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New Rec: First Solar (FSLR: $130.04) May 9, 2011

Position: Sell Target: $85

$MM	Q1 11a	Q2 11e	Q3 11e	Q4 11e	2011e	2012e
Revs	567.3	681.4	1,251.6	1,148.6	3,648.9	4,867.9
EPS $	1.33	1.07	2.37	1.92	6.69	7.50
Y/Ygr	-33%	-42%	16%	7%	-13%	12%
PE	na	na	na	na	19.4	17.3
PSR	na	na	na	na	3.1	2.3
Consen	na	1.22	2.88	4.30	9.73	10.92

Shares Out: 87.1M Market Cap: $11.3B FYE: Dec

Concept:

1. FSLR's segment accounting obfuscates the profitability between non-captive module sales and sales of utility scale solar systems. Sales of utility scale solar systems will drive unsustainably high operating profits in the next two years due to their above market

economics, masking the deterioration in the company's core business of selling solar modules.

2. FSLR's non-captive components results will underperform investor expectations due to unfavorable supply and demand, competitor cost reductions, and increased competition from other thin film module manufacturers.
3. FSLR's modules are only 11.7% efficient. This compares to its competitors' crystalline modules that are typically 14%-16% efficient and some that are over 20% efficient. Due to FSLR's lower efficiency, its modules sell for less than those of its competitors, putting the company at a competitive disadvantage. As competitors sell at lower prices, FSLR may be unable to profitably maintain a price low enough to justify purchase of its modules versus competitors.
4. We value the company on a sum of parts basis at about $80. The catalyst to a lower valuation will be the realization that profits over the next two years are unsustainable, as they are driven by unsustainably high profits from sales of power systems, and not by core operating sales of modules. Investors will also come to understand the weakness in the core business.

Summary: The solar industry has grown significantly in the past several years. Demand for solar modules increased from about 2.7GWs (gigawatts) in 2007 to about 18.0GWs in 2010. As the cost for solar power is much higher than conventional sources of power, demand for solar has primarily been driven by subsidies in Europe, which accounted for more than 80% of estimated solar installations in each of the past three years. Forecasts are for solar installations to grow slightly to about 19GWs in 2011, staying at about the same level for 2012, and resuming growth to about 22.5GWs in 2013. Supply, on the other hand, is growing much faster and we expect a glut of solar modules in late 2011 and 2012.

FSLR operates is business as two segments, components and systems. The company views its components segment, which manufactures and sells solar modules mostly to customers in Europe, as its principal business. The systems business develops, sells, and constructs utility scale solar power plants, mainly in the United States. FSLR acquired several solar developers in the United States in 2009 and 2010, through which it obtained its 2.4GW project pipeline. There is significant value in these projects, due to their associated power purchase agreements (PPAs), which are priced much higher than what new projects will be able to garner.

FSLR's segment reporting is somewhat misleading, since it obfuscates the real economics of the reporting segments, components and systems. The company views the systems segment as an enabler to drive module throughput. As a result, FSLR runs this segment at a breakeven operating profit, reporting only enough revenue to cover the segment's cost of goods sold and operating expenses. The balance of revenue and all of the operating profit is allocated to the components segment for the modules that are included in the systems. Due to this accounting

treatment, it is difficult to ascertain the profitability of the non-captive module business apart from the captive systems business.

Competition is increasing in the US utility scale solar market. Utility scale project prices have declined from about $6/watt (installed) in 2008 to about $3/watt today. Developers tell us prices should be about $2.50 for 2012 to 2014, and one developer told us he had heard some companies bidding as low as $1.50/watt for projects installed by 2015.

We think FSLR will generate revenue from its captive systems pipeline of $3.66/watt installed in 2011 and $3.60/watt installed in 2012, resulting in captive system gross profit of $1.13/watt in 2011 and $1.11/watt in 2012. Due to deteriorating fundamentals in its non-captive solar module business, FSLR recently increased the amount of modules it will sell into its captive pipeline in 2011 from its previous guidance of 400MWs (megawatts) to its new guidance of 450MWs. We estimate the sales of its systems, including the modules, will result in operating income of $352mm in 2011 and $618mm in 2012. This compares to the company's guidance of $900mm-$970mm and our estimates of $656mm for total company operating income in 2011 and our estimate of $759mm for total company operating income in 2012. If FSLR's projects were repriced to $3.10/watt installed, a slight premium to the market today, we estimate the systems business would earn only about $239mm (including profit on modules) of operating profit and $2.33 of EPS in 2012. Under these assumptions, total company operating income would be only about $380mm and EPS would only be about $3.81 in 2012.

We estimate the non-captive component business generated the vast majority of the company's operating profits of $680mm in 2009 and $749mm in 2010. However, our analysis suggests non-captive module profits are falling fast. Based on our review of FSLR's financial results, we estimate Q1 2011 non-captive module ASPs were down -23% y/y and down -7% sequentially. Based on industry publications, it appears module prices have already declined by about -10% sequentially for Q2 2011. Companies continue to ramp up manufacturing capacity much more than the market can absorb product. And with subsidy reductions throughout Europe, prices must be lower to stimulate demand.

Some think FSLR can make money by selling modules even in an oversupplied environment. FSLR has the lowest manufacturing cost structure in the industry at about $0.75/watt. Vertically integrated crystalline module manufacturers (except silicon) currently have a cost of around $1.20/watt. The cost difference is basically due to polysilicon. FSLR's cadmium telluride modules contain a negligible amount of polysilicon, but its crystalline competitors use about 6 grams, which amounts to $0.42/watt at $70/kg polysilicon prices. Polysilicon prices are expected to decline meaningfully and this cost/watt advantage should

follow. Equally as important, however, FSLR's modules command less revenue per watt due to their low efficiency.

FSLR modules are 11.7% efficient as of Q1 2011. This compares with most crystalline modules that are 14%-16% efficient, and some that have efficiencies in excess of 20%. Efficiency is the primary driver of price. Less efficient modules require more space, racking hardware, and labor to generate the same amount of power as high efficiency modules. According to our sources, the point of indifference for modules that are 10% efficient compared to modules that are 15% efficient is about a $0.30-0.40 discount per watt for the lower efficiency module. FSLR has consistently sold modules for less money than its competitors. As module prices come down, lower efficiency modules will be increasingly disadvantaged as they become a smaller % of the overall project cost. FSLR targets annual efficiency gains of 0.5% (i.e. 11.7% in Q1 2011 to 12.2% in Q2 2012), but nearly every other company is increasing its efficiency as well.

In addition to increased competition from crystalline module manufacturers, several companies are planning to manufacture varying types of thin film modules. Some companies have even announced plans to manufacture cadmium telluride modules, which would compete directly with FSLR. Most notably, GE recently announced it is building a manufacturing plant in the US capable of producing up to 400MWs per year, which will go live late in 2011. GE has already reported module efficiency of 12.8%, significantly exceeding the efficiency of FSLR modules of 11.7%. This is yet another problem for FSLR.

We value FSLR on a sum of the parts basis. We estimate the company will generate operating income from non-captive component sales of $305mm in 2011 and $141mm in 2012, contributing EPS of $3.05 in 2011 and $1.37 in 2012. Note that our estimate for non-captive earnings declines materially despite the company spending about $1B of capex to expand and upgrade its module manufacturing facilities. Our estimates assume non-captive solar module prices decline from $1.62/watt in 2010 to $1.19/watt in 2011 and $0.98/watt in 2012. Price declines could be more severe. Recent company commentary by Renesola suggested crystalline silicon module prices could be $1.00-$1.20/watt by Q4 2011. If this occurred, FSLR may have to price its modules as low as $0.70-$0.90/watt in order to sell them due to their low efficiency. FSLR would likely lose money on its non-captive component sales if this occurred. Based on multiple of 15X forward 2012 EPS, a multiple slightly richer than the company's current multiple of 12X consensus, we value the non-captive component business at $21/share.

We value the systems business as if the company were selling its projects closer to today's prices, plus an NPV premium for the above market value of the current pipeline. We estimate at today's market price of about $3.10/watt installed,

a slight premium to the current market, FSLR's systems business (including modules installed in systems) would generate about $1.30 of EPS in 2011 and $2.33 of EPS in 2012. We will detail how we arrive at that number, below. Based on a 15X forward EPS multiple, this business should be worth about $35/share. We think the current project pipeline will drive about $1.5 billion of excess operating earnings from 2011 to 2014. Using a 10% discount rate and assuming a tax rate of 15%, we think the above market NPV of these projects is about $13/share.

To summarize, we value the non-captive components business at $21/share, the recurring systems business at $35/share, the NPV premium of the above market project pipeline at $13/share, and net cash on the balance sheet of $8/share. Our analysis suggests the stock could be worth about $77. Our initial price target for FSLR is $85

We find it interesting that none of the sell side analysts have attempted to build a model that breaks out operating profit between the non-captive module revenue stream and the captive systems revenue stream. FSLR is ramping up its systems business. As the prices of modules sold into the systems business rise and prices of non-captive module sales decline, FSLR's accounting will increasingly obfuscate the diverging fundamentals of its businesses. We expect investors to come to realize this problem, and to come to realize that FSLR's non-captive module business may not be profitable in late 2011 and 2012. While the company's project pipeline allows it some leeway with respect to managing earnings, we think a material earnings shortfall should become apparent in the back half of 2011. Complicating matters, the company will likely have burned through much of its lucrative pipeline by the end of 2012, which means there could be an earnings cliff in 2013 just around the corner from a disappointing 2012. When investors realize this, the stock is likely to face significant multiple compression.

Longer term it is possible, given that its technology is less efficient, that prices of competitor modules could fall to such an extent that FSLR would no longer be profitable in its component sales to third parties, as FSLR may not be able to lower its own costs fast enough or far enough to profitably keep up with the increasing efficiency and lower costs of its competitors.

Background:

The company views its components segment as its principal business. The components segment manufactures and sells solar modules, mostly to Europe. The systems business, in contrast, sells complete utility scale solar power plants, mainly in the United States. FSLR moved aggressively into the utility scale solar market by acquiring several solar power plant developers in the United States,

which provided FSLR with the vast majority of its current 2.4GW utility scale pipeline. However, only about 30% of it is permitted, and some of the larger products face significant environmental opposition. FSLR's systems segment provides project development, EPC services, project finance, etc. Systems sales are primarily driven by projects developed in house or acquired.

The solar industry has grown significantly in the past several years. Demand for solar modules increased from about 2.7 GWs in 2007 to about 18.0 GWs in 2010. Demand for solar has primarily been driven by subsidies in Europe. In Europe, subsidies come in the form of a feed-in tariff (FiT), which is policy mechanism designed to encourage investments in renewable energy. Under the feed-in tariff regime, renewable energy generators are paid above market power prices for the power they produce by utilities required to purchase it. As expected, solar modules typically find their way to geographies with the highest subsidies, causing significant fluctuations in year to year installations as subsidy regimes change.

Table 1. Solar Installations (MWs)

	2007	2008	2009	2010	2011e	2012e	2013e
Germany	1,250	1,800	3,800	7,560	6,000	5,000	4,000
Italy	50	300	700	3,780	5,000	3,000	3,000
US	250	350	500	1,000	2,000	3,500	4,000
France	-	50	200	700	1,250	1,000	1,000
Japan	200	100	500	1,000	1,250	1,250	1,250
China	100	100	150	500	1,000	2,000	3,000
India	-	50	50	100	200	400	600
Spain	500	2,600	200	300	300	300	300
Czech Rep	-	50	400	1,250	150	150	150
Other	350	600	1,000	1,810	2,100	2,400	5,200
Total	2,700	6,000	7,500	18,000	19,250	19,000	22,500
Y/Y %	Na	122%	25%	140%	7%	-1%	18%
% of total							
Germany	46%	30%	51%	42%	31%	26%	18%
Italy	2%	5%	9%	21%	26%	11%	9%
US	9%	6%	7%	6%	10%	18%	18%
China	4%	2%	2%	3%	5%	11%	13%

-OWS estimates based on review of industry data

Germany accounted for an estimated 3.8GWs, or 51%, and 7.6GWs, or 42% of total estimated solar installations in 2009 and 2010 respectively. Germany is the most mature solar consumer, nearing 20GWs of installed capacity. Falling prices and a rich FiT structure has led to significant installation volumes. Germany originally had a goal of 20GWs of solar by 2020. It is likely to meet that goal early, by the end of 2011. Germany's FiT for a 100 kW rooftop mounted solar system was 0.44 Euros per kilowatt hour (kwh) at the end of 2009 and 0.35

Euros/kwh at the end of 2010. At 0.35 Euros/kwh, this is the equivalent of paying 355 Euros per megawatt hour, about 5X the 2012 forward peak wholesale power price of about 71 Euros. Due to rising subsidy costs, Germany has taken action to reduce annual installations. It recently reduced the Fit, which currently stands at 0.25 Euros. Legislation has been passed that adjusts FiTs upwards and downwards based on backward looking installation volumes. It appears that Germany is targeting annual installations of about 3.5GWs for the next several years. Any significant deviations from this level will likely trigger a legislative response.

Italy accounted for an estimated 0.7GWs, or 9%, and 3.8GWs, or 21% of total estimated solar installations in 2009 and 2010 respectively. Similar to Germany, Italy should exceed its original 2020 goal of 8 GWs of installed capacity by mid 2011. To no-one's surprise, this aggressive build out has been the result of a favorable FiT. Italy is redesigning its FiT program. There have been several drafts of the new legislation released, but the final version is yet to come. Some drafts have had caps on annual installations, while others have not. All the drafts have suggested meaningful reductions in FiTs. Some drafts have proposed reductions of more than -30% from now through the end of 2011 and some proposed reductions of more than -75% by 2015. The message should be clear. Italy, like most other countries, cannot afford to pay such high subsidies. The latest draft of Italy's legislation, suggests the country may set a target to have 23GWs installed by the end of 2016, which would suggest annual installations of about 3GWs.

Other European countries are also cutting back on subsidies. Spain, which accounted for 43% of estimated solar module installations in 2008, recently enacted policy that retroactively changed the FiT rates on solar plants. France recently reduced its subsidies after identifying a backlog of about 3.5GWs under a rich FiT structure. The 3.5GWs is grandfathered in under the old FiT and the French government estimates 2.0GWs will be built in 2011 and 2012. However under the new plan, annual installations are capped at 500 MWs/year, excluding the amount grandfathered in.

China had about 2 GWs of installed solar capacity at the end of 2011. China has a target of 5GWs of installed capacity by 2015. There is chatter that China will increase its target to 10GWs by 2015 in response to the nuclear crisis in Japan. Our demand forecast is for installed capacity of 15 GWs in China by year-end 2015. Regardless, the Chinese market is unlikely to move the needle materially on near term demand.

Although the United States represents only about 10% of estimated 2011 solar installations, it is a fast growing market and is the focus of FSLR's systems business. According to the Solar Energy Industries Association, there are 0.8GWs

of utility scale solar projects in operation, 0.7GWs in construction, and 25GWs in development in the United States. Utility scale solar projects can be as small as 1MW and the largest one in operation in the United States is about 80MWs. As companies seek to realize better economies of scale, the size of projects in development are much larger than those in operation, with projects from 100MWs to 500MWs accounting for a substantial majority of projects in development. Concentrated solar projects account for about 9GWs of those being developed while traditional flat module photovoltaics account for about 16GWs. Although concentrated solar reportedly costs more money, some types of concentrated solar can provide baseload power generation, which enhances its value.

Solar module manufacturers often talk about reducing their total installed costs per watt in order to deliver power at market prices. The bogey a number of the companies use is $0.10/kwh. At this level, they assert, the cost of solar is at grid parity. In the same breath, they will usually tell you this assumes a 30% tax credit subsidy. It also appears to assume very low financing costs (sometimes DOE backed financing) and a depreciable life for tax purposes of 5 years, which can be attractive to investors with a tax appetite. The current unsubsidized installed cost of a utility scale solar project is about $3.00/watt, about half what it was in 2008. At this price, we estimate the unlevered return on invested capital for an investor would be about 1.3%, assuming the project sold power at forward peak market prices and did not benefit from subsidies. Not only is solar not economic, but it is uneconomic at forward power prices even after the benefits of subsidies, unless of course, someone is willing to enter into a long term off take agreement to buy power at above market prices. This is precisely what has driven solar project development in the US, mainly in California.

About 30 US states have requirements for their utilities to source certain percentages of their power from renewable sources by specified years. These requirements are called renewable portfolio standards, or RPS. In order to meet RPS, power developers bid for contracts to supply renewable power to utilities at a fixed price for 10+ years. Once a power purchase agreement (PPA) is in place and the state utility commission has approved the terms (if necessary), the developer will move to secure financing. Basically, the utility agrees to pay very high prices for the power, which it then passes on to the unwitting consumer. California is the only state so far which has seen significant PPA approvals. Companies have signed up deals to deliver power for prices of more than $0.16/kwh and for terms up to 25 years. Prices are declining. According to FSLR, new PPAs are being offered at $0.10-$0.12/kwh. Yet there is still growing concern, even in California, that consumers are being negatively impacted by these costs. The Division of Ratepayer Advocates, which is a branch of the California Public Utilities Commission, is advocating for a more stringent and more competitive PPA approval process. There is also pressure in a handful of states to reduce RPS.

Assuming the RPS go unchanged, our sources tell us that the US needs about 100GWs of renewable power installations between now and 2020. They also tell us that solar should account for no more than 30% due to its high cost. The majority of renewable power installations are expected to be wind projects, which, while still expensive, are much cheaper than solar.

Europe, which accounted for in excess of 80% of solar installations in 2009 and 2010, is cutting back dramatically. While bulls often tout the US and China as the next solar frontiers, the markets are unlikely to compensate for declining demand in Europe. Estimates for 2012 solar installations world-wide vary widely from around 14GWs to as high as 22GWs. We forecast global demand to increase from 18 GWs in 2010 to about 19 GWs in 2011 and in 2012, increasing to 22.5 GWs in 2013. Our projections are slightly higher than consensus projections of 17.6GWs for 2011 and 18.3GWs for 2012, based on a recent FSLR presentation.

Discussion:

1. Segment accounting obfuscates segment profitability

FSLR operates as two business segments, components and systems. Total sales were $2.6B in 2010, out of which components was $2.2B and Systems was $378mm. The company views its components segment as its principal business. The components segment designs, manufactures, and sells solar modules, primarily through project developers and system integrators in Europe. The systems business, by contrast, sells complete utility scale solar power plants, mainly in the United States. For systems, FSLR provides project development, EPC, project finance, etc. Systems sales are primarily driven by projects developed in house or acquired. FSLR views the systems segment as a means to drive module throughput. As a result, FSLR runs this segment at a breakeven operating profit, reporting only enough revenue to cover the segment's cost of goods sold and operating expenses. The balance of revenue is allocated to the components segment for the modules that are included in the systems.

In addition to its segment disclosures, FSLR provides a breakdown of revenue by product, or end markets. The two buckets for revenue by product are "solar module revenue," which is non-captive customer component revenue, and "solar power system revenue." Out of $2.6B in sales in 2010, modules were $2B and Solar power system revenue was $577mm. Solar power system revenue when defined by product, includes revenues from modules sold to systems segment customers. By calculating the difference between the revenue of the systems segment, which does not include components, and the revenue by product, which does include components, we can arrive at how much revenue the systems business is generating on behalf of the components business. In 2010, for example, the

company reported $577mm of power systems product revenue but only $378mm of systems segment revenue. This means the systems business generated $198mm for the components segment. The company tells us the number of MWs its systems business installs each year. By dividing the $198mm by the 165MWs of systems installed in 2010, we can ascertain the average component revenue generated from systems sales, or $1.20/watt.

Table 2. Impact of segment accounting (OWS analysis):

	2009	2010
Solar power systems product revenue*	162.4	576.8
Systems segment revenue**	100.8	378.4
Revenue to components segment from systems	61.7	198.4
MWs installed by systems business (DC)***	38.0	165.0
Component ASPs on systems business sales	$1.62	$1.20
Component segment ASPs****	$1.83	$1.58
Non-Systems component ASPs****	$1.84	$1.62
Component segment gross profit per watt	$0.96	$0.81

*- Solar power systems revenue includes revenue generated from modules
**- Systems segment revenue excludes revenue generated from modules.
***- Systems installations per company disclosures
****- See discussion of components business for detailed analysis

Based on our analysis, we estimate component revenue per watt generated by systems sales of $1.62/watt in 2009 and $1.20/watt in 2010. We estimate this reduced component ASPs by -$0.01/watt in 2009 and -$0.04/watt in 2010 and gross profit per watt by about -1% in 2009 and -5% in 2010. As component revenue per watt from both systems and non-systems business was declining, this accounting did not materially obscure the business trends. However, FSLR is poised to grow its systems business materially. While systems accounted for about 12% of component unit sales in 2010, it will likely account for about 23% in 2011, and in excess of 30% in 2012. Importantly, many of the projects it will execute in the coming years were priced when solar companies could charge much more money. As FSLR executes on these projects, it will result in very favorable component ASPs, and obscure the deteriorating fundamentals of the non-captive component business. But once FSLR burns through these lucrative projects and executes on projects priced in today's market, profitability will deteriorate meaningfully.

2. Systems business will generate unsustainable profits in 2011 and 2012

FSLR has disclosed a project development pipeline of 2.4GWs. FSLR obtained 2.2GWs of this pipeline by acquiring NextLight for $297mm in July of 2010 and OptiSolar for $399mm in April of 2009. All of the projects that came from NextLight and OptiSolar have related power purchase agreements, or PPAs. These PPAs are long term agreements to sell power to two California utilities,

Southern California Edison and PG&E. According to FSLR, its current PPAs, which resulted from 2007 and 2008 RPS solicitations, are priced to deliver power for $0.14-$0.16/kwh. This compares to forward peak market prices in California of about $0.07/kwh. FSLR has indicated that, for new projects, it is bidding to provide power for $0.10-0.12/kwh. As a point of reference, Sunpower personnel told us they recently signed a PPA to deliver power for less than $0.11/kwh. PPA prices are important to FSLR, as the company is now in the development business, and PPA prices will dictate how investors will be willing to spend for FSLR's projects. Assuming an investor desires a specified return, FSLR would generate -27% less revenue per installed watt for a project with a PPA priced at $0.11/kwh, when compared with a project with a PPA priced at $0.15/kwh (($0.15-$0.11)/$0.15=-27%). It is worth noting that these prices would be much higher without significant subsidies.

PPA prices are primarily a function of how much it costs to install a watt. Some factors can change this equation. For instance according to Sunpower, trackers (allow solar modules to turn as the sun moves across the sky) can add 10% to project costs but increase power output by up to 30%, meaning the project would be 30% more valuable on an installed cost per watt basis. Due to the increased cost of trackers, sources tell us they only make sense to deploy when installing high efficiency modules. Also, a module's temperature coefficient will affect how it performs with changing temperatures. Thin films generally perform better than crystalline modules in the heat. In the Arizona desert, for example, cadmium telluride should generate about 5% more power per watt than its crystalline competitors, making it about 5% more valuable than crystalline on an installed cost per watt basis, all else being equal.

Competition has increased significantly for utility scale solar power projects. Companies such as Suntech, Sunpower, and Sharp are have landed major projects. Utility scale project prices have declined from $6+/watt in 2008 to about $3.00/watt for those being installed today. We are hearing that companies are bidding on projects to be delivered for less than $2.50/watt for 2012-2014, and one developer told us that has heard bids for as low as $1.50/watt for delivery in 2015. In a recent corporate presentation, Suntech indicated it plans to sell installed projects for $2.50 in 2013. As is happening with solar modules, the lucrative profits in utility scale solar development are being competed away. Based on the above market PPAs and discussions with developers, we think FSLR's revenue for the current pipeline will be $3.25-$3.75/watt installed. However, the current level of profitability of FSLR's pipeline appears unsustainable.

FSLR breaks down the cost of a solar project by site specific costs, interest during development, module cost, and EPC (engineering, procurement, and construction). Based on our review of a pie chart provided by FSLR in its year end

earnings call, total project costs are about 8% for site specific costs, 12% for development, 5% for interest, 30% for modules, and 45% for EPC. EPC, or balance of system (BOS), includes inverters, electrical, mounting hardware, project management and engineering, and installation labor, appears to be about 45% of the total cost. Since, we know that FSLR's module costs are about $0.75/watt, we can deduce that FSLR thinks it can install a system for about $2.50/watt.

Table 3. FSLR installed cost per watt based on OWS analysis:

Projects	$/watt	As a % of total project cost*
Module	0.75	30%
EPC	1.13**	45%
Development	0.30	12%
Site specific	0.20	8%
Interest during construction	0.13	5%
Estimated total systems cost	2.50	100%

*- based on review of pie chart included in FSLR Q4 2010 earnings presentation.
**- FSLR notes in its presentation that the balance of system cost was about $1.40/watt in Q1 2009 and is expected to be $0.91-$0.98/watt in 2014.

We estimate FSLR will generate system product revenue per watt installed of $3.66 in 2011 and $3.60 in 2012 due to the above market value of its projects PPAs. If its PPAs were priced today, it is unlikely the company would be able to generate more than $3.00/watt of revenue from these projects, based on our discussions with developers. We expect FSLR systems business to install 476MWs in 2011 and 856MWs in 2012, driving operating profits from systems sales of $352mm in 2011 and $618mm in 2012. Due to the accounting, this will materially impact the results of the components segment, which we think will report total operating income of $656mm in 2011 and $759mm in 2012. However, if these projects were priced in today's market, the company would earn much less money.

Table 4: 2012 Systems product earnings estimates at various project prices:

Systems products revenue/watt	2012e	$3.25	$3.10	$2.95	$2.80
MWs installed	856	856	856	856	856
System product revenue per watt	$3.60	$3.30	$3.10	$2.90	$2.70
Systems product revenue	3,078	2,825	2,654	2,482	2,311
Systems COGS, incl. module costs	2,128	2,128	2,128	2,128	2,128
Gross profit on systems sales	951	697	526	355	183
System operating expenses, including allocation of module opex allocation	332	305	287	268	250
Operating profit from systems sales	618.2	391.9	239.2	86.5	(66.2)
Estimated EPS from systems sales	$6.01	$3.81	$2.33	$0.84	$(0.64)

We estimate system product sales will contribute EPS of about $3.53 in 2011 and $6.01 in 2012, compared to total company estimated EPS of about $6.69 in 2011 and $7.50 in 2012. If these projects were repriced to $3.10/watt, a slight

premium to today's market prices, we estimate system sales would drive only $2.33 of EPS in 2012 and that company EPS would be about $3.81. Yet, if projects were priced down to $2.80/watt, much closer to what we are hearing for new projects, it appears FSLR could lose money on its projects and that total company EPS might only be about $1/share in 2012. We wonder whether investors, who focus so much on forward multiples, understand that these are above market profits that will not last.

3. FSLR's components business fundamentals are deteriorating

The fundamentals of the solar industry are under pressure. Companies continue to expand capacity despite moderating demand for solar modules. Crystalline module manufacturers are continuing to reduce costs, which should reduce the marginal cost, and, therefore, the price the industry will be able to charge in a market where there is far more supply than demand. In addition to deteriorating solar fundamentals, FSLR will be facing direct competition in thin films, and more specifically, from other cadmium telluride products.

a. Based on review of industry data, which we compared to individual companies' plans to expand, we think all parts of the supply chain will increase significantly. Average annual polysilicon capacity and wafer capacity, the two most capital intense pieces of the solar supply chain, are both expected to be up about 2X from 2010 to 2012. While it is possible we could see some companies scale back their plans, much of the capacity due to come on in 2011 and early 2012 is already complete or in construction.

Table 5. Estimated supply chain capacity (OWS estimates based on industry research):

Avg annual capacity (MW)	2008	2009	2010	2011e	2012e	2013e
Polysilicon	7,950	13,050	22,500	33,000	43,000	51,000
Y/Y % in poly capacity	Na	64%	72%	47%	30%	19%
Wafers	8,250	12,250	20,125	31,375	40,250	48,250
Y/Y % in wafer capacity	Na	48%	64%	56%	28%	20%
Cells	10,500	16,000	30,000	45,000	52,500	62,500
Y/Y % in cell capacity	Na	52%	88%	50%	17%	19%
Modules	7,550	11,600	18,500	28,000	36,250	43,000
Y/Y % in module capacity	Na	54%	59%	51%	29%	19%
Solar installations (MWs)	6,000	7,500	18,000	19,250	19,000	22,500
Solar installations y/y %	Na	25%	140%	7%	-1%	18%
Installations as a % of module capacity	79.5%	64.7%	97.3%	68.8%	52.4%	52.3%
Blended ASPs*	3.70	2.10	1.77	Na	Na	Na
Y/Y price %	5%	-43%	-16%	Na	Na	Na

*- calculated based on average revenue per watt of FSLR, CSIQ, STP, YGE, & TSL

Module demand is expected be relatively flat at between 18GWs to 19GW from 2010 to 2012, increasing to 22.5GWs in 2013. As supply has grown and companies have reduced costs, industry ASPs have declined. We estimate the blended ASPs of FSLR, CSIQ, STP, YGE, and TSL declined by -43% in 2009 and -16% in 2010. ASPs are expected to decline further. We estimate FSLR's ASPs/watt were -23% y/y for Q1 2011, but shipments were up only 24% y/y. Most companies have not released quarterly earnings yet, but the data points we have so far are not bullish for FSLR's market share or for forward pricing. Jinko Solar shipped 208MWs of product in Q1, up 150% y/y. Jinko expects shipments to increase 50% sequentially in Q2 and expects pricing to decline from about $1.75/watt in Q1 to $1.58-$1.67/watt in Q2. Renesola also released earnings, with shipments up 36% y/y. Renesola has experienced ASP declines from $1.85/watt in Q4 10 to $1.72/watt in Q1 11. Management noted that it currently sees module prices as low as Eur1.05 and noted prices could fall to between $1.10-$1.20/watt by Q4 11. Renesola continue to ramp up its manufacturing capacity.

b. Crystalline solar module production costs should decline materially. FSLR's cadmium telluride modules use only about 1% of the polysilicon of crystalline solar modules. Because of this advantage, its manufacturing cost per watt is lower. Polysilicon prices are currently about $70/kg. This is up significantly from $20-$30/kg in the early 2000s, but down materially from the peak of over $300/kg in 2007 and 2008. Most mass producers of crystalline solar modules use about 6 grams of polysilicon per watt, meaning they spend about $0.42/watt on polysilicon alone, accounting for about 34% of the total module cost. By contrast, low cost producers of polysilicon can make product for about $20/kg. Our sources think polysilicon prices will decline to $20-$30/kg longer term. A contact at MEMC predicted prices would reach this level around 2013. If there is a significant supply/demand imbalance, prices could reach those levels much sooner. This would be very good news for crystalline solar module manufacturers, and very bad news for FSLR.

Table 6. Solar module cost per watt comparison:

	Marginal production*	Low cost producers	FSLR Q4
Polysilicon costs	$0.42	$0.14	-
Wafer	0.28	-	-
Cell	0.23	-	-
Module	0.30	-	0.75
Non-silicon costs	0.81	0.73	0.75
Total module $cost/watt	$1.23	$0.87	$0.75
Polysilicon as a % of total cost	34.1%	15.6%	0.0%

*- based on industry research presentation for companies without their own polysilicon capacity
**- GCL cost of polysilicon. $22.50/kg, 6 grams per watt assumed.

***- Jinko Solar Q1 non-silicon costs. Jinko expects non-silicon costs to be reduced to $0.67/watt by year end. Trina and Yingli non-silicon costs/watt were $0.74/watt in Q4.

At spot polysilicon prices, marginal crystalline solar module production costs are about $1.23/watt. Low cost producers can produce modules for about $1.15/watt, assuming current spot prices. Better yet, if low cost polysilicon producers vertically integrated with low cost module manufacturers, they could currently manufacture modules for about $0.87/watt. Companies such as Renesola are adding polysilicon capacity. Some polysilicon companies, such as MEMC, are adding wafer and module capacity, partly through joint ventures. As more polysilicon capacity comes online and as the industry is increasingly vertically integrated, costs should decline materially. Much of the incremental capacity coming online will be in low cost regions such as China, where electricity, a key input to the production process, is priced cheaply. Chinese polysilicon costs are currently about $20-$25/kg.

Companies will also benefit from using less polysilicon per watt. For example, Yingli used 6.8 grams/watt in 2008, 6.3 grams/watt in 2009, and 5.8 grams/watt in 2010. Companies use less polysilicon per watt as they improve their technology and slice wafers thinner. Today's solar wafers are about 150-200 microns thick, about half the thickness of a decade ago. Sources suggest wafer thickness will be cut in half again in the next decade.

c. FSLR faces increased competition from thin film competitors. There are three main types of thin film: cadmium telluride, copper indium gallium selenide (CIGS), and amorphous silicon. Each has its strengths and its benefits. Amorphous silicon (a-Si) modules are usually only 6%-10% efficient. Due to its lower efficiency, it is difficult to incorporate into most projects, regardless of the price per watt. CIGS, on the other hand, can be much more efficient. The National Renewable Energy Lab in Santa Clara, CA, recently confirmed that Miasole, a German company, realized 15.7% efficiency in its newest thin film module. Miasole is planning to ship its 13% efficiency modules in Q2 2011. CIGS are technically challenging to manufacture, so we will wait to see how this technology progresses. Anecdotally, we hear that there are a lot number of companies investing in CIGS research.

FSLR will also be seeing direct competition in the cadmium telluride market. Most notably, GE recently announced it is building a manufacturing plant in the US capable of producing up to 400MWs per year. The plant will go live late in 2011. GE has reported module efficiency of 12.8%, significantly exceeding the efficiency of FSLR modules of 11.7%. GE already has an order backlog for its new modules. A number of smaller companies, such as Abound Solar, also plan to manufacture cadmium telluride modules.

4. FSLR's low efficiency modules put it at a competitive disadvantage

FSLR manufactures cadmium telluride solar modules. FSLR's modules have an efficiency rating of 11.7% as of Q1 2011. Most of FSLR's competitors manufacture crystalline modules with efficiency ratings of 14%-16% and some have efficiency ratings that exceed 20%. Efficiency is the primary driver of price. Less efficient modules require more space, racking hardware, and labor to generate the same amount of power as high efficiency modules. According to our sources, price equivalence for modules that are 10% efficient compared to modules that are 15% efficient is about a $0.30-0.40/watt discount for the lower efficiency module. FSLR has consistently sold modules for less money than its competitors.

Table 7. Revenue per watt analysis:

	2007	2008	2009	2010	Q4 2010
FSLR	2.44	2.37	1.84	1.62	1.48
Canadian Solar	3.63	4.23	2.13	1.86	1.91
Suntech	3.71	3.89	2.48	1.85	1.86
Yingli	3.91	3.88	2.02	1.78	1.73
Trina	3.98	4.14	2.12	1.76	1.83
Average	3.53	3.70	2.12	1.77	1.76
Average Y/Y%	na	5%	-43%	-16%	
Average of group ex FSLR	3.81	4.04	2.19	1.81	1.83
FSLR discount	1.36	1.66	0.35	0.19	0.35
FSLR market share	7.6%	8.4%	14.8%	7.8%	Na

*- based on OWS calculations

FSLR realized ASPs on sales to third parties of about $2.37/watt in 2008, $1.84/watt in 2009, and $1.62/watt in 2010. This compared to the average of TSL, CSIQ, YGE, and STP (whose modules are about 14%-16% efficient) which realized average ASPs of $4.04/watt in 2008, $2.19/watt in 2009, and $1.81/watt in 2010, premiums over FSLR modules of $1.66/watt in 2008, $0.35/watt in 2009, and $0.19/watt in 2010. FSLR sold its modules at very significant discounts to its competitors in 2008 and 2009, presumably to gain market acceptance. And although FSLR's discount relative to its competitors fell to $0.19/watt in 2010, the company ceded significant market share. We estimate FSLR's market share fell from about 15% in 2009 to 8% in 2010, in a market where virtually every module manufacturer was sold out. This discount widened to about $0.35/watt in Q4 2010, as FSLR once again was forced to reduce prices more than its competitors to drive demand as additional supply came online.

We think FSLR's current discount of $0.35/watt relative to its competitors is about right, due the additional costs of installing low efficiency modules. If

competition continues to reduce prices, FSLR should have to drop prices fast enough to maintain this spread. And at some point, FSLR's competitors may be able to produce modules so cheaply that in order to maintain the spread, FSLR will be forced to sell its modules at a loss. Complicating matters, lower efficiency modules will be increasingly disadvantaged in a declining module price environment as modules become a smaller % of the overall project cost. So if polysilicon prices decline materially, FSLR may find itself unable to compete with crystalline modules, despite its low manufacturing costs.

As we discuss in point 6, below, according to the National Renewable Energy Laboratory (NREL), "best research-cell efficiency" is currently 16.7% for cadmium telluride modules. Sources say that module efficiency peaks at 75%-80% of its best research cell efficiency. Assuming cadmium telluride modules can realize 80% of their best research cell efficiency, FSLR's module efficiency would peak at about 13.4%, unless its best research cell efficiency improves in the lab. It appears cadmium telluride best research cell efficiency has been around 16% since the mid 1990s. Coincidentally, FSLR has a 2014 targeted efficiency of 13.5%-14%%. This could be the peak in terms of raising its module efficiency. Some types of crystalline cells, by contrast, have realized up to 27.6% best research cell efficiencies. If FSLR is not able to increase its module efficiency much higher than 13.4%, its ability to compete would be at risk if other technologies realize much higher efficiencies.

5. FSLR's use of cadmium telluride could pose environmental risks

Elemental cadmium and certain cadmium compounds, including cadmium telluride, are regulated as hazardous materials due to the adverse health effects that can arise from human exposure to the materials. The use of cadmium is coming under increasingly stringent governmental regulation, with some countries and regions restricting the use of cadmium in specified products. For example, the European Union restricts the use of cadmium in all electrical and electronic equipment unless specifically excluded from the coverage. Solar modules are currently excluded from compliance, but the possibility remains that the exclusion could be lifted through amendments. If this occurred, FSLR would be forced either to redesign its modules without using cadmium, or stop selling its modules in the EU. In 2010, 74% of FSLR's sales were generated from module sales in the European Union.

Due to the use of cadmium telluride and other hazardous substances in its solar modules, FSLR has established a voluntary module collection and recycling program to collect and recycle modules once they reach the end of their useful lives. Under this agreement, FSLR agrees to provide for the collection and recycling of its solar modules upon notification from systems owners. As of

March 31, 2011, FSLR has $156mm set aside to cover its estimated collection and recycling costs. We have no way of knowing whether this will be adequate.

During our due diligence on FSLR, a number of sources questioned whether a developer should install cadmium telluride solar modules due to potential environmental risks. One source wondered what would happen if unruly kids decided to use cadmium telluride modules for target practice. Another wondered what would happen if a field of modules was struck by lightning. Could such an event cause significant contamination? In any event, these types of questions could eventually become problematic for FSLR.

6. Emerging technologies could disrupt competitive landscape

Companies are investing heavily in both existing and new solar technologies. Through the course of our research, we spoke with many industry participants regarding which solar technologies would be the ultimate winners. We received many different responses from various contacts. While it is unclear what technology or technologies will ultimately win, different technologies have different strengths and weaknesses, and a number of technologies will likely have their place. Thin film CIGS (copper indium gallium selenide) and concentrated solar were frequently mentioned among technologies with the most potential.

Among the thin film solar technologies, CIGS solar cells appear to have the highest potential module efficiency. According to the National Renewable Energy Laboratory (NREL), CIGS "best research-cell efficiency" has reached 20.3% in the lab. This compares to cadmium telluride cells at 16.7% and amorphous silicon cells at 12.5%. Anecdotally, we are told that a technology has peaked once its modules produce at 75%-80% of the technology's best research cell efficiency. So based on the current best research cell efficiencies as reported by the NREL, FSLR's cadmium telluride module efficiency could peak at about 13.4% and CIGS module efficiency could peak at about 16.2%. However, industry participants are working on ways to install multiple layers of semiconductor on solar modules, known as multijunction, and could enhance efficiency materially. For technical reasons, we are told it is currently not possible to produce multijunction solar modules using cadmium telluride. Based on the NREL best research cell efficiency chart provided online, it appears best research cell efficiencies have not increased materially for either CIGS or cadmium telluride solar cells since the late 1990s.

There are a number of concentrated solar technologies. Some use mirrors to concentrate light on traditional silicon modules, while others use mirrors to focus light on tubes containing water or oils. Areva, for example, provides a solution that focuses light on elevated tubes containing water. The light boils the water and

generates high pressure, superheated steam that can drive a traditional steam turbine or be used in industrial steam applications. One very significant advantage of this type of concentrated solar, known as solar thermal, is that the energy can be stored in the form of boiling water and used to generate base load power. While there were only about 500MWs of concentrated solar in operating at the end of 2010, the vast majority of which was installed in the 1980s, there are about 400MWs in construction and 9GWs in development as of the end of 2010, according to the Solar Energy Industries Association. Concentrated solar has realized best cell efficiency ratings, as high as 43.3%, materially better than the best crystalline cell at 27.6% and the best thin film at 20.3%.

Competition continues to heat up in solar. Apart from the technologies we discussed, there are countless others. For example, companies are integrating solar modules into windows, roofing materials, and decorative stone, and more. Whether some type of thin film, crystalline, concentrated solar, or other technology we have not yet heard of ends up dominating the solar landscape is unclear. What is clear is that more companies are investing, more technologies will emerge, and competition is likely to intensify, resulting in lower prices, and higher technology risk to FSLR.

7. Accounting for acquisitions distorts systems project economics

As discussed above, FSLR acquired most of its project pipeline through the acquisitions of OptiSolar's solar power project development business for $399mm in 2009 and NextLight for $297mm in 2010. Both of these entities develop utility scale solar projects. As a result of these acquisitions, FSLR has about $433mm of goodwill on its books. Most of this goodwill is allocated to the company's components segment, which is the only segment that reports any operating profit.

Table 8: Goodwill from OptiSolar and NextLight acquisitions:

December 2010 10-K	Components	Systems	Total
OptiSolar acquisition goodwill	251,275	35,240	286,515
NextLight acquisition goodwill	142,090	4,683	146,773
Total	393,365	39,923	433,288

FSLR has $287mm of goodwill on its books for the OptiSolar acquisition, which according to the 10-K, "represents the synergies and economies of scale we expected would benefit our solar module business from our having control over OptiSolar's project pipeline." FSLR has $147mm of goodwill on its books for the NextLight acquisition, which according to the 10-K, "represents the greater degree of vertical integration we expected to achieve by using our own solar modules in the acquired projects." Based on these disclosures, it appears the value of these acquisitions is primarily in their existing project pipelines. This leaves us

wondering, will the goodwill be written off as FSLR's current project pipeline is sold?

To test for goodwill impairment, FSLR compares the book value of each reporting unit to the price for which it could sell the unit as a whole in an orderly transaction. For purposes of testing the goodwill in its systems business, FSLR includes some of the profitability associated with the solar module element of the solar power plants that it builds and sells. But what will happen to the goodwill of the components business? Based on FSLR's approach to testing for goodwill, it appears goodwill resulting from the OptiSolar and NextLight acquisitions could remain on the balance sheet until the fair market value of the components segment is less than the book value of the components segment. If this is the case, it could result in additional cumulative reported extra $4/share of EPS, unless of course the fair value of the components segment declines to less than its reported book value. FSLR does not disclose the book values of each segment, however, total company book value was $40/share at March 31, 2011, of which $5/share was goodwill. We wonder whether FSLR's accounting for its acquisitions will pass muster, once it has burned through its project pipelines.

8. Recent results

FSLR recently released Q1 2011 earnings. The company maintained its guidance for EPS of $9.25-9.75 for 2011, but reduced expectations for Q2 2011, as financing for one of its projects, Agua Caliente, was delayed. The company also reduced both the high and low ends of guidance for 2011 operating income by $10mm, to $900mm-$970mm. The company acknowledged market weakness in Europe due to uncertainty around regional FiTs. FSLR also reduced its guidance for operating cash flows from $1.0B-$1.1mm to $0.8B-$1.0B. Capital spending guidance of $1.0-$1.1B was maintained, which suggests the company will not generate any free cash flow in 2011. Given the deteriorating conditions in Europe, the company has apparently decided to increase the amount of modules it sells into its captive systems business in 2011 from its prior guidance of 400MWs to its new guidance of 450MWs. Management noted it could sell as many as 600MWs of modules into its captive project pipeline if third party module pricing falls more than expected.

9. OWS vs. "street" assumptions:

Consensus expectations are for revenue of $3.8B in 2011 and $4.8B in 2012, EBIT of $945mm in 2011 and $1.18B in 2012, and EPS of $9.73 in 2011 and $10.92 in 2012. This compares to our estimates for revenue of $3.6B in 2011 and $4.9B in 2012, EBIT of $656mm in 2011 and $759mm in 2012, and EPS of $6.69 in 2011 and $7.50 in 2012. Although our revenue estimate is about the same as the

"street" for 2012, we suspect we have higher systems project revenue, and lower non-captive module sales. Despite our in line 2012 revenue estimate, our forecast for EBIT and EPS are well below consensus. We think FSLR's non-captive module business will struggle to make money. We forecast non-captive module ASPs of $1.19/watt in 2011 and $0.98/watt in 2012 and non captive module EPS of only $3.05 in 2011 and $1.37 in 2012. Our estimates for the captive systems business assume the company sells 476MWs and 856MWs of modules into its captive pipeline in 2011 and 2012. We estimate captive systems sales generate EPS of $3.53 in 2011 and $6.01 in 2012.

"Street" analysts do not break out their EPS projections by business segment, and, as a result, we do not know how they arrive at their EPS projections.

We find it interesting that none of the sell side analysts have attempted to build a model that breaks out operating profit between the non-captive module revenue stream and the captive systems revenue stream. FSLR is ramping up its systems business, which we estimate accounted for 12% of 2010 module unit volume and will grow to 23% and 32% of 2011 and 2012 module unit volumes. As the prices of modules sold into the systems business rise and prices of non-captive module sales decline, FSLR's accounting will increasingly obfuscate the diverging fundamentals of its businesses. Do investors realize FSLR's non-captive module business may not be profitable in late 2011 and 2012?

While the company's project pipeline allows it some leeway with respect to managing earnings, we think a material earnings shortfall should become apparent in the back half of 2011. Complicating matters, the company will likely have burned through much of its lucrative pipeline by the end of 2012, which means there could be an earnings cliff in 2013 just around the corner from a disappointing 2012. Not only is the stock likely to trade down on an earnings miss, but it will likely face multiple compression as investors figure out that the current profitability level of the systems business is not sustainable.

10. Risks to thesis:

The main risk to our thesis is legislative policy. If policy leads to higher demand and pricing for solar modules than we forecast, FSLR may be able to beat our estimates and the stock could move higher. Given the rapid anticipated growth in supply, we are doubtful that legislative policy of any one country will be material enough to stem the industry-wide decline in solar module prices.

A second risk to our thesis pertains to the company's project development portfolio. If the company is able to replace its current pipeline of lucrative projects with new projects that are also very profitable, we may be forced to revisit our

earnings assumptions. Based on our due diligence, we think this is an unlikely scenario. PPA prices have declined materially since the company's current project pipeline PPAs were signed. In addition, competition has increased significantly in the utility scale solar market as we detailed above.

11. Earnings model and company valuation

We value FSLR on a sum of the parts basis. We estimate the company will generate operating income from non-captive component sales of $305mm in 2011 and $141mm in 2012, contributing EPS of $3.05 in 2011 and $1.37 in 2012. Based on multiple of 15X forward 2012 EPS, a multiple slightly richer than the company's current multiple of 12X consensus, we value the non-captive component business at $21/share.

We value the systems business as if the company were selling its projects closer to today's prices, plus an NPV premium for the above market value of the current pipeline. We estimate at today's market price of about $3.10/watt installed, a slight premium to the current market, FSLR's systems business (including modules installed in systems) would generate about $1.30 of EPS in 2011 and $2.33 of EPS in 2012. We will detail how we arrive at that number, below. Based on a 15X forward EPS multiple, this business should be worth about $35/share. We think the current project pipeline will drive about $1.5 billion of excess operating earnings from 2011 to 2014. Using a 10% discount rate and assuming a tax rate of 15%, we think the above market NPV of these projects is about $13/share.

To summarize, we value the non-captive components business at $21/share, the recurring systems business at $35/share, the NPV premium of the above market project pipeline at $13/share, and net cash on the balance sheet of $8/share. Our analysis suggests the stock could be worth about $77. Our initial price target for FSLR is $85

12. Financials:

a. OWS quarterly projections:

	Q110	Q210	Q310	Q410	Q111	Q211e	Q311e	Q411e
Total revenue	568.0	587.9	797.9	609.8	567.3	681.4	1,251.6	1,148.6
COGS	285.9	303.7	476.0	313.1	307.6	411.4	838.8	785.4
Gross profit	282.0	284.2	321.9	296.7	259.7	270.0	412.8	363.2
R&D expense	22.9	22.8	21.5	27.6	31.4	36.0	32.0	33.0
S&M expense	66.9	78.6	85.0	91.3	87.0	115.0	135.0	129.0
Production start-up expense	1.1	2.3	3.8	12.2	11.9	14.0	12.5	12.5
Operating expenses	90.9	103.7	110.3	131.1	130.3	165.0	179.5	174.5
Operating income	191.1	180.5	211.6	165.7	129.4	105.0	233.3	188.7
Foreign currency gain/(loss)	(0.7)	(2.6)	(1.0)	0.9	1.0	-	-	-
Interest income	4.9	2.6	2.3	6.9	2.7	2.5	2.6	2.7
Pre-tax net income	195.4	180.4	212.9	173.4	133.0	107.5	235.9	191.4
Provision for income taxes	23.0	21.4	36.0	17.4	17.0	14.0	28.3	23.0
Net income	172.3	159.0	176.9	155.9	116.0	93.5	207.6	168.4
Shares	86.1	86.4	86.6	86.8	87.1	87.3	87.6	87.8
EPS	2.00	1.84	2.04	1.80	1.33	1.07	2.37	1.92
Tax rate	12%	12%	17%	10%	13%	13%	12%	12%

Y/Y % change

	Q110	Q210	Q310	Q410	Q111	Q211e	Q311e	Q411e
Total revenue	36%	12%	66%	-5%	0%	16%	57%	88%
COGS	56%	33%	102%	-17%	8%	35%	76%	151%
Gross profit	20%	-5%	31%	11%	-8%	-5%	28%	22%
R&D expense	96%	23%	-11%	16%	37%	58%	49%	20%
S&M expense	36%	8%	57%	-6%	30%	46%	59%	41%
Production start-up expense	-82%	-9%	-6%	1009%	941%	512%	227%	3%
Operating expenses	35%	10%	34%	8%	43%	59%	63%	33%
Operating income	14%	-12%	30%	14%	-32%	-42%	10%	14%
Foreign currency gain/(loss)	-138%	1198%	978%	-72%	-236%	-100%	100%	100%
Interest income	3210%	-187%	10%	167%	-45%	-3%	14%	-61%
Pre-tax net income	15%	-10%	29%	15%	-32%	-40%	11%	10%
Provision for income taxes	348%	3%	210%	100%	-26%	-35%	-21%	32%
Net income	5%	-12%	15%	10%	-33%	-41%	17%	8%
Shares	4%	1%	1%	1%	1%	1%	1%	1%
EPS	0%	-13%	14%	9%	-33%	-42%	16%	7%

As a % of revenue:

As a % of revenue	Q110	Q210	Q310	Q410	Q111	Q211e	Q311e	Q411e
Total revenue	100%	100%	100%	100%	100%	100%	100%	100%
COGS	50%	52%	60%	51%	54%	60%	67%	68%
Gross profit	50%	48%	40%	49%	46%	40%	33%	32%
R&D expense	4%	4%	3%	5%	6%	5%	3%	3%
S&M expense	12%	13%	11%	15%	15%	17%	11%	11%
Production start-up expense	0%	0%	0%	2%	2%	2%	1%	1%
Operating expenses	16%	18%	14%	21%	23%	24%	14%	15%
Operating income	34%	31%	27%	27%	23%	15%	19%	16%
Foreign currency gain/(loss)	0%	0%	0%	0%	0%	0%	0%	0%
Interest income	1%	0%	0%	1%	0%	0%	0%	0%
Pre-tax net income	34%	31%	27%	28%	23%	16%	19%	17%
Provision for income taxes	4%	4%	5%	3%	3%	2%	2%	2%
Net income	30%	27%	22%	26%	20%	14%	17%	15%

b. Annual projections:

	2009	2010	2011e	2012e
Total revenue	2,066.2	2,563.5	3,648.9	4,867.9
COGS	1,021.6	1,378.7	2,343.2	3,353.9
Gross profit	1,044.6	1,184.8	1,305.7	1,514.0
R&D expense	78.2	94.8	132.4	152.0
S&M expense	272.9	321.7	466.0	568.0
Production start-up expense	13.9	19.4	50.9	35.0
Total operating expenses	365.0	435.9	649.3	755.0
Total operating income	679.6	748.9	656.4	759.0
Foreign currency gain/(loss)	5.2	(3.5)	1.0	-
Interest income	1.5	16.6	10.5	11.8
Pre-tax net income	686.3	762.1	667.9	770.8
Provision for income taxes	46.2	97.9	82.3	107.9
Net income	640.1	664.2	585.6	662.9
Shares	85.0	86.5	87.5	88.4
EPS	7.53	7.68	6.69	7.50
Tax rate	7%	13%	12%	14%

Y/Y % change:

	2010	2011e	2012e
Total revenue	24%	42%	33%
COGS	35%	70%	43%
Gross profit	13%	10%	16%
R&D expense	21%	40%	15%
S&M expense	18%	45%	22%
Production start-up expense	40%	162%	-31%
Total operating expenses	19%	49%	16%
Total operating income	10%	-12%	16%
Foreign currency gain/(loss)	-167%	-127%	-100%
Interest income	1015%	-37%	12%
Pre-tax net income	11%	-12%	15%
Provision for income taxes	112%	-16%	31%
Net income	4%	-12%	13%

As a % of revenue:

	2009	2010	2011e	2012e
Total revenue	100%	100%	100%	100%
COGS	49%	54%	64%	69%
Gross profit	51%	46%	36%	31%
R&D expense	4%	4%	4%	3%
S&M expense	13%	13%	13%	12%
Production start-up expense	1%	1%	1%	1%
Total operating expenses	18%	17%	18%	16%
Total operating income	33%	29%	18%	16%
Foreign currency gain/(loss)	0%	0%	0%	0%
Interest income	0%	1%	0%	0%
Pre-tax net income	33%	30%	18%	16%
Provision for income taxes	2%	4%	2%	2%
Net income	31%	26%	16%	14%

c. Cash flow:

	2010	2011e	2012e
Net income	664.2	585.6	662.9
Depreciation	137.5	197.0	268.0
Normalized operating cash flow	801.7	782.6	930.9
Capex			
Acquisitions	(588.9)	(1,000.0)	(750.0)
Investing cash flows	(296.5)	(21.1)	
Free cash flows	(885.4)	(1,021.1)	(750.0)

*- about 75% of 2011 capex is dedicated to new production lines. The balance of 25% appears to be for upgrading manufacturing equipment to raise module efficiency and for general corporate purposes (IT).

d. OWS analysis of captive systems business profitability vs non-captive module results:

	Q111	Q211e	Q311e	Q411e	2011e	2012e
Non-captive module results						
MWs shipped	368	451	435	347	1,601.4	1,818.3
ASPs	$1.38	$1.24	$1.11	$1.03	$1.19	$0.98
Revenue*	505.7	558.9	485.1	357.6	1,907.4	1,789.5
COGS	261.3	325.0	309.1	242.9	1,138.3	1,226.1
Gross profit	244.5	233.9	176.0	114.7	769.1	563.4
R&D	28.7	32.4	17.8	15.6	94.5	81.9
S&M	79.5	103.6	75.2	60.9	319.1	305.7
Production start-up	11.9	14.0	12.5	12.5	50.9	35.0
Total operating expenses	120.1	150.0	105.5	88.9	464.5	422.6
Operating income	124.4	83.9	70.5	25.8	304.6	140.8
Non-captive after tax EPS	$1.25	$0.84	$0.71	$0.26	$3.05	$1.37
Captive systems results						
MWs of systems installed	20	35	207	214	476.0	856.0
Systems EPC revenue	13.8	60.8	380.6	390.6	845.8	1,541.5
Systems Module revenue*	47.8	61.7	385.9	400.4	895.7	1,536.9
Total systems product revenue	61.551	122.5	766.5	791.0	1,741.6	3,078.4
System COGS, including modules	46.3	86.3	529.7	542.5	1,204.9	2,127.9
Gross profit	15.2	36.2	236.8	248.5	536.6	950.5
R&D	2.7	3.6	14.2	17.4	37.9	70.1
S&M	7.5	11.4	59.8	68.1	146.9	262.3
Total operating expenses	10.2	15.0	74.0	85.6	184.8	332.4
Operating income	5.0	21.1	162.8	162.9	351.9	618.2
Captive after tax EPS	$0.05	$0.21	$1.64	$1.63	$3.53	$6.01
As presented by FSLR						
Components segment rev*	520	620	866	748	2,753	3,331
Systems segment rev	48	62	386	400	896	1,537
Total revenue	567	681	1,252	1,149	3,649	4,868
Operating income						
Components segment operating income	129	105	233	189	656.4	759.0
Systems segment operating income	-	-	-	-	-	-
Total operating income	129	105	233	189	656.4	759.0

*- components segment revenue is the sum of non-captive module revenues and modules sold in the captive systems business.

**- note all segment income flows to components segments based on company accounting.