

SOLAR SECTOR UPDATE

From... MAC Global Solar Energy Index

the tracking index for

Guggenheim Solar ETF* (NYSE ARCA: TAN)

Solar Index Performance

The MAC Solar Index, which is the tracking index for the Guggenheim Solar Energy ETF (NYSE ARCA: TAN), rallied sharply from April through July, posting a new 1-1/2 year high in early August. The MAC Solar index was up by 75% on a year-to-date basis as of August 9, 2013.

The rally in solar stocks has been driven mainly by the stabilization of polysilicon and solar panel pricing (see charts on p. 3) combined with strong solar demand and improved profitability of solar manufacturers. In addition, the markets were pleased that the European Union and China came to an agreement on solar trade that averted punitive duties and a larger trade war.

Global solar demand remains strong

Global solar demand in recent months has remained strong, supported by increasingly attractive solar economics for consumers after the sharp drop in solar pricing in recent years. European solar installations have stalled due to reduced government support, but the slack has been more than taken up by strong growth in major countries such as the U.S., Japan, and China.

Regarding solar in the U.S., Goldman Sachs said in early July that their talks with solar companies indicated “strong U.S. demand across residential, commercial and utility channels, with solid visibility through the balance of 2013 supported by reports of effectively sold out U.S.-specific allocated capacity.” Goldman added that pricing appears solid and that their current forecast for U.S. PV installation growth of +30% in 2013 and +19% in 2014 appears “conservative given recent momentum.”

The U.S. reached a milestone of 10 gigawatts of installed PV capacity in the first half of 2013, according to NPD Solarbuzz. That gives the U.S. the fourth largest installed PV capacity in the world behind Germany, Italy and China. NPD Solarbuzz forecasts that cumulative PV installations

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The MAC Global Solar Energy Index (SUNIDX) is licensed as the tracking index for the Guggenheim Solar ETF* (NYSE ARCA: TAN).

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Note: Index performance does not reflect transaction costs, fees or expenses of TAN.

MAC Global Solar Energy Index (SUNIDX)



in the U.S. will increase by an additional 80% over the next 18 months, surpassing 17 gigawatts by the end of 2014.

Meanwhile, solar continues to surge in Japan in the wake of the Fukushima nuclear disaster in 2011 and the Japanese government's subsequent push to quickly install more solar to take up the slack from reduced nuclear-generated electricity. Japan's PV installations in Q1-2013 surged by 270%, according to research firm IHS. Japan will be the world's largest market in terms of revenue in 2013 with \$20 billion of PV installations, according to IHS.

In China, the State Council, which is the country's cabinet and the top governing body, officially approved the plan for China to more than quadruple its PV capacity to 35 gigawatts by 2015. That means China will add about 10 gigawatts of solar per year during 2013-15. The Chinese

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government's target for solar installations represents a compounded annual growth rate of about 70% for the 2013-15 period.

Obama climate plan involves regulating carbon and promoting clean energy

President Obama in a major climate address on June 25 at Georgetown University in Washington DC outlined his new two-step climate action plan. Mr. Obama, recognizing opposition in Congress, said he would instead take executive action to promote his administration's goals to reduce greenhouse gas emissions by 17% by 2020 and double renewable electricity generation by 2020. Mr. Obama said climate change is a very serious issue that requires an aggressive federal response.

Mr. Obama, noting that power plants emit about 40% of U.S. greenhouse gas pollution, directed the EPA to develop rules to start regulating greenhouse gas emissions from existing power plants. This rule-making will take a number of years but the expected result will be a crack-down on existing coal-based power plants in particular. Coal-generated electricity has already fallen to 37% of U.S. electricity generation from levels near 50% as recently as 2008, mainly due to tougher rules on new coal plants and due to the U.S. natural gas boom.

Many governments around the world continue to pay lip service to nuclear power, but the reality is that solar beat nuclear power last year by a factor of 26 to 1 regarding new installed capacity. Specifically, only 1.2 gigawatts of nuclear generation capacity was installed globally in 2012 compared with 32 gigawatts of solar, according to the World Nuclear Industry Status Report 2013.

Mr. Obama in his climate speech also set a goal of having the federal government obtain 20% of its total electricity supply from renewable resources by 2020. Mr. Obama directed the Department of Interior to grant permits for an additional 10 gigawatts of renewable energy on public lands by 2020, adding to the 10 gigawatts of permits already granted by 2012. Mr. Obama also directed the Department of Defense to deploy 3 gigawatts of renewable energy at military installations, including solar, by 2025.

Tea Party group expresses strong support for solar

In Georgia, the all-Republican state regulatory electricity commission approved a plan that requires Atlanta-based Georgia Power Co., a unit of Southern Company, to increase its solar power capacity by 525 megawatts by the end of 2016. The move was opposed by Americans for

Prosperity (AFP), a group founded and funded by the billionaire Koch brothers, who are big fossil-fuel promoters. However, the Tea Party Patriots, a branch of the Tea Party in Georgia, accused the AFP of "putting out absolutely false data" about solar. Debbie Dooley, the national coordinator of the Tea Party Patriots, expressed strong support for solar as a matter of customer freedom over utility monopolies and said her group was forming a "Green Tea Coalition" to support solar. Ms. Dooley gave an interesting interview ([link](#)) to Chris Hayes on MSNBC.

There has been little roll-back of solar mandates at the state level, despite broad control of many state legislatures by Republicans, because many Republicans recognize that solar energy stimulates jobs and provides income to farmers and land owners. In addition, solar is a distributed electricity generation source that delivers electricity choice and freedom to home and business owners and that reduces their reliance on the monopoly grid.

EU and China settle solar trade anti-dumping dispute in a big plus for the solar industry

The European Commission in early August approved a EU-China solar-panel pact that involves Chinese solar manufacturers agreeing to a minimum selling price in Europe of 0.56 euros per watt and a volume limit of 7 gigawatts of Chinese exports to Europe. The deal averted Europe's threat to impose anti-dumping duties as high as 67.9% on Chinese solar panels. As part of the deal, China froze its trade investigations into European wine and polysilicon exports to China.

About 90 Chinese solar companies agreed to the deal, whereas the other 50 Chinese solar companies that export to Europe will be hit with a punitive duty of 47.6%. The deal favors the large Tier 1 Chinese solar companies who sell high-quality and bankable panels at relatively low prices due to their technology and economies of scale. European solar panel manufacturers were highly critical of the deal, saying that the minimum price should have been set much higher. The deal is favorable for the solar industry in general since it takes some of the downward pricing pressure off solar panels in Europe. The China-EU deal will remain in force only until the end of 2015.

Meanwhile, other solar trade spats continued. Europe settled its anti-dumping solar case against China but Europe's investigation continues on anti-subsidy claims against China. Moreover, China recently imposed tariffs on polysilicon exports to the U.S. and South Korea. Despite these trade spats, solar companies have various ways to get around solar trade restrictions over the longer-term by shifting production and sourcing channels.

Solar Pricing

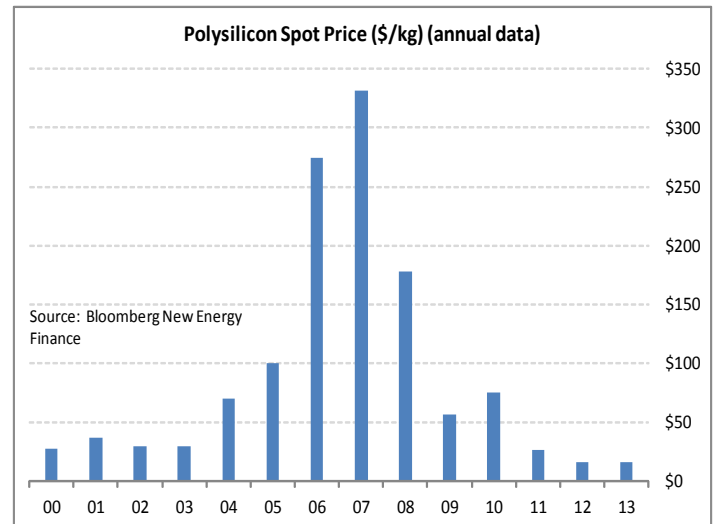
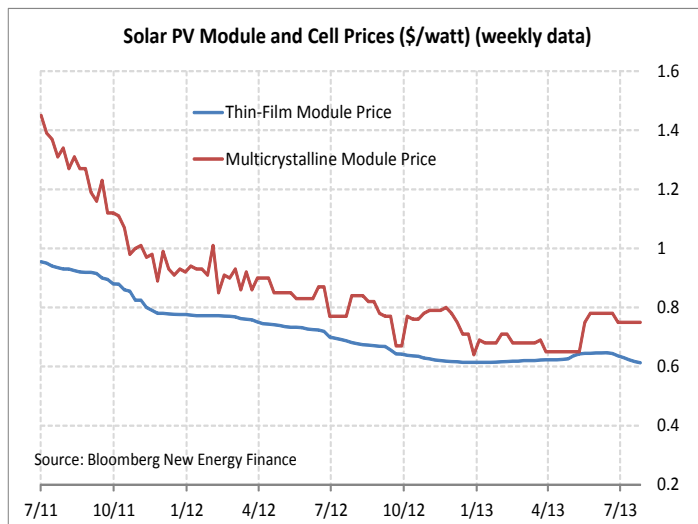
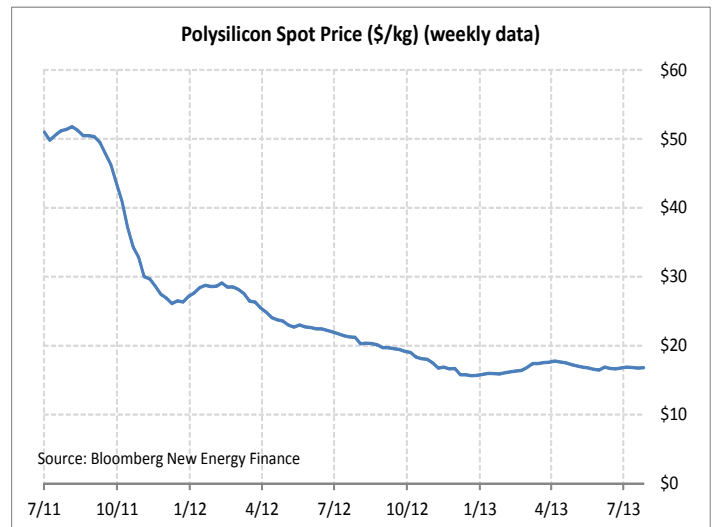
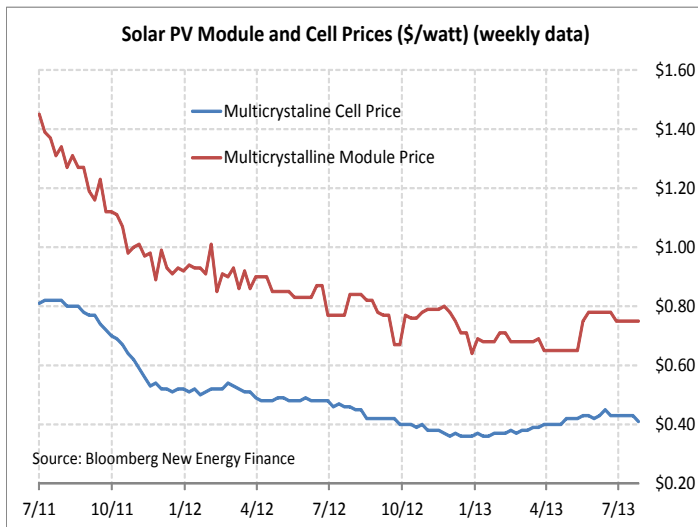
Prices for solar cells and modules hit record lows in late 2012 and then moved mostly higher in the first half of 2013. The price of multicrystalline solar cells move higher by 25% to a 1-year high of 45 cents per watt in mid-June from the record low of 36 cents in December 2012, but has since faded to 41 cents, according to data provided by Bloomberg New Energy Finance. Multicrystalline solar cells are manufactured from wafers that are cut from pure polysilicon. The cells are then assembled into a module assembly that includes a frame, an encapsulate, and wiring.

Meanwhile, solar module prices moved higher by 22% from the record low of 64 cents per watt posted in Dec 2012 to post an 8-month high of 78 cents in May, according to Bloomberg New Energy Finance. Solar module prices have since fallen back to 75 cents, still up by 17% from the record low.

Spot polysilicon prices move higher by 14% to a 9-month high of \$17.97 per kg in April from the record low of \$15.83 posted in Dec 2012, but have since faded to \$16.99, according to Bloomberg New Energy Finance.

Solar pricing has stabilized in the past several months mainly because production has slowed as smaller and higher-cost producers have been forced out of the market. In addition, the large players have stopped building new capacity and most are running below current capacity.

Thin-film solar modules made by First Solar and others do not use polysilicon and instead use a different process to place a semiconductor PV coating on a substrate backing. Thin-film module prices have not rebounded this year and instead hit a record low of 61.1 cents per watt in the latest reporting week of Aug 7, according to Bloomberg New Energy Finance



Solar PV Annual New Installations

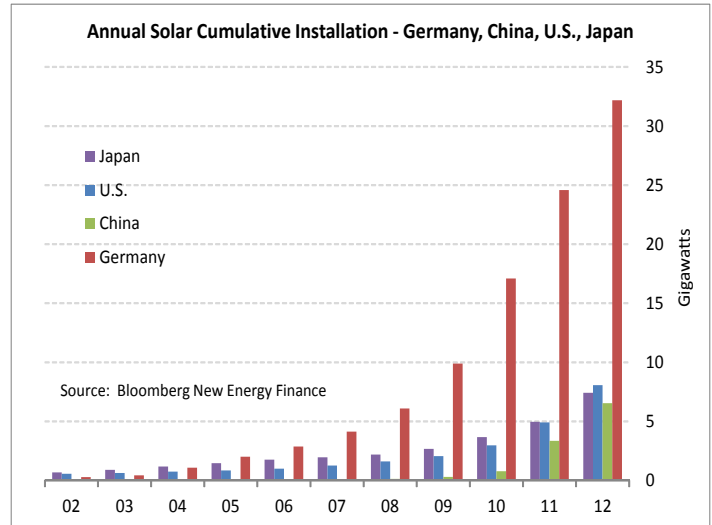
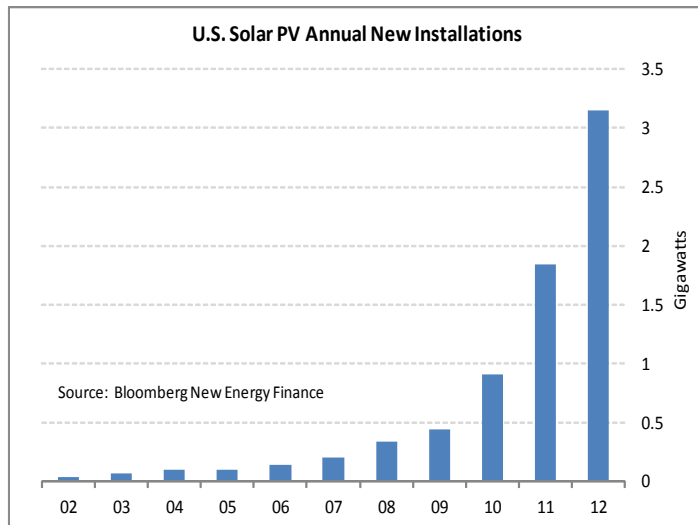
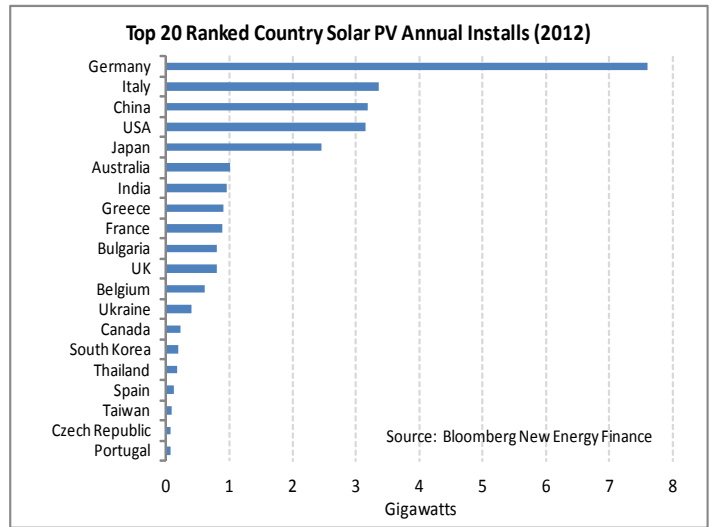
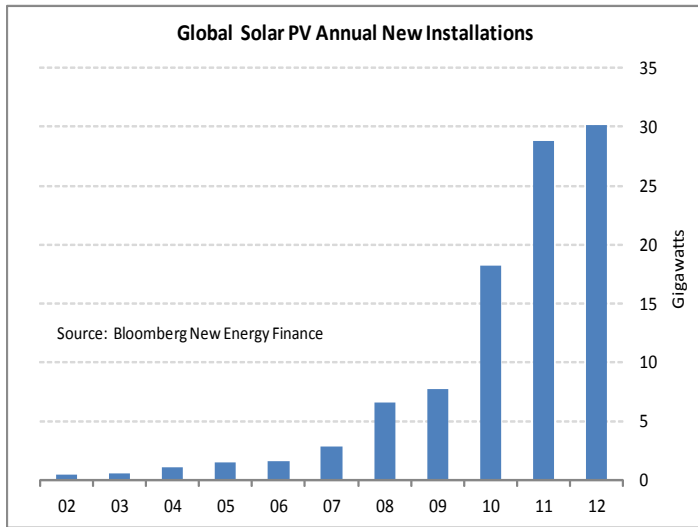
Global annual solar PV installations in 2012 grew by +4.7% y/y to 30.1 gigawatts, slowing sharply from the growth rates of +58% in 2011 and +135% in 2010, according to Bloomberg New Energy Finance. Nevertheless, the 2012 installation level of 30.1 gigawatts was more than ten times the 2.8 gigawatt level seen five years earlier in 2007.

Germany was once again the country with the largest amount of new solar PV installations in 2012 at 7.604 gigawatts. However, that was only a small 1.6% increase from 2011's pace of 7.485 gigawatts as Germany cut back on solar incentives. There were sharp drops in 2012 of -58% for installed solar in Italy, -45% in France, and -67% in Spain. The weakness in European solar was offset by increases elsewhere such as in the U.S. (+71%) and China (+24%).

For 2013, IHS is forecasting that the rankings for annual new solar PV installations will be: China, U.S., Germany,

Japan, and Italy. Solar installations in general are expected to be more evenly spread across the world, as opposed to the years of 2004-2011 when Europe dominated installations. This will be a healthy development for the solar industry, which will have a more diversified customer mix and will not be as vulnerable to subsidy shifts in specific countries.

The U.S. had a huge year in 2012 with new solar PV installations growing by 71% to 3.150 gigawatts from 1.845 gigawatts in 2011. Solar energy economics for customers substantially improved with the average price of a completed system in 2012 dropping -27% y/y, according to Solar Energy Industries Association (SEIA). The states with the largest PV solar installations in 2012 were: California (1,033 MW), Arizona (710 MW), New Jersey (415 MW), Nevada (198 MW), and North Carolina (132 MW), according to the SEIA.



Solar PV Cumulative Installations

The amount of cumulative PV electricity generation capacity across the world exceeded the 100 gigawatt threshold to hit 103.8 gigawatts (a gigawatt is 1 billion watts) by the end of 2012, according to data from Bloomberg New Energy Finance. In just five years, global cumulative solar PV electricity generation capacity has increased by ten-fold from 10.4 gigawatts in 2007 to 103.8 gigawatts in 2012, representing a compounded annual growth rate of 58%.

Germany at the end of 2012 had the world's largest amount of cumulative installed solar electricity generation capacity by far at 32.2 gigawatts, according to Bloomberg New Energy Finance. Germany had 31% of world solar capacity at the end of 2012. Italy by the end of 2012 had the second highest solar capacity at 16.1 gigawatts representing 15.5% of the world total. The countries having the next largest

solar capacity by the end of 2012 were the U.S. at 8.1 gigawatts, Japan at 7.4 gigawatts, China at 6.5 gigawatts, and Spain at 6.2 gigawatts.

U.S. cumulative solar electricity capacity rose to 8.069 gigawatts at the end of 2012, representing 7.8% of the world total. That is enough to power about 1.3 million households. U.S. cumulative solar electricity capacity over the past five years rose by more than six-fold from 1.267 gigawatts in 2007 to 8.069 gigawatts in 2012.

China's cumulative solar electricity capacity in 2012 rose to 6.539 gigawatts, representing 6.3% of the world total. China's cumulative solar electricity capacity in the past 5 years has risen by 65-fold from 100 megawatts in 2007 to 6.539 gigawatts in 2012.

