PVNews™

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Italian Market Looks Hot, But Can it Stay that Way?

The Italian solar market is reaping the benefits of a generous feed-in tariff, high solar insolation, high retail electricity prices, and the continued drop in module prices, making for some of the highest IRRs in Europe. A spate of project announcements in the first weeks of 2010 seems to indicate that a bright year lies ahead for Italy's solar market. However, the questions that loom over the Italian market are not trivial. Though generally received as good news, modest feed-in tariff reductions of roughly 15% for 2011 (to align these incentives with fallen module costs) remain unratified, a situation that rattled the market as February came to a close. Beyond that, frustrations with Italy's permitting and grid interconnection processes have added to project uncertainty and clouded the outlook for demand in the second half of 2010, according to Barclay Capital's Vishal Shah. "Given the lengthy interconnection process, most projects that have not yet started construction are unlikely to receive project financing, in our view." Assessing the uncertainly around the feed-in tariff issue, Shah writes in a recent report that "we see increasing downside risks to our 2H10 Italian demand forecasts (which calls for ~50% sequential growth or ~400MW)."

Still, in light of the announcements of major projects in the country that came at a steady clip in February, the industry remains hopeful that the uncertainties hanging over the Italian market are addressed in time to keep project financing flowing into what remains one of the most promising yet frustrating solar market in Europe today.

Important solar projects announced for Italy in the past month include:

SunEdison plans to build a 72 MW photovoltaic solar power plant in Northeastern Italy, near the town of Rovigo. When completed, this is expected to be the largest photovoltaic (PV) solar power plant in Europe. Power generation will begin in the second half of 2010 with final completion expected by year's end. In the first full year of operation, the system will generate sufficient energy to power 17,150 homes, avoiding the accumulation of 41,000 tons of CO_2 in the process -- the equivalent of removing 8,000 cars from the road. SunEdison will jointly develop the project with financing partner Banco Santander. Additional financial partners are expected to join the project for final ownership. At 72 megawatts, this solar power plant will be the largest in Europe. Currently, the largest facility is a 60MW solar farm in Olmedilla, Spain, followed by a 50 MW in Strasskirchen, Germany built by MEMC through a joint venture agreement.

TerniEnergia announced the start of construction of 10 photovoltaic plants in the regions of Umbria, Marche, Sicily and Apulia, for a total capacity of approximately 10 MWp. Approximately 4.5 MWp are for joint-venture companies, while the remaining 5MWp are to be set up on behalf of third parties, of which 3,5 MWp are without solar panels suppliers. The completion of construction works is expected to take place in March 2010.

Amplio Group of London has completed and connected two plants of 1MW each and expects to connect four additional plants of 1MW. Amplio's investment will be approximately €13 million. The project will result in a total of 6MW of solar plants in

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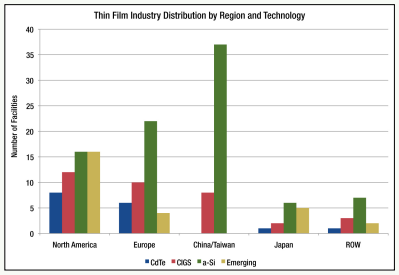

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Letter From the Editor

A Fond Farewell

As PVNews enters its 29th year this month, it is time for another twist in its epic story. As of next month, I will be stepping down as the Editor-in-Chief in order to concentrate on other responsibilities. My ongoing work of monitoring and guiding the Research reports of Greentech Media, teaching at Chicago Booth, and running both the Prometheus Institute and the Carbon War Room remains unchanged and keeps me quite busy. An upcoming second baby is, perhaps, the icing on the cake that means something had to give.

It is very hard for me to make this change, as I have been and remain deeply committed to the franchise of PVNews. As I often remark, it is the dominant written history of the solar energy industry, and as such it has been my personal mission (and promise to its founder, Paul Maycock) that I would protect and preserve its legacy. As such, the entire archive of PVNews issues has been digitized and soon will be delivered to the National Archives – befitting the National Treasure status it deserves.

PVNews has witnessed the growth of an industry that is today in the process of rising up to change the world. Paul's insight more than three decades ago (also captured in his 1980 book titled – "A Guide to the PV Revolution") was that solar energy would eventually be the cheapest and most reliable source of electricity in the world. Since then, the volume of solar produced each year have increased a thousand-fold, and the price per Watt has fallen by a factor of 20. Over the next few decades solar will come to dominate the global energy mix, most notably in the places where energy is most needed in the developing world.

As PVNews moves forward to report further industry success, let us not forget that we stand on the shoulders of giants. It was perhaps inevitable that harnessing the power of the sun for modern energy would happen. However, I believe it happened faster because of people like Paul Maycock and the efforts to publish PVNews. It has been a privilege to be a part of that tradition and bring you the news of progress. Thank you for your part and dedication. Long live the PV Revolution.

-TB

PVNews™ in History

10 Years Ago in PVNews History

UNIQUE SOLAR PLANT COMMISSIONED IN LAKSHWADEEP

A 50 kW Solar PV Power plant has been commissioned in the Kadmat Island of Lakshwadeep in India, situated on the Western Coast in the Arabian Sea. The plant caters to the needs of Water Sports Institutes and the cottages surrounding it. This is the first for a Solar PV plant utilized for sporting activity in India and will be a role model for other Institutes to follow. The Bitra and Bangaran Islands in Lakshwadeep also have 25 kW and 10 kW PV power plants for meeting the lighting loads in the domestic sector.

25 Years Ago in PVNews History

PRESIDENT REAGAN'S BUDGET WOULD SLASH PV BY 20 PERCENT

The DOE budget sent to Congress by President Reagan proposes a reduction in federal funds for photovoltaics from $56,605,000 in FY85 to $44,800,000 in FY86. If Mr. Stockman and his crew had its way, PV would have been in the $30 million range. Secretary Hodel fought very hard to get the PV budget to the $45 million level. No funds are earmarked for the completion of SMUD, and "research for the sake of research" is pressed even further. If he could, Mr. Stockman apparently would like to eclipse the sun.

U.S. PV News

After First Attempt Goes Dark, Houston Tries Again for Big Solar

by Stephen Munro

Question: Why is Houston, a metropolis designated in 2008 as a "Solar America City," still bereft of utility-scale PV generation two years later? The nuanced answer: It's the result of complex market and policy forces. The simple answer: Conventionally generated electricity is really cheap in Texas.

Notwithstanding its solar-city designation by the federal Department of Energy, Houston has so far been unable to sign up a contractor to build a 10 MW solar facility on city land. A request for proposals, issued in late 2008, produced 11 responses.

Merchant generator NRG Energy's bid was chosen as the most doable, but the deal fell through when the parties couldn't find a way around a Texas statute that could be interpreted to require annual appropriations – rather than a one-time contractual commitment – to cover the 25-year purchase agreement. NRG pulled out, and the city has since redoubled its effort to find a replacement.

"We're now in negotiations with another party," said Don Whaley, a Houston-based energy consultant working with the city on the project. He predicts that a deal will go to city council for approval before midyear.

When and if that occurs, it would mark a significant event in an economic environment tilted in favor of conventional generation and a statewide renewable-energy landscape dominated by wind power.

In a March 3 presentation to the Houston chapter of the Energy Bar Association, Whaley reported that the average delivered cost of solar-generated electricity in the 11 proposals was about $0.20/kWh over the 25-year term. That compares with a present composite price of utility-delivered electricity in Houston of $0.065/kWh, he said.

Figure 1 Value of RECs (February 2010)

Maine RECs

vintage	offer
2009	$20.00
2010	$22.00
2011	$28.00
2012	$30.00

Texas RECs

vintage	offer
2007	$1.00
2008	$1.00
2009	$1.05
2010	$1.10

Pennsylvania RECs

vintage	offer
2008	$1.75
2009	$2.75
2010	$3.50
2011	$5.00

New Jersey RECs

vintage	offer
2010	$4.00
2011	$9.00
2012	$11.00
2013	$11.00

Connecticut RECs

vintage	offer
2009	$20.00
2010	$26.00
2011	$30.00

Source: James Cargas, Houston TX City Attorney's Office

"In the current energy price environment, it's difficult to rationalize" a solar facility purely on a cost comparison, Whaley said.

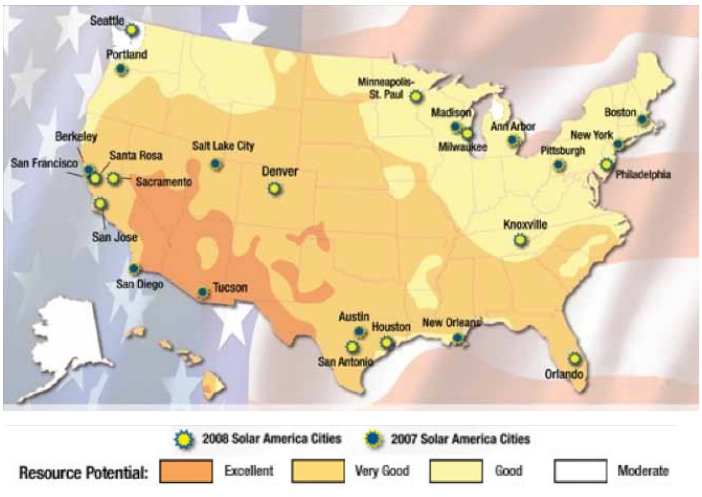
(In obtaining permission to cover the event, PV News agreed to report that any views/opinions expressed by the speakers are solely their own and are not those of the EBA or its Houston chapter.)

Data from another presenter, James Cargas, Houston's Senior Assistant City Attorney, underscore the project's economic challenge.

According to Cargas' data, the estimated 2010 value of a renewable energy credit in Texas is $1.10. That compares with an estimate of $3.50 in Pennsylvania, $4 in New Jersey, $22 in Maine and $26 in Connecticut. Using that value and factoring in its expected utilization rate, a 10 MW solar plant in Texas would produce less than $20,000 in present-value RECs over its life.

In Texas, wind capacity now exceeds 9,000 MW vs. about 6 MW of solar. Part of the basis for that disparity is the state's inventory of both moving air and open space. Wind also enjoys a perception of being lower-cost to install, although the presenters maintain that's not the case when costs are factored in to transmit the electrons from remote farms in West Texas.

Figure 2 Solar America Cities



Source: US DOE, Office of Energy Efficiency & Renewable Energy

The door is open for projects that make use of a "creative purchasing structure," said Stephanie Kroger, of counsel to Andrews Kurth in Houston. Whoever breaks down the barriers now blocking large-scale solar will do so by exploiting existing state law defining and limiting the operations of REPs, or retail electric providers, she added.

Kroger described such barrier-busting strategies such as "dual REP," "REP sleeves" and "self REPs" – noting that all require some commitment by upper-level managers who typically don't focus on renewable energy procurement. But she observed that Walmart has taken the step of becoming a self-provider in Texas, indicating

awareness by one end-user widely noted for its attention to both costs and customer perception.

Looking forward, players on the ground in Texas expect the Houston PV project to move this year, more than doubling the state's solar capacity in one stroke. Its rationale will be many things – fulfilling political and public sentiment, diversifying sources, reducing peak demand. But low cost won't be among these reasons – at least at first.

Over the long term, they're sure the project will pay off economically, too.

"As recently as June 2008, Houston consumers saw prices for all of their electricity top $0.20/kWh," recalled Whaley, recalling the oil-price bubble of the time. Conversely, currently low fossil-fuel prices "are not sustainable, and with the coming increases and improved pricing for solar installations, the gap will narrow substantially."

Producers

SunPower Signs 32MWp Solar Power Supply Agreement with Toshiba

SunPower Corporation announced that, under a strategic supply agreement, Toshiba Corporation will order 32 MWp of high-efficiency solar panels from SunPower in 2010. The SunPower panels will form the cornerstone of Toshiba's new residential solar offering in Japan, to be launched on April 1.

http://www.sunpowercorp.com/

Petra Solar Secures $40M in Financing

Petra Solar, a developer of pole-mounted smart grid and solar systems for utilities has raised $40M in funding for expansion. Two new investors, Craton Equity Partners and Espírito Santo Ventures, led the latest round with 100% participation from existing investors, Element Partners, Blue Run Ventures, OnPoint Technologies (U.S. Army's Venture Fund) and Kuwait's National Technology Enterprises Company (NTEC).

http://www.petrasolar.com/

SunPower to Acquire SunRay Renewable Energy

SunPower Corporation has signed a definitive agreement to acquire SunRay Renewable Energy. Upon closing the transaction, SunPower will acquire a project pipeline of solar photovoltaic projects totaling more than 1,200 MWp in Italy, France, Israel, Spain, the United Kingdom and Greece. The total consideration for the acquisition is approximately $277M, including $235M in cash and $42M in a letter of credit and promissory notes.

http://www.sunpowercorp.com/

Calisolar Acquires Ontario, Canada Based 6N Silicon

Calisolar Inc. announced the acquisition of 6N Silicon Inc., an Ontario-based silicon supplier to Calisolar and the solar industry. The acquisition was completed through a stock-for-stock transaction between the two privately held companies. In addition, $22.5M in funding was raised from existing Calisolar and 6N investors. The new funds will be used to increase capacity at the Sunnyvale, California cell manufacturing facility and to expand silicon purification operations in Vaughan, Ontario.

http://www.calisolar.com/

Johns Manville Signs Supply Agreement With SolarFrameWorks

Johns Manville (JM) announced it has reached an agreement with SolarFrameWorks, a premier photovoltaic solutions company, for SolarFrameWorks to supply its proprietary building-integrated photovoltaic (BIPV) CoolPly™ solar roofing components to JM. Johns Manville will market these products through its business entity, the JM E3 Company, more informally known as JM E3co.

http://www.solarframeworks.com/

Konarka Announces Business Collaboration and Strategic Investment with Konica Minolta

Konarka Technologies has signed a comprehensive R&D collaboration and strategic investment agreement with Konica Minolta Holdings Inc. The companies reached agreement to start full-scale collaboration in April in the joint development and distribution of organic thin-film photovoltaics. Under the agreement, Konica Minolta has invested $20M in Konarka.

http://www.konarka.com/

Projects

MetLife and John Hancock Finance 19 MW Solar Power Plant

MetLife and John Hancock Financial Services will finance the construction and third-party ownership of a 19-megawatt (AC) solar photovoltaic power plant that SunPower Corporation is contracted to build for Xcel Energy in Colorado's Alamosa County, the companies announced. Construction on the plant, which will be the largest solar power plant in Colorado, will begin this spring, with operations expected to commence before the end of the year. Approximately 100 jobs will be created during construction.

The plant will use SunPower® T20 Tracker systems, which tilt toward the sun as it moves across the sky, increasing energy capture and providing more power on hot summer days when utilities need it most. SunPower Trackers generate up to 30 percent more energy per land area than conventional systems and, therefore, reduce land-use requirements.

http://www.metlife.com/

Con Edison Calls for More Solar Power

Con Edison has filed a proposal with the New York State Public Service Commission (PSC) to support the development of 25 MWp of solar energy resources in New York City by 2015. Con Edison suggested the State set aside $24.8M of its renewable energy funds for these programs for residential and commercial customers in New York City.

http://www.coned.com/

Peterborough Utilities to Construct 10MWp Solar Farm

ICP Solar Technologies, has announced that EPOD Solar, a British Columbia company, has entered into an agreement with Peterborough Utilities Inc.(PUI) to construct a 10MWp solar farm on Lily Lake Road in Peterborough, Ontario worth in excess of $30M. Construction is expected to begin within one month.

http://www.peterboroughutilities.ca/home.htm

PGE Plans Rooftop PV Project with ProLogis

Portland General Electric (PGE) has partnered with U.S. Bank, ProLogis and several Oregon companies on a 2.4 MWp rooftop PV project. The roughly 900,000 square-foot project will cover the roofs of seven ProLogis distribution warehouses in Portland, Gresham and Clackamas.

http://www.pge.com

SolarCity Creates New $90M Fund

SolarCity announced a new fund to finance an additional $90M in commercial and residential solar projects in 2010 with U.S. Bancorp Community Development Corporation (USBCDC), a division of U.S. Bancorp. SolarCity and USBCDC have now collaborated on three separate funds to finance a total of $190M in solar projects in the U.S. in 2009 and 2010.

http://www.solarcity.com/

OPDE Plans 45 MWp of Solar System in Mexico

The Governor of the State of Durango, Mexico and President of the National Conference of Governors CONAGO, Ismael Hernández Deras, and representatives of the Board of OPDE, Alejandro Chávez and Gustavo Carrero, have signed a collaboration agreement whereby the Spanish solar photovoltaic multinational is committed to study, plan, build and launch solar farms that will reach a total capacity of 45 MWp during the period 2010-2013.

The Governor of Durango signs the agreement with OPDE

NV Energy Signs Power Purchase Agreement for 50 MWp Solar Project

NV Energy and NextLight Renewable Power, LLC, have announced a 25-year contract for the purchase and sale of energy to be produced at NextLight's 50 MWp Silver State Solar Power photovoltaic facility near Primm, Nevada.

http://www.nvenergy.com/

Samsung Building 130 MWp Of Solar In California

Samsung C&T Corp. has signed an agreement with Pacific Gas & Electric Co. to build and operate five solar power plants in California. The five plants will have a combined capacity of 130 MWp. Financial terms of the deal were not disclosed.

http://www.samsung.com/us/

WMECo Selects Solar Energy Site

Western Massachusetts Electric Company (WMECo) announced its plan to develop the first of several large-scale solar energy facilities. The selected site on Silver Lake Boulevard combines two parcels of land owned by WMECo and the Pittsfield Economic Development Authority (PEDA) at the William Stanley Business Park. The eight-acre site will accommodate up to 1.8 MWp of solar capacity.

http://www.wmeco.com/

A rendering of the William Stanley Business Park

Solarpack Awarded With Two 20 MW PV Power Plants

Solarpack, along with another major Spanish developer, has been awarded the sale of 98 GWh per year of solar PV energy tendered by the government of Peru for a period of 20 years. This energy will be produced by two 20 MW PV plants located in two southern regions of the Andean country.

This contract enables Solarpack to consolidate its operations in South America, where the company is already one of the biggest developers specializing in PV solar energy, with a project portfolio of roughly 90 MW, according to CEO Paul Burgos.

From its subsidiary in Chile, Solarpack is spearheading the implementation of projects such as the Calama Solar 1

plant, which is the first multi-megawatt solar plant with an environmental license on the continent of South America.

http://www.solarpack.es/

TXU Energy Partners, SolarCity Introduce Solar Lease In Texas

Dallas-based TXU Energy has introduced a new solar lease program in cooperation with SolarCity. The program, available to northern Texas homeowners, will include a solar-lease option that includes installation, monitoring, repairs and insurance for a low monthly fee.

http://www.txu.com/

Policies

Senators Seek to Halt Treasury Cash-Grant Program

Senators have sent a letter to the Obama administration urging Treasury Secretary Geithner to suspend the Section 1603 cash-grant program until new rules are implemented. A recent report from the Investigative Reporting Workshop revealed that a clean energy grant program in the stimulus package has paid out more than $1B to foreign manufacturers; the senators have proposed a change to the program to ensure that funds flow only to projects that will create jobs in the U.S.

http://www.ustreas.gov/recovery/1603.shtml

Legislation Establishes PACE Program In San Francisco

Mayor Gavin Newsom has signed the final legislation required to establish San Francisco's Property Assessed Clean Energy (PACE) program. The program makes $150M in bonding capacity available to private property owners to finance renewable energy improvements, water conservation and energy efficiency through a voluntary special property tax.

http://www.sfmayor.org/

Florida Governor Awards $10M For State Solar Program

Florida governor Charlie Crist has announced the award of $10M in American Recovery and Reinvestment Act of 2009 (ARRA) grants to the Florida Solar Energy Center in Cocoa Beach, Fla. The grant, known as the SunSmart School and E-Shelters program, is a portion of the $126M the state received in funding for energy-related initiatives under ARRA.

http://www.recovery.gov/Transparency/RecipientReportedData/Pages/statesummary.aspx?StateCode=FL

Delaware Governor Introduces Several Energy Initiatives

Governor Jack Markell of Delaware has signed an executive order designed to reduce the environmental impact of state government operations. Under the executive order, at least 20% of the annual electricity demand for buildings owned or operated by the state executive branch must come from renewable sources by the end of fiscal year 2012. The requirement increases to 30% by the end of fiscal year 2013.

http://governor.delaware.gov/

Net-Metering Legislation Passes In New York

Governor David A. Paterson has announced the passage of a three-way bill negotiated with the legislature to improve net metering in New York. Non-residential wind and solar systems will now be allowed up to 25 kWp, with interconnection charges capped at $350 and $750 for solar and wind, respectively. For systems above 25 kW, up to the overall cap of 2 MW, customers will be responsible for the actual interconnection charges.

http://www.state.ny.us/governor/

Controversial Arizona Energy Bill Withdrawn

H.B.2701, an Arizona House Bill that solar energy executives and other stakeholders have criticized as potentially detrimental to the solar sector in the state, has been pulled from consideration. The bill, proposed by Rep. Debbie Lesko, would have allowed utilities to count nuclear energy toward their renewable portfolio standard requirements.

http://azleg.gov/DocumentsForBill.asp?Bill_Number=hb2701

APS' AZ Sun Program Receives Approval

Phoenix-based Arizona Public Service (APS) has received approval for its AZ Sun Program by the Arizona Corporation Commission. Through the expected four-year life of the program, APS plans to invest up to $500M for 100 MWp of turnkey photovoltaic power plants across Arizona. Developers will be selected to build the plants, which APS will own. The plants will be selected through competitive procurement processes.

http://www.aps.com/

CEC Announces Clean Energy Program

The California Energy Commission (CEC) has announced the $90M Clean Energy Manufacturing Program, which will provide financing to manufacturers in the clean energy sector. The Clean Energy Manufacturing Program will combine two programs that offer California-based clean energy businesses a combination of financing options.

http://www.energy.ca.gov/recovery/cleanenergy.html

California Legislature Approves Raised Net-Metering Cap

The California State Assembly has passed A.B.510, a bill that would raise the cap on net metering. The bill now needs only Gov. Schwarzenegger's approval to become law, according to the Vote Solar Initiative.

Existing law requires California's major electric utilities to make net metering available to customers on a first-come-first-served basis until the total program capacity exceeds 2.5% of the utility's peak demand. A.B.510 doubles the net-metering program capacity to 5%.

California public agencies have already installed at least 51 MW of solar, saving taxpayers more than $270 million in avoided utility payments. With federal stimulus funds committed to support the state's switch to solar, this legislation is a critical component of a fiscally and environmentally responsible energy future in California, says Vote Solar.

http://votesolar.org/

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the provinces of Foggia and Lecce, both of which are in the region of Puglia in southern Italy. This brings Amplio's total investment in solar in the last 12 months to approximately €33 million, financed in part with equity and vendor finance in order to accelerate construction of the solar plants. Amplio is expanding its solar team and in 2010 will be seeking financing for an additional 20-30MW, which are in the final permit stages and ready to commence building. Once the plants are fully operational, Amplio intends to refinance its solar portfolio with senior bank debt. This additional 6MW will bring Amplio's fully operational solar portfolio to a total of 9MW. Amplio has already built and financed 3MW in Sicily, with Martifer serving as Engineering, Procurement and Construction ("EPC") contractor. Amplio has also been working with three other EPC contractors, Ecoware and Sinergia Sistemi of Italy and Solarig of Spain.

Kerself S.p.A. announced its Saem subsidiary has signed a contract with the TSJ investment company to build three 1 MW turnkey photovoltaic solar plants in the province of Bari, for a value of approximately 11 million euro. Building work is expected to commence at the beginning of next week and is scheduled for completion within 45 days.

United Solar will supply up to 25 MW of UNI-SOLAR® brand photovoltaic laminates to Enel Green Power for installation on a number of buildings owned by CIS-Interporto di Nola in Italy. Enel Green Power is the renewable energy-operating arm of the Enel Group. The UNI-SOLAR laminates will be fully integrated with the existing architecture and will be installed on the roofs of a number of commercial and logistics buildings, and are expected to begin producing power in 2010.

Solar cell and module equipment supplier **2BG** has ramped up a 15MW turnkey module line for the AV Project company in Avellino, Italy. The update of the line, which was installed in January, will make it the second 2BG line installed by the company and will allow the upgrade of AV's production capacity with the latest automation solutions. The original line was designed to process 48 cells per module, while the new line handles 60 cells per module.

The Enerqos Group has begun the construction of two photovoltaic roofs with maximum output power of 200kWp and 400kWp, respectively, to cover the shopping centers of Nova Coop, one of the largest distribution chains in Piedmont. They will be among the first Italian solar plants to be built with CIGS-based Solyndra cylindrical panels. The installation work will be undertaken by the Piedmont-based company Photovoltaic Systems, under the supervision of Enerqos' Industrial Roofs Business Unit.

Prothea is currently implementing the development of three solar photovoltaic projects totaling around 10MW in Central and Southern Italy. One project is located in the Calabria Region, Catanzaro Province, Municipality of Cropani; two are in the Lazio Region, Viterbo Province, Municipality of Viterbo. Additional projects totaling 5 MW have recently been started in Marche and Abruzzo.

Iberdrola Ingeniería y Construcción has been awarded a contract to build a €27 million photovoltaic solar plant in Italy. Being developed for Pugliasolar, this new renewable energies facility will have installed capacity of 8 MW and annual estimated output of 12 GWh. The photovoltaic plant, which is being financed by Unicredit Mediocredito Centrale, will have eight 1 MW modules, which will come on-line in two phases: the first 6 MW will be completed in late spring, and the other two should be operational by the end of the summer.

FRV (Fotowatio Renewable Ventures) will develop a 10-megawatt photovoltaic power plant in Fiumicino, Rome. Developed in partnership with Turin-based Solesa Green Power, the facility will be the largest solar power plant in the Rome province, as well as one of the largest in Italy. FRV and Solesa Green Power expect to begin construction of the plant, commissioned to Siliken, by April. The plant is scheduled to be operational by the end of this year, with an expected production of 14 million kWh of electricity.

Scheuten Solar opened two 1 MW projects at Palo del Colle, in Bari province, Italy. The Italian companies Molino Casillo S.p.A. and Ascopiave S.p.a. (daughter company of Ascoenergy S.r.l.) have teamed up as investors in these sustainable energy projects in Italy's Apulia region. Apart from the above, Scheuten Solar is realizing another four 1 MW projects in Italy with the same partners.

The Sorgenia group has signed a loan agreement in the sum of 70 million euro with Banca MPS Capital Services Banca per le Imprese SpA and Unicredit MedioCredito Centrale SpA to develop new projects in the photovoltaic sector in Italy. In particular, the deal will enable the subsidiary Sorgenia Solar to build new plants totaling more than 15 MW and to refinance seven sites that have already been in operation for about two years and were subject to the previous Energy Account (Conto Energia).

Colexon, a German project developer, has broken ground on a 1 MW plant in the northern Italian community of Imola. The project is expected to be completed in the first half of 2010. It is planned to use a total of 4,620 Moser Baer modules on an area of 2.35 hectares for this project. In addition to this, SMA inverters will convert the yearly 1.1 million generated kilowatt-hours into grid-compliant AC.

And finally...

Italy's feed-in tariff will be undergoing reform. In November 2009, Italy's three industry associations (ASOSOLARE, APER, and GFI) joined together to propose new rates that would induce a significant decline beginning in 2011. According to a draft

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World PV News

Europe

German Cabinet Approves Cuts in Solar Power Tariffs

The German government has agreed to cut subsidies for electricity-generating solar panels. For the last 10 years, German utilities have been legally obligated to pay above-market prices for electricity from solar panels on roofs and in fields.

Chancellor Angela Merkel's cabinet agreed to reduce feed-in tariffs by 16% for rooftop panels commissioned after July 1 of this year, in a deal previously struck amongst the coalition partners. Those rates of return were already cut by 9% for photovoltaic systems commissioned after January 1 of this year, so the final reduction will amount to 25% compared to 2009 prices.

The July 1 price reduction -- which still awaits parliamentary approval -- means utilities will pay 0.33 euros (0.45 dollars) per kilowatt-hour. The cost of solar panels has dropped significantly since the subsidies were introduced 10 years ago. However, government moves to unwind start-up assistance were bitterly opposed by a solar-power lobby.

Under the agreement, solar panels set up on military land and garbage dumps will see rates reduced by a further 11%, while units on farmland will only be subsidized in exceptional circumstances. Farm groups, angered by what they perceived as big-city investors buying up farmland to "harvest the sunshine," had sought the change in law.

The silicon collectors on photovoltaic panels can convert the sun's heat into electricity. Conversion devices alongside them then transform the current into the form of electricity used in homes and offices.

Prime Sun Power Plans 500MWp Of Solar Development in Europe

Prime Sun Power Inc. says it plans to focus on the development, construction and operation of its own and third-party utility-scale photovoltaic power plants. The company is targeting photovoltaic solar power generation in Europe, particularly in Italy, Greece and Turkey, and will develop, build and operate 500MWp of solar power PV generation through the end of 2013.

http://www.primesunpower.com/

AREVA to Acquire Ausra

France-based energy company AREVA plans to acquire 100% of Ausra, a provider of concentrated solar power products. AREVA says this acquisition serves to launch its new global solar energy business. The company intends to add CSP to diversify its renewable energy portfolio.

http://www.areva.com/

Ausra's Kimberlina power plant

GDF SUEZ to Build France's Largest Photovoltaic System

GDF SUEZ and its joint venture partners, together with the Mayor of Curbans, Daniel Rolland, signed an agreement to build France's largest photovoltaic solar power facility in Curbans (in southeastern France). The project is part of the group's strategy to have a diversified electricity production base with an installed capacity of 10,000 MWp by the year 2013. The Curbans photovoltaic power facility will have a total output of 33 MWp.

http://www.gdfsuez.com/en/group/

Satcon Selected for Twenty Five Greek Solar Installations

Satcon Technology has been selected by EasyPower S.A. to supply 2.5 MWp of its PowerGate(R) Plus 100-kilowatt solar PV inverter solutions across 25 installations on the island of Rhodes, Greece. The solar power plants will be developed and constructed by EasyPower S.A. and are expected to generate enough solar energy to supply 1.2% of the island's electricity demand.

http://www.satcon.com/

Fidelis Energy Expands International Presence and Signs LOI for $18.4 Million in Commercial Projects in Greece

Fidelis Energy Inc. has signed a Letter of Intent (LOI) with multiple Greek multinational corporations to install and operate approximately 10 megawatts (MW) of photovoltaic (PV) systems on all of their large-scale manufacturing facilities located throughout Greece. The company will provide all solar equipment for the installation on the sites, and will also sell the newly generated solar energy to the buildings at a discounted rate compared to the previous electricity provider.

http://www.fidelisenergyinc.com/

Asia

Trina Solar Develops New Square-Cell Tech

Trina Solar Ltd. says it has achieved a breakthrough in its development of monocrystalline cell technology. Using specially designed metallization and passivation techniques, the advanced cell structure is expected to significantly boost cell conversion efficiency, achieving up to 18.8% efficiency in test laboratory production, according to Trina Solar.

http://www.trinasolar.com/

Berjaya Solar to Develop Malaysia's First Large Scale Solar Photovoltaic Power Plant

Berjaya Solar Sdn Bhd, a wholly-owned subsidiary of Berjaya Corporation Berhad, announced the proposed development of the country's first large-scale, 10MWp ground-based Solar Photovoltaic (PV) power plant at Bukit Tagar, Selangor, estimated to cost approximately RM180M. This is the precursor to developing a proposed 50MWp solar PV power plant in the future based on the success of the 10 MWp plant undertaking.

Taiwan to Set Aside NT$1B to Subsidize Public PV Systems

Taiwan's Ministry of Economic Affairs (MOEA) will set aside a budget of NT$1 billion (US$31.3 million) specifically for subsidizing PV system installations included in public construction projects in 2010, according to a report from Chinese-language newspaper Economic Daily News (EDN). The subsidy budget for 2009 was NT$480 million.

http://w2kdmz1.moea.gov.tw/english/index.asp

HJ Solar Building 9.87 MWp PV Project in Thailand

Shanghai, China-based Hengji PV-Tech Energy Co. Ltd. (HJ Solar), a subsidiary of Hengji Group, has been awarded a pilot PV project in Thailand with an accumulated installation capacity of 9.87 MWp.

http://www.hjsolar.com/EN_aboutus.asp

Yingli Green Energy Signs 285 MWp Three-Year Framework Agreement

Yingli Green Energy has signed a three-year framework agreement with Gehrlicher Solar AG, one of the leading PV system integrators in Europe. Under the terms of this agreement, Yingli Green Energy has agreed to supply 285MWp of PV modules to Gehrlicher Solar over a three-year period through 2012.

http://www.yinglisolar.com/

China City Investments Signs Contract for Thin Film Plant

China City Investments Limited signed a contract with BudaSolar Technologies to serve as the technology provider for the turnkey delivery of production lines with a 85MWp/year capacity. The lines will use silicon-based thin-film PV technology. The agreement is the first phase of the Dalian City Industrial Park Project targeting a production capacity of 1GWp, which is slated to be achieved in 10 phases.

http://www.budasolar.hu/

LDK Solar Acquires Best Solar's Crystalline Module Manufacturing Plant

LDK Solar Co. Ltd. has entered into an agreement to acquire the crystalline module manufacturing plant of Best Solar Co. Ltd. Under the terms of the transaction, LDK Solar will acquire Best Solar's crystalline module manufacturing plant at a cash consideration of $21.5M, representing the fair value of the assets acquired, determined on an arm's-length basis.

http://www.ldksolar.com/

Best Solar's plant in Suzhou

Kyocera Plans 1 GWp Production Capacity by 2013

Kyocera Corporation has recently completed construction of a new solar cell manufacturing plant, further increasing the company's production capacity to meet the growing demand for solar energy products in the global market and contributing to the company's expanded annual production target of 1 GWp by March 2013.

http://www.kyocerasolar.com/

Mitsubishi Electric Expands Production Capacity

Mitsubishi Electric has completed construction of PV Cell Plant #2, a new photovoltaic cell production facility at its Nakatsugawa Works Iida Factory in Nagano Prefecture. By March 2011, the company will raise its annual PV cell/module production capacity by 50MWp to 270MWp, and ultimately plans to reach an annual capacity of 600MWp at an early stage.

http://www.mitsubishielectric.com/

ROW

Arava Power Signs Contracts For 100 MWp Of Solar Projects

Arava Power Co. (APC), an Israel-based solar developer, has signed contractual agreements with 15 collective rural communities located in the Arava, the Negev, and northern Israel to build midsize solar photovoltaic fields. The projects, averaging 6.5 MWp each, will produce a total of 100 MWp of solar energy.

http://www.aravapower.com/

Looking Back at Thin Film in 2009: A Credit-Constrained, Recessionary Market

Barring a few notable exceptions, there is little doubt that after the growth and promise shown in 2008, the past year was a difficult one for thin film companies. The credit crisis, the global recession, the evaporation of Spain (the largest PV market in 2008) as a demand center, and the build-up of oversupply at the cell and module level all came together starting in late 2008. While the resulting demand slump and the severe supply-demand imbalance affected PV suppliers of all technologies across the value chain, thin film manufacturers faced a host of specific challenges, due in large part to the relatively nascent status of the industry's companies and technologies.

However, not all was doom and gloom. Although market conditions remained difficult through the year, there was much to cheer about in terms of technological progress, production share, and market penetration. Following will be a brief summary of the trials, tribulations, and triumphs of the thin film space over the past twelve months.

Surveying the Thin Film Landscape

In terms of production share, confirmed 2009 numbers will only be available later in the year: however, preliminary estimates based on a top-down analysis reveal that around 1.28 GW of thin-film modules were shipped over the course of the year. CdTe giant First Solar comprised 87% of this figure, with amorphous silicon and CIGS making up 14% and 6% respectively. Amorphous silicon production in particular is expected to be down from last year (389 MW in 2008), due to an abundance of more bankable crystalline silicon PV, which would have been favored by developers and banks in the severely credit-constrained world of 2009.

Figure 1: Estimated Preliminary 2009 Thin Film Production by Technology (MW-dc)

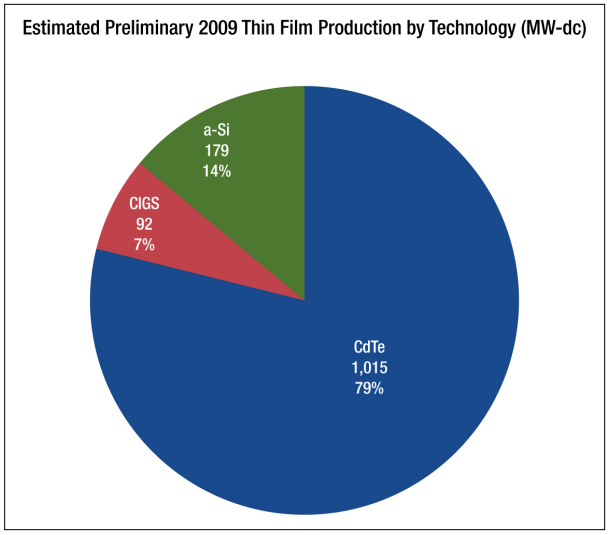


Figure 2 lists the top thin film manufacturers in 2009, by capacity. As seen, the gap between First Solar and the rest is sizeable indeed. A single CIGS company - Q-Cells subsidiary Solibro - made it into the top ten.

Figure 2: Top Thin-Film Manufacturers by 2009 Manufacturing Capacity (MW-dc)

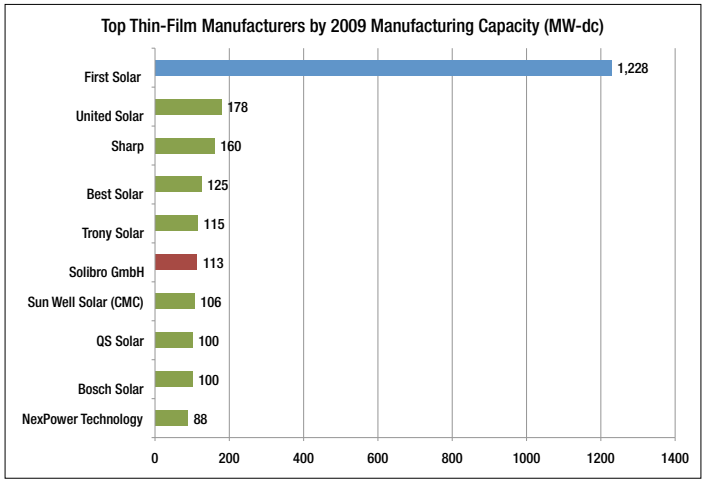


Figure 3 displays the number of tracked facilities by technology. Since 2007, this figure has increased dramatically, from only 91 at the end of 2006 to 166 currently; around 2companies were added to the list in 2009. As can be seen, amorphous silicon (which has the lowest barrier to entry due to the availability of turnkey equipment from suppliers such as Applied Materials and Oerlikon) makes up more than half of the tracked facilities. 35 facilities, compared to 27 in 2008, are tracked for CIGS, while CdTe technology has so far been adopted by only 12 players apart from First Solar.

Figure 3: 2009 Industry Distribution by Technology

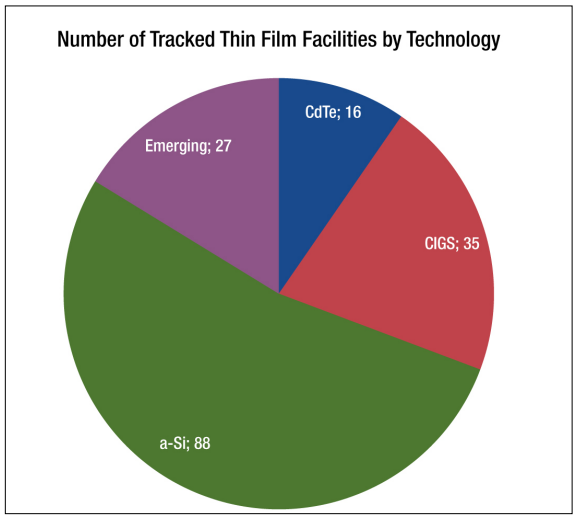
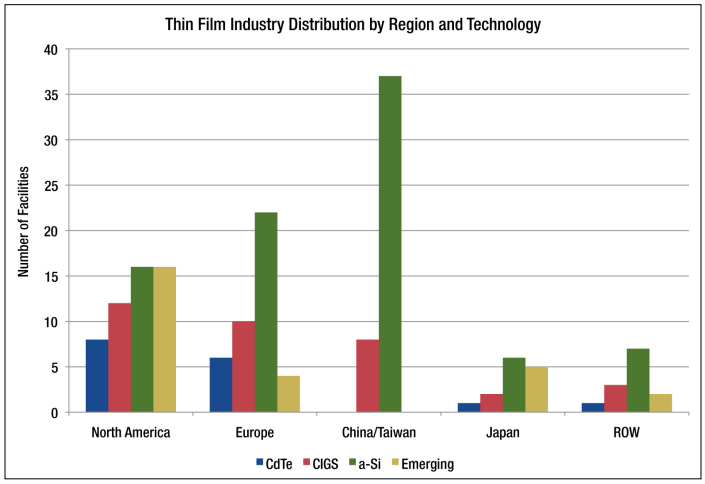


Figure 4 looks more closely at tracked facilities, grouping them by technology and location. While North America leads the world in the placement of high-IP technologies of CIGS, CdTe, and

next-gen thin-film, China and Taiwan almost exclusively are home to more commoditized amorphous silicon PV, although a few firms in this region have started investing in CIGS of late as well, also through the purchase of turnkey equipment. Europe, too, has more than 2a-Si plants, thanks to an early start there.

Figure 4: Thin Film Industry Distribution by Region and Technology



Technology	North America	Europe	China/Taiwan	Japan	ROW	Total
CdTe	8	6	0	1	1	16
CIGS	12	10	8	2	3	35
a-Si	16	22	37	6	7	88
Emerging	16	4	0	5	2	27
Total	52	42	45	14	13	166

All data is from the upcoming GTM Research report, Thin Film 3.0: Breaking Into the Mainstream by Shyam Mehta.

Continued from page 7

decree that passed through the Italian Parliament (though currently delayed by elections), the ground-mount tariff for projects over 1 MW will only be cut to €0.313/kWh, a smaller cut than proposed by the industry associations. This would decline to €0.2642/kWh at the end of 2011 and digress by 6% annually thereafter. The proposal also includes a 4% annual digression beginning July 2012.

While significant, these cuts would not significantly hinder the Italian market. Returns will remain sufficient even with module price moderation. Thus, administrative concerns remain at the forefront.

2011 Rates		
System Size	Ground Mount (% reduction from 2010 levels)	Rooftop (% reduction from 2010 levels)
1-6 kW	€0.365 (5%)	€0.401 (5%)
6-20 kW	€0.339 (7%)	€0.375 (7%)
20-200 kW	€0.313 (9%)	€0.330 (14%)
200-1000 kW	€0.304 (12%)	€0.323 (16%)
>1000 kW	€0.297 (14%)	€0.315 (18%)

Calendar

March 2010

Greentech Media's Solar Summit 2010
Phoenix, Arizona
March 30-31
http://www.greentechmedia.com/events/live/greentech-medias-solar-summit-2010/

2010 5th AsiaSolar PV Industry Exhibition & Forum
Shanghai, China
March 30 - April 1
www.asiasolarexpo.com

April 2010

International Conference on Concentrating Photovoltaic Systems
Freiburg, Germany
April 7- 9
http://www.cpv-conference.org

ENERSOL Expo 2010
Tunis, Tunisia
April 7-10
http://www.exposervicestunisie.com/enersol

2nd PV Summit Asia
Beijing, China
April 15 - 16
http://www.merisis-asia.com/pv2010

Conference: SolarTech' Leadership Summit Summit.
San Ramon, California, USA
April 21 - 22
http://www.calsolarsummit.org

Thin-Film Industry Forum
Berlin, Germany
April 22 - 23
http://www.solarpraxis.de

PHOTON's 8th Solar Silicon Conference
Stuttgart, Germany
April 27
http://www.photon-expo.com

5th European PV-Hybrid & Mini-Grid Conference
Barcelona, Spain
April 29 - 30
http://www.otti.de

May 2010

Conference: Photovoltaics Summit 2010
San Diego, California, USA
May 3 - 5
http://www.photovoltaicssummit.com

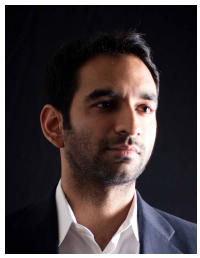
SNEC PV Power Expo 2010
Shanghai, China
May 5 - 7
http://www.snec.org.cn

The Analyst's Corner

CIGS is Coming, and Will Vindicate One of the Big Three Startups

by Shyam Mehta

Prior to 2009, most VC-backed flexible substrate firms had precious little to show for all the investments they had garnered. The past year, however, saw three of them enter into commercial production and achieve key technological milestones. Nanosolar, which uses a unique process that involves printing nano-particle CIGS "ink" onto aluminum foil, announced that it was producing modules at an annual run rate of 12 MW, had top cell efficiency verified by NREL at 16.4%, and unveiled its TUV/IEC-certified "Utility Panel" for large-scale deployment. Solyndra, which produces cylindrical panels for commercial rooftops, indicated it had sold 17.3 MW in the first nine months of 2009, including a 1.9-MW system in Belgium, and had reached module efficiency of 11% to 14%. Moreover, Miasolé, which deposits CIGS on flexible steel rolls using a sputtering process, announced it had started shipping panels in October 2009.



Setting the stage for the ascendance of CIGS as a real competitor in the PV marketplace, a few CIGS producers will begin to attain manufacturing costs and efficiencies on par with First Solar by 2012, which will drive competitive economics, especially in non-feed-in-tariff markets where minimizing capital costs is paramount. Nevertheless, CIGS adoption at the utility scale will be far from immediate, especially in the U.S., given the demonstrated risk-averseness of U.S. utilities; this will also be true when it comes to financing large-scale CIGS utility systems in Europe. Performance and degradation concerns will have to be alleviated before mass adoption proceeds, which may take two or more years.