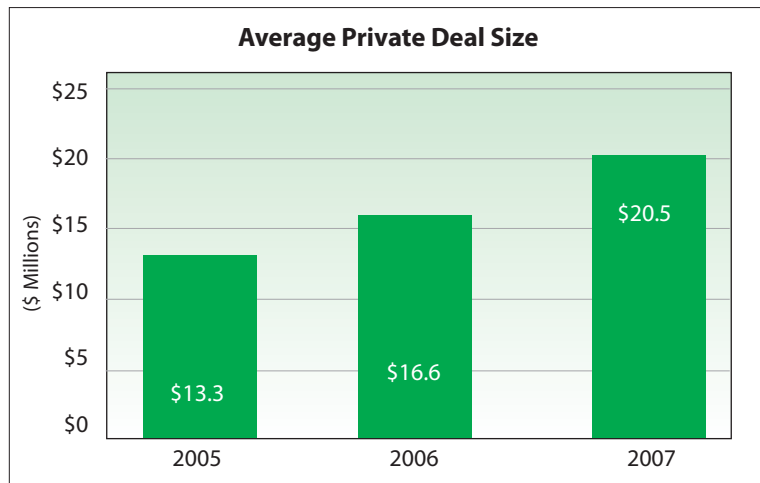
Many of these companies will pursue pre-IPO convertible offerings, which offer companies access to investors with deep pockets - including many that would have participated in an IPO - as well as provide additional time for these companies to prepare for going public. Additionally, these transactions are not accompanied by the same level of scrutiny, mandated by the Securities Exchange Commission and the Sarbanes-Oxley Act of 2002, that follows a public listing.

Another benefit of pre-IPO convertible offerings is that companies are able to raise larger sums of money at better prices than through pursuing a traditional growth-capital private-equity raise. Investors, many of which are hedge funds or traditional institutional investors, prefer having the ability to buy potentially hot IPO shares in advance and at a discount.

For all these reasons, solar companies are likely to execute more pre-IPO convertible offerings than Nasdaq or NYSE IPOs in 2008.

Not only is the use of pre-IPO convertible offerings increasing, but

traditional convertible offerings are also poised for substantial growth in 2008. Public solar companies are turning to convertible offerings, rather than traditional equity securities, as a means of lowering their capital costs as they become cash-flow-positive and begin to generate net income. In 2007, seven public



Source: Bloomberg, Capital IQ, Factiva, Jefferies, New Energy Finance

companies raised a total of \$1.2 billion through convertible offerings.

As a comparison, only \$0.1 billion was raised through this method in 2006 and 2005 combined*. Investor appetite for convertible offerings is unlikely to weaken in 2008 as solar companies continue to experience strong share-price appreciation. Also, this type of security gives investors both upside potential as well as downside protection.

High-yield offerings are also likely to make an appearance in 2008, as debt investors attempt to generate similarly strong returns from the solar sector that their public- and private-equity brethren have achieved. The high-yield option, which has not really been available to most solar companies previously, will thus become a viable and preferred financing option. This avenue will provide a lower cost of capital, as well as the ability to leverage assets more effectively.

While 2007 has been a record-setting year for solar financings, 2008

has the potential to be even better. Public solar companies will need to raise large sums of capital to fund continued expansion, so they will probably pursue follow-on and convertible-equity - as well as high-yield - offerings.

However, solar IPOs on Nasdaq and the NYSE are unlikely to surpass 2007 figures because, over the past several months, public investors have set a higher bar for companies to overcome. This trend seems unlikely to change for the time being.

While the IPO route may be more challenging, private companies will not want for capital as they move from product development to commercialization, due to the continued strong support of the venture capital (VC) community. Additionally, pre-IPO converts will give private companies access a wider set of investors with even larger financial resources than VCs.

Although financial market turbulence is expected to continue through at least the first half of 2008, investors are taking a positive long-term view of clean technology as a whole, as well as enabling solar to position itself as one of the leading renewable energy sources. It is likely that there will be some bumps in the road in 2008, due to either the failure of a public company to meet Wall Street's expectations, or a private company's failure to move successfully from product development to commercialization.

Nevertheless, the solar sector is poised to provide investors with substantially higher returns than the overall market and even most other sectors of clean technology.

* These references cite information derived from Bloomberg, Capital IQ, Factiva, Jefferies and New Energy Finance. ☛