

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), is down -5% year-to-date (through Oct 14) giving back a little of the +127% rally seen in 2013. The MAC Solar Index posted a new 7-month high in early September but has since fallen sharply. The fundamentals of the solar industry remain strong but solar stocks have been caught by the downside correction in the overall U.S. stock market that has hit smaller-cap and higher-beta stocks particularly hard.

Nevertheless, solar stocks are still up sharply from the lows posted in late 2012 due to the surge in end-market demand, the stabilization of polysilicon and solar panel pricing (see charts on p. 3), reduced capacity via the exit of weaker solar players, and the improved profitability of solar manufacturers. The surge in demand has been driven by the sharply lower cost for solar and by the spread of solar growth across the world rather than just the initial concentration in Europe.

Strong solar demand is creating a module shortage

Global demand for solar panels has strengthened substantially in the past year and demand has now caught up with capacity, thus leading to some solar panel shortages. SunPower CEO Tom Werner recently said, "It would be fair to say that our panels are in short supply." SunPower in July announced plans for a new 700 MW plant that will come on line in 2017. Meanwhile, Trina's CEO Jifan Gao said in September that, "Right now Trina is producing at 100% of capacity and selling at all rates, and we still can't meet all customer demand."

The increase in demand is coming from a variety of geographical sectors and is being driven by the drop in solar pricing that has made many more solar projects economical. China, by far the world's number one country for new solar installs, had a very weak first half with installations of

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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)



only 3.3 GW. However, some market observers now believe that a breakneck pace of China installs in the second half may allow China to still reach its 2014 goal of 13 GW. The Chinese government is particularly trying to boost the installation of distributed solar at government, commercial and residential locations.

Meanwhile, solar demand in Japan remains strong as the government continues its efforts to promote solar as a means to reduce the country's dependence on nuclear energy. Japan will install 10-12 GW of solar in 2014, easily making Japan the second largest solar market behind China, according to Bloomberg New Energy Finance. However, solar growth in Japan is currently seeing some bottlenecks as five of the nation's utilities temporarily halted grid connection approval for solar farms to provide some time to study the capacity of their grids to integrate solar.

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***Please note: This material contains the opinions of MAC Global Solar Energy Index but not necessarily those of Guggenheim Funds Distributors, LLC.**

Successful Yieldco IPOs pave the way for more

Clean-energy YieldCos have quickly found acceptance among investors, thus providing solar companies with a valuable way to reduce capital costs and unlock shareholder value by spinning off their project subsidiaries.

In the solar industry, a “YieldCo” is a company that owns solar electricity generation facilities and collects stable electricity revenue from investment-grade utilities or companies through long-term power-purchase agreements. A YieldCo typically has low operating costs and distributes its excess cash to shareholders through relatively high dividends. A YieldCo can minimize or even eliminate its corporate tax liability by taking advantage of clean energy tax credits and accelerated depreciation. A YieldCo can be attractive to an investor who is looking for low risk and strong dividend yield.

The MAC Solar Index in September added two YieldCos as constituents: TerraForm Power (TERP), a spin-off from SunEdison (SUNE), and Abengoa Yield (ABY). YieldCos add a lower beta yield component to a stock index, thus damping the volatility of the index while boosting its overall dividend yield.

There are sure to be more solar YieldCos down the road. SunEdison (SUNE) has already filed an IPO prospectus for a second YieldCo that would own solar projects in Asia and Africa. Companies such as Trina (TSL), Jinko Solar (JKS), SunPower (SPWR), and others are also reportedly considering spinning off YieldCo subsidiaries.

IEA offers roadmap for solar to become the world's largest power source by 2050

The International Energy Agency in September released a roadmap for solar to become the world's largest power source by 2050. The IEA report ([link](#)) anticipates that solar PV could account for 16%, and concentrated solar power plants could account for 11%, of the world's energy by 2050. The report anticipates that the levelized cost of solar electricity could drop to 5.4 cents per kWh by 2050 and that rooftop PV could drop to 7.8 cents/kWh.

Chinese and U.S. officials may be working to settle solar trade disputes

The U.S. Department of Commerce on July 25 issued a preliminary ruling for anti-dumping duties on Chinese solar companies, adding to the anti-subsidy duties that the DOC imposed earlier in the year. China then retaliated by clamping down on loopholes to its previous duties on polysilicon imports from the U.S. and Korea. On a brighter

note, China's Ministry of Commerce on Aug 8 sent a letter to the U.S. Commerce Secretary suggesting that China may be open to a possible settlement that would eliminate the tit-for-tat duties. Meanwhile, there was good solar trade news from India as India's Ministry of Commerce & Industry in early September announced that the government dropped its May proposal to impose anti-dumping duties on solar imports.

Massachusetts posts third year of double-digit clean energy job growth

Clean energy jobs in Massachusetts have grown by nearly 50% since 2010. The clean energy sector in Massachusetts now includes 88,273 employees and 5,985 businesses, according to the 2014 Massachusetts Clean Energy Industry Report. The report said that the Massachusetts clean energy industry has grown to \$10 billion, accounting for 2.5% of the state's GDP. The report highlights the important contributions that clean energy is making to job creation and GDP growth in the United States as a whole, in addition to the benefits of reducing consumer electricity costs and reducing pollution and carbon emissions.

GT Technology's bankruptcy not caused by solar

GT Technology (GTAT) on Oct 6 surprised the markets by announcing a Chapter 11 bankruptcy filing. GTAT was originally focused only on solar production equipment but then aggressively branched out into sapphire crystal technology. GTAT's bankruptcy was caused by a cash crunch tied in part to Apple's decision not to use GTAT's sapphire glass for its new iPhone 6. GTAT's bankruptcy was not related to its solar business. Indeed, the solar industry has begun to add new capacity, which is supportive for solar production equipment manufacturers.

Solar industry should see minimal impact from plunge in crude oil prices

The recent plunge in Brent crude oil prices to \$85/barrel has had some negative impact on solar stock prices, but only because of a misperception among some investors that solar and crude oil are closely connected. The plunge in crude oil prices could possibly reduce political pressure for alternative energy policy support, but otherwise there is no direct connection between crude oil prices and solar. Solar power is part of the electricity-generation sector of the U.S. economy, whereas crude oil fuel products are mainly used to drive engines in the transportation sector. A sharp drop in oil prices has no significant impact on electricity prices because U.S. utilities derive only about 1% of their electricity from burning petroleum fuel. Lower crude oil prices therefore do not present a competitive threat to solar.

Solar Pricing

Prices for solar cells and modules have edged lower in 2014 and have posted new record lows. Specifically, the price of multicrystalline solar cells edged to a record low of 34 cents per watt in September, taking out the former low of 36 cents per watt posted in late 2012 and early 2013, according to data from Bloomberg New Energy Finance. Solar cell prices in the past three years have plunged by -58% from the 81 cent level seen in mid-2011.

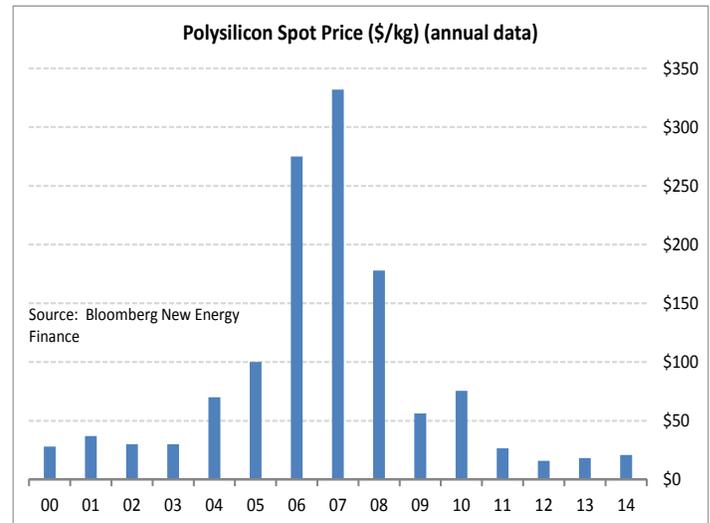
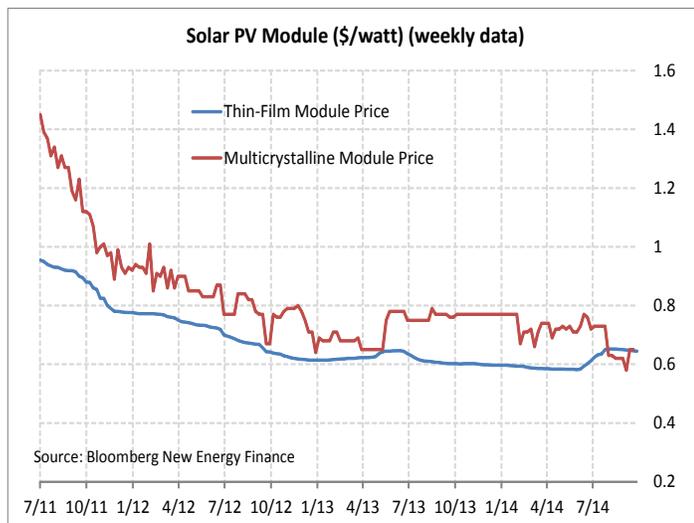
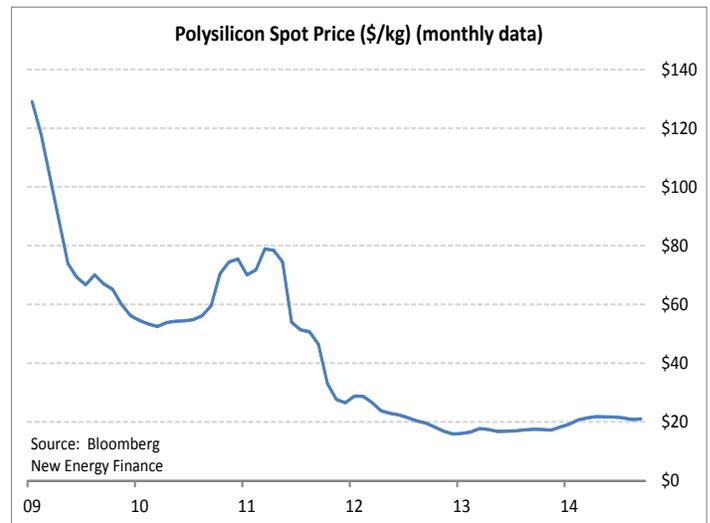
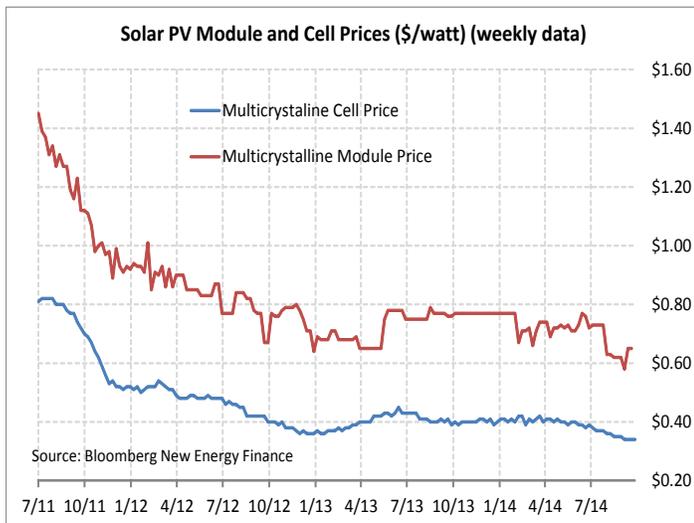
Meanwhile, multicrystalline solar module prices posted a new record low of 58 cents per watt in the week of Sep 8, 2014, and then recovered a bit to 65 cents per watt in mid-September, according to data from Bloomberg New Energy Finance. Solar module prices in the past three years have plunged by -60% from the \$1.45 level seen in mid-2011.

Spot polysilicon prices are trading sideways just above \$20 per kilogram, closing September at \$20.99 per kilogram,

according to data from Bloomberg New Energy Finance. Polysilicon prices posted a record low of \$15.83 per kilogram in Dec 2012 but have since recovered modestly. Polysilicon prices in the past three years have plunged by -59% from the \$51.37 level seen in mid-2011.

Solar pricing in 2013-14 has stabilized mainly because of stronger demand and reduced production capacity after the 2011-12 shakeout forced smaller and higher-cost producers out of the market. In addition, the large players are now calibrating their production more closely to demand.

The price of thin-film modules made by First Solar and others posted a new record low of 58.2 cents in early June 2014, according to Bloomberg New Energy Finance. Thin-film module prices have since recovered modestly to 65.0 cents per watt.



Solar PV Annual New Installations

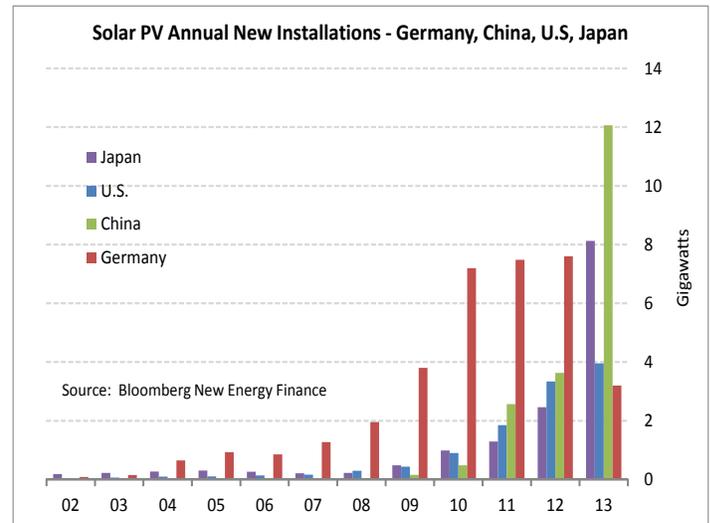
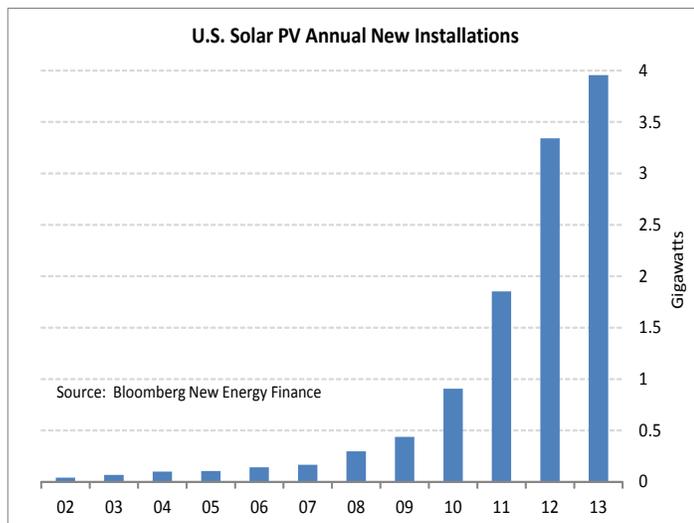
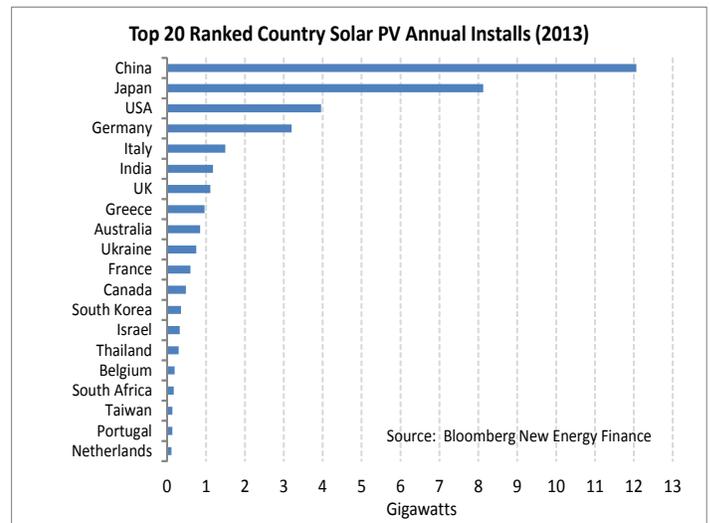
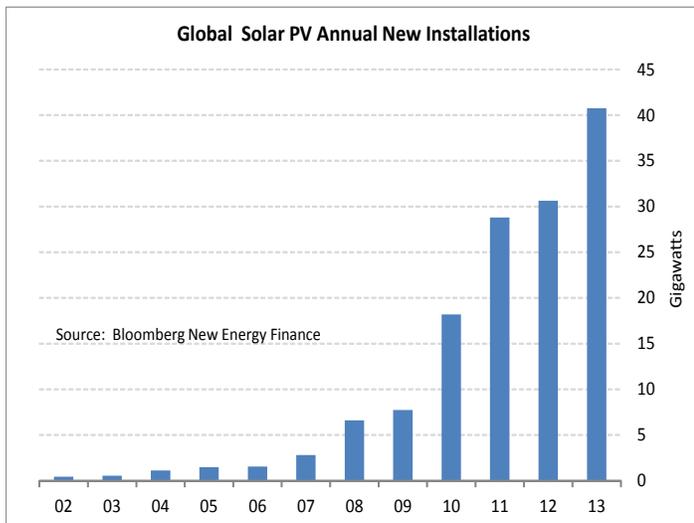
Global new solar PV installations in 2013 grew by +33% y/y to a record 40.7 gigawatts (GW) from 30.6 GW in 2012, improving sharply from the poor +6% y/y growth rate seen in 2012, according to Bloomberg New Energy Finance. Global solar PV installations have grown by a compounded annual rate of +44% over the last 5 years and have risen six-fold from 2008.

China leapfrogged Germany into the number one world spot for annual PV installs with 12.0 GW of installs in 2013, up by +232% from its 2012 level of 3.6 GW. Japan took second with 8.1 GW of new installs in 2013, up by +230% from 2.5 GW in 2012. The U.S. stood third in new installs at 4.0 GW.

The sharp increase in installs in China, Japan and the U.S. more than offset the declines in Europe caused by reduced subsidy support. German installs in 2013 fell by -58% to

3.2 GW from 7.6 GW in 2012, although that was still large enough to put Germany in fourth place for world installs. Italian installs fell by -58% to 1.5 GW from 3.6 GW in 2012. French installs fell by -44% to 600 MW from 1.1 GW in 2012. The diversification of solar PV installs beyond Europe was a very healthy development for the solar industry.

U.S. solar PV installations in 2013 grew by +18% to a record high of 4.0 GW from 3.3 GW in 2012, according to data from Bloomberg New Energy Finance. U.S. PV installations over the last 5 years have grown by a compounded annual growth rate of +68%. SEIA is forecasting that U.S. PV installs will grow by an annual compounded growth rate of about +30% over the next three years to 9.2 GW by 2016. The states with the largest new PV solar installations in 2013 were California (2,621 MW), Arizona (421 MW), North Carolina (335 MW), Massachusetts (237 MW), and New Jersey (236 MW), according to the SEIA.



Solar PV Cumulative Installations

The amount of cumulative PV electricity generation capacity across the world grew sharply by +40% y/y to 146 gigawatts (GW) by the end of 2013, according to data from Bloomberg New Energy Finance. In just five years, global cumulative solar PV electricity generation capacity has increased by nine-fold from 16.8 GW in 2008 to 146.0 GW in 2013, representing a compounded annual growth rate of +43%.

Germany at the end of 2013 had the world's largest amount of cumulative installed solar electricity generation capacity by far at 35.4 GW, according to Bloomberg New Energy Finance. Germany's cumulative solar electricity capacity in the past 5 years has risen by more than five-fold from 6.1 GW in 2008 to 35.4 GW in 2013.

China moved into second place in 2013 with 19.1 GW of installed PV, representing 13.1% of installed global PV capacity. China's cumulative solar electricity capacity in the past 5 years has risen by 136-fold from 140 megawatts in 2008 to 19.07 GW in 2013.

Italy was in third place in 2013 with 18.0 GW of installed PV, representing 12.3% of world capacity. Japan was in fourth place in 2013 with 15.6 GW of installed PV, representing 10.7% of installed global PV capacity.

The U.S. was in fifth place in world PV cumulative capacity in 2013 at 12.5 GW representing 8.6% of world capacity. U.S. cumulative solar electricity capacity over the past five years rose by more than nine-fold from 1.37 GW in 2008 to 12.5 GW in 2013 and showed an annual compounded growth rate of +47%.

