

San Diego Solar Power International 2008 : Market, Pricing and Technology Trends

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The following report is based on technologies on display, seminars attended and various personal conversations held with a variety of people at the show.

US Market in 2008

PV installed capacity figures for 2008 is not out but it will probably show the biggest annual growth in US so far.

Main reason: Uncertainty (until last month) in the ITC extension bill beyond 2008 which caused accelerated installation of projects which were on the reserve list in 2007.

US PV installed capacity grew by 48% in 2007 over 2006 to more than 205 MWdc with trends towards non residential, roof mounted and bigger systems primarily due to the PPA business model (over 2/3 of commercial installations were using the PPA model).

Out of 26000 sites installed PV systems in 2007, a total of 30 systems larger than 500 KW accounted for 29% of the total installed capacity in 2007. Same trend towards bigger projects are expected in 2008.

The PV markets are expanding in more states with nearly all having an RPS (Renewable Portfolio Standards – some with PV carve outs) ranging from 10 to 25% mostly by 2016. RPS implementation targets for different states vary from 2010 to 2025.

California still accounts by far (over 50%) of the installations in 2008 followed by a distant New Jersey and still a distant Nevada. Never the less compared to Europe and Japan the US market is still has a long way to go. (based on cumulative installed capacity per person, US average to German Average is 1.6 to 41 Wdc/person)

Dealing with US incentives (tax ,rebates, TOU etc) on the federal, inter-estate , county city, utility levels is getting more and more complicated and has turned into a highly in demand specialty.

PV industry job market (expected to grow to over 400,000 with over half in California by 2016) is now divided into various specialties. Companies serious in doing large projects have people specifically dealing with utilities rates, Net metering & interconnection, financing, proposal preparation, PV design, policy trends etc.

Further information on State Incentive & Policy Trends, Solar Installation Trends, Net Metering & Interconnection Trends see the following web sites:

www.irecusa.org, www.solarabcs.org, www.dsire.org

Expected down turn in 2009

Were it not for the current credit crunch the ITC extension for another 8 years that removes the cap for residential and covers also the utilities and the AMT would have boosted the 2009 PV market tremendously.

According to Matt Cheney of MMA Renewable Ventures (participant in a CEO round table discussion) not only every new proposal will now be scrutinized far more in detail but compared to 6 months ago you need to add \$0.70 to \$1 per Watt in capital costs and it would take 3 to 4 years before the capital markets stabilize again.

While the residential market responds quicker to tax incentives, the non residential markets with larger PV system size which were put on ice in 2008 (due to uncertainty in ITC extension) even if revived would result in actual installation in the 3rd and 4th quarter of 2009.

A number of major incentive drivers in US are tax related which in turn will only be effective if there exist a corporate or private tax hunger which is obviously reduced in a struggling economy. In addition over 29 states including California have a large 2009 budget deficit which could effect the states rebate programs

Personal Comment

Clearly the credit crunch, uncertainty in economy, oil price down ward trend etc is expected to lower the market demand for PV systems in 2009. On the other hand the fundamental driving forces behind the growth of renewable energy market: rising electricity costs (predicted on average to rise by 10% next year), energy source security and independence, global warming , new job creation opportunities, lowered installed system costs etc haven't changed and definitely the PV market demand though at times choppy should still be on a healthy growth path. In fact in any economic downturn

there are certain niche markets that flourish and in this respect PV application markets offer many possibilities at the present time. Clearly year 2009 is a challenging year for the PV industry and the winners are those with a clear marketing plan and goals and a competent sales force.

Module prices

In contrast to the Long Beach 2007 Solar Conference the buzz words echoing around San Diego Solar Power International 2008 were definitely **NOT** the “shortage of Silicon” or “ we are sold out” that was pronounced loudly by almost all PV companies during the Long Beach 2007 event. Neither was it the eminent appearance of low cost thin films such as CIGS, CdTe or a-Si modules (even though First Solar with over 200 MW production is now ranked 5th among the PV manufacturers).

In contrast to 2007 the discussions of lowering of PV system prices didn't revolve around the supply of Silicon or production scale up but more focused on module and installed system costs. On the module level the emphasize is back again on increasing efficiency by optimizing known parameters that effect the carrier generation and collection (no mention of any upcoming revolutionary breakthroughs) as well as making ever thinner wafers. On the system level the emphasize was on lowering KWh by optimizing the BOS and installation costs. According to Anton Milner of Q-cell “the retail installed cost of a PV system in Germany today stands at 4.25 Euros/W (\$ 5.70/W)”. According to Martin Heming of Schott Solar “Module prices have been dropping by 4% a year over the last 10 years and we have a factor of 2 and not 10 away of becoming on par with conventional energy sources. To achieve that we don't need any breakthroughs” . According to Dick Swanson from Sun Power “apart from higher efficiency and thinner cells the cost reduction should be extended to all the factors effecting the installed cost and KWh out put that included simple drop in place tracking systems”.

Words going around about price levels for modules for 2009 were anything from 3.30 to 3.75 \$ / W. There was also a strong feeling by some that the oversupply of modules during later part of 2009 can lead to 25% or even higher drop of module prices (what was referred to as price flip)

Technology Trends

Going by technologies on display at San Diego Solar Power International 2008 there were several new innovations that were attracting attention and worth noting :

Enphase Energy booth with their micro Inverters for every module with MPPT tracking and system monitoring on module level (wireless or over power lines) was quite sensational. Their web based module monitoring system which was packaged with the inverters was offered at a monthly fee of \$10. However not every one that I talked to was convinced that micro-inverters was the way to go.

Never the less there seems to be a definite trend for the introduction of more electronics on the module level. They include module level MPPT, wireless and/or over power line monitoring modules within a PV systems, DC/DC converters on module or semi string level to bring down wiring losses. National Semiconductor Company was not present at the show but the following is an excerpt from their web site:

“National Semiconductor is entering the photovoltaic market with new technology designed to increase the effectiveness of solar panels under variable light conditions. National's SolarMagic™ technology recoups up to 50 percent of the lost energy, dramatically improving the economics in shaded and other real-world conditions. The SolarMagic technology maximizes the energy output of each solar panel, compensating for much of the energy lost due to shadows from tree branches or power lines, dust and debris, and panel-to-panel mismatch”.

On module mounting systems there were several companies with new mounting systems aimed at reducing module installation costs. Most of the designs were focused on new inter-lockable frame designs : BP Solar Integra, Sharp SRS (same as last year), Suntech & Kyocera Andalay (same as last year) Click Rack-Offered by Yes Solar Solutions and Fath Solar GmbH (a German Company). Sun power Smart Mount system on the other hand offers mounting devices that would be attached to the roof and provide quick mounting for the modules (The system on display was not very impressive). The aim of all new frame designs and mounting system is to reduce labor cost for mounting, provide grounding by interlocking the modules and in few cases have the electrical interconnection also integrated with the interlocking frames (apparently not a neat solution). The trend in new frame design is proprietary approach aimed at differentiation and not standardization.