

ENERGY

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Vol.153,2016

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New Energy (新能源)

India's solar dream rests on Chinese imports

India's rush to add solar power is being aided largely by a manufacturing overcapacity in China, reports Soumya Sarkar

The Indian solar energy sector is in the middle of unprecedented growth, fed by rapidly declining tariffs, improved technology and a global oversupply of photovoltaic (PV) panels and other material, mainly from China. Although a smaller market than China, the United States or Japan, it is expanding faster than other major nations.

India expects to add as much as 5.4 GW of new solar capacity in 2016, making it the fourth largest solar market globally. The country currently has a total capacity of 7.8 GW of solar power. In comparison, installed capacity in the United States is 25 GW. The prospect for India looks bright. "The tailwinds are exceptionally strong with rapidly falling costs and a greater environmental agenda in the post COP21 [Paris climate summit] world," Bridge to India, an energy consultancy, said in its new India Solar Handbook.

"The solar development pipeline now stands at 22 GW with over 13 GW under construction," market intelligence firm Mercom Capital Group said in their India Solar Quarterly Market Update.

This bullishness benefits from a global glut in photovoltaic equipment. "Recent market reports suggest that an oversupply situation is building up in PV module manufacturing in China, especially for the second half of 2016 and this is likely to lead to significant price corrections in the market," Bridge to India says. This has forced Chinese industry, particularly tier II firms, to lower prices and look at overseas markets.

"Several major solar manufacturers have announced plans to expand their production capacities ahead of 2017. In total, we expect 15 GW of new module capacity to come online in 2016, across 10 major producers, with the majority (14 GW) added by Chinese manufacturers," Morgan Stanley, an investment bank, said in a report on August 2.

At the same time, Chinese demand is expected to slow down sharply in the remaining part of 2016, according to market research firm IHS. The leading information provider noted that module prices for the fourth quarter of 2016 have already declined by as much as 10% since the first half. The fall in prices comes at a perfect time for the Indian solar market as the first three months of 2017 are expected to be the biggest quarter for new capacity, with additions of around 2 GW, according to Bridge to India.

The circumstance of lowered capital costs, overseas slowdown and proactive policy thrust has not being accompanied by strengthening India's domestic manufacturing capacity. "In the absence of manufacturing, India will need to import US\$42 billion (280 billion yuan) of solar equipment by 2030 corresponding to 100 GW of installed capacity," warns a report by KPMG, an advisory firm.

India has emerged as a key growth market for the Chinese suppliers, Bridge to India said in an industry update. "Unless there is a change in Chinese demand sentiment or the European Union removes its trade barriers against Chinese suppliers, we expect prices to stay soft for the next few quarters," the consultancy said.

Cheaper Chinese imports have left local suppliers uncompetitive. "It is clearly very difficult to promote domestic manufacturing in India without solving the macro issues such as ease of doing business, infrastructure, cost of power, cost of finance and local ecosystem for raw materials," Bridge to India said in a recent update.

The remarkable pace of capacity growth through imported material has hurt rickety local manufacturing firms. The Indian Solar Manufacturers' Association has asked for safeguards and anti-dumping duties. Safeguard levies seek to protect local industry against sudden import surges. Anti-dumping duties are imposed when overseas

exporters are seen to be selling products below fair market value.

Their protest may not hold much water. “It would be hard for the small outdated Indian module manufacturers to throw stones with any credibility,” said Tim Buckley, a director at Institute for Energy Economics and Financial Analysis in Sydney. “The quality of their product is widely reported as substandard and uncompetitive.”

Domestic strengthening

However, things may improve. “I think Energy Minister (Piyush) Goyal is on the right path in terms of trying to encourage global module majors like Trina Solar, Canadian Solar, Hanwha Solar and First Solar to consider joint venturing with a local established power company to build a new modern, latest technology facility in India, with appropriate capital concessions and inducements to ease the cost of new builds,” said Buckley. “Tesla received a US\$1 billion incentive to build their Gigawatt factory in Nevada, so there is nothing new in incentivising the establishment of new industries and easing first mover barriers.”

The local industry cannot cope with the recent surge in demand so Chinese imports are inevitable, according to Srinivas Krishnaswamy, chief executive officer of Vasudha Foundation, a clean energy think tank.

“On its part, the government does provide some support to Indian firms by stipulating domestic supply requirements, Krishnaswamy said. “Unfortunately, the domestic manufacturing industry lacks capacity and depth. If solar maintains a sustained growth, we expect it will lead to investments in manufacturing as well.”

“Given the likely 10 GW plus annual demand for modules across India going forward, there is scope for a number of new plants to be built to localise the supply chain in line with Prime Minister Narendra Modi’s Make in India campaign,” said Buckley.

Till that happens, it is likely that the extraordinary growth of the Indian solar energy sector will be fuelled by imports, mostly from China. “It is a happy coincidence that there is a combination of large solar project announcements in India and oversupply and depressed prices of Chinese equipment,” Jasmeet Khurana, an associate director at Bridge to India said. “We should make the most of it.”

印度太阳能之梦仰仗中国出口

中国制造业产能过剩导致的太阳能光伏电池和其他设备价格下滑，使得印度太阳能产业获得迅猛发展。

印度的太阳能产业正处于前所未有的高速发展时期，这主要得益于快速下滑的关税税率，日益提高的技术水平，以及主要集中在中国的全球太阳能光伏电池板和其他材料的供给过度。尽管目前印度的市场规模还不及美国、中国和日本，但其发展速度却是几个主要市场国家中最快的。

印度预计 2016 年新增太阳能装机 540 万千瓦，成为全球第 4 大太阳能市场。目前，印度全国太阳能总装机为 780 万千瓦。而美国的现有太阳能装机容量则高达 2500 万千瓦。所以说，未来印度市场前景光明。能源咨询机构印度之桥（Bridge to India）在其最新出版的《印度太阳能产业指南》中指出：“在后联合国气候变化大会（巴黎气候峰会）时代，随着产业成本快速下降，各国环境保护日程相继出台，整个太阳能产业发展环境一片大好。”而马克姆资本集团（Mercom Capital Group）也在其《印度太阳能市场季度动态》中表示：“目前的太阳能管线建设计划总量为 2200 万千瓦，其中有 1300 万千瓦已经开工建设。”

印度太阳能产业的快速发展得益于全球太阳能光伏设备供应过量。印度之桥（Bridge to India）表示：“最近的市场报告显示，中国太阳能电池组件供应过量现象日渐显现，2016 年下半年尤其明显，未来很有可能带动市场价格出现重大调整。”中国太阳能产业（特别是二级企业）不得不进一步下调产品价格，并放眼海外市场。

投资银行摩根士丹利（Morgan Stanley）在 8 月 2 日的一份报告中指出：“已经有多家主流太阳能设备制造厂商宣布在 2017 年前提高产能。总的来看，我们预计 2016 年 10 家主要制造商新上线光伏电池产能大

约为 1500 万千瓦，其中大部分新增产能（1400 万千瓦）都将来自中国。”

与此同时，市场研究公司 IHS 认为，2016 年剩余时间内中国国内太阳能产业需求量将出现急剧下滑。这家知名信息提供商还指出，2016 年第 4 季度太阳能光伏组件的价格将比上半年下降 10%。印度之桥（Bridge to India）表示，这样的价格跳水对印度太阳能市场来说时机正好，因为他们预计 2017 年前 3 个月将成为印度太阳能新增产能幅度最大的一个季度，总量可能高达 200 万千瓦。

然而，不断走低的资金成本、疲软的海外市场以及积极主动的政策导向并没有带来印度国内太阳能产业制造能力的提高。咨询公司毕马威（KPMG）在一份报告中警告称：“印度 2030 年太阳能装机容量将达到 1 亿千瓦。而相关制造业能力缺席将导致印度进口的太阳能设备总值高达 420 亿美元。”

印度之桥（Bridge to India）在一份行业动态文章中指出，印度已经成为中国供应商的主要新增市场。该机构表示：“除非中国国内市场需求发生改变，或者欧盟解除对中国供应商的贸易壁垒，否则未来几个季度内太阳能市场价格仍将保持温和状态。”

中国进口产品价格低廉，严重影响了印度当地供应商的市场竞争力。印度之桥（Bridge to India）在最近一份市场动态文章中指出：“如今印度国内面临着许多宏观问题，比如经商环境便捷度、基础设施建设、能源与金融成本、原材料与当地生态系统关系协调等等。如果这些问题无法解决，那么推动印度当地制造业发展就只能是天方夜谭。”

通过进口材料大幅进行产能建设的行为已经严重打击了印度当地的制造企业。为此，印度太阳能制造商协会向政府提议征收保护性关税及反倾销税。保护性关税可以保护当地工业免受进口激增的影响。而当海外进口商以低于市场平均价格的水平进行产品销售时，进口国家有权向其征收反倾销税。

然而这样的抗议未必站得住脚。悉尼能源经济学与金融分析研究所（Institute for Energy Economics and Financial Analysis）的蒂姆·巴克利（Tim Buckley）告诉第三极：“这些落后的小型印度太阳能组件制造商的发言并没有什么可信度。早就有报道指出，这些质量欠佳的产品根本不具备市场竞争力。”

强化国内市场

然而，事情总会出现转机。巴克利（Buckley）表示：“我认为印度能源部长皮尤什·戈亚尔（Piyush Goyal）已经看清了未来发展的正确方向。比如通过适当的资本让步和鼓励措施降低建设成本，推动天合光能（Trina Solar）、阿特斯集团（Canadian Solar）、恒华集团（Hanwha Solar）和第一太阳能（First Solar）等多家全球主流太阳能电池组件制造企业与印度当地公司设立合资企业，共同在印度建设最新的现代产能设备。我记得特斯拉（Tesla）公司就因在内华达州建立超级电池工厂（Gigawatt）而获得了 10 亿美元的鼓励优惠。所以说，在鼓励新兴行业建设和消除先行者壁垒方面，无非都是这些套路，没有什么新的东西。”

清洁能源智库瓦苏达基金会（Vasudha Foundation）首席执行官斯里尼瓦·克里希纳希瓦米（Srinivas Krishnaswamy）认为，印度当地的工厂无法应对突如其来的需求增长，所以从中国进口电池板是不可避免的。

克里希纳希瓦米（Krishnaswamy）告诉第三极：“从其自身来说，印度政府的确通过限定国内供应标准当地企业提供了一些支持。但是，关键在于印度国内制造商在能力和深度等方面存在不足。如果太阳能产业能够保持持续增长，我们希望未来还能够增加相关制造产业方面的投资。”

巴克利（Buckley）指出：“预计未来印度全国每年新增太阳能电池组件的需求将有可能达到 1000 万千瓦以上，所以印度总理纳伦德拉·穆迪（Narendra Modi）希望建设多个全新电站，以便实现电力供应产业链本地化布局的‘印度制造’（Make in India）计划仍然大有可为。”

除非上述愿景能够及时实现，否则印度太阳能产业的迅猛发展恐怕还要依赖进口设备，尤其是来自中国的进口设备的支持。印度之桥（Bridge to India）副总监加斯米特·库拉纳（Jasmeet Khurana）告诉第三极：“目前印度的大型太阳能项目不断上马，而中国的相关设备则出现了供大于求和价格下滑，至少这个巧合在我们看来是不错的。所以我们应该积极利用这个机遇。”

DP Energy greenlighted for 168.5MW solar in South

Australian hybrid park

Northern Ireland-headquartered renewable energy firm DP Energy has received approval to develop a AU\$680 million (US\$519 million) renewable energy park in South Australia involving 375MW of wind and solar capacity.

The South Australian government greenlighted the Port Augusta Renewable Energy Park, which will power the equivalent of 200,000 homes. The project will be located on land situated on a coastal plain south-east of Port Augusta.

It will contain 59 wind turbines (206.5MW) and 400 hectares of solar arrays (168.5MW), according to a company spokesman.

When the application was submitted last December, DP Energy said the park would include 1.6 million PV modules measuring 1.2x0.8m and 150 solar PV inverters. It would also have 40km of solar PV site tracks as well as three solar PV interconnector substations containing switchgear and transformers.

A DP Energy release said the wind projects will be driven mainly by temperature differences between land and sea rather than weather systems, which means they have a regular evening peak in line with the usual evening peak in electricity demand. They also peak in summer when demand is greater, claimed DP Energy. This will be complemented by midday peaks in solar generation.

The project will create 250 jobs during construction, peaking at 600, with 15-20 ongoing jobs.

The approval comes shortly after a major national debate over whether renewables had caused extreme electricity price hikes in South Australia, which newly-appointed energy minister Josh Frydenburg later put to rest by saying that the major cause was increased gas prices, interconnector maintenance and a cold snap, while adding that renewables still played a small role in the price hikes.

DP Energy chief executive Simon De Pietro said: "The state has great natural resources in both wind and sun coupled with a clear regulatory framework, an excellent case management service (through Investment Attraction South Australia), and a professional and independent planning assessment process."

Victoria consults on renewables policy

In other news, the Victorian government is consulting on the design of its renewable energy auction scheme. The state is targeting 25% renewables by 2020 and 40% by 2025

The consultation paper seeks feedback on the design of the overall scheme structure, as well as on specific scheme components including payment structure, contracting elements, scheme administration and cost recovery mechanism, and auction evaluation principles.

A series of workshops will be held throughout August for key stakeholders and interested members of the public to provide verbal feedback on the consultation paper.

DP Energy 南澳大利亚混合动力园区 168.5MW 太阳能获得批准

总部位于北爱尔兰的可再生能源公司 DP Energy 日前获得批准,在南澳大利亚开发一个 6.8 亿澳元(5.19 亿美元)可再生能源园区,涉及 375MW 风能和太阳能装机容量。

南澳大利亚政府批准 Port Augusta 可再生能源园区,其将为相当于二十万户家庭供电。该项目将坐落于 Port Augusta 东南部海岸平原。

根据一位公司发言人,该项目将包括五十九个风力涡轮机(206.5MW)和四百公顷的太阳能电池阵(168.5MW)。

当去年十二月递交申请时,DP Energy 表示,该园区将包括一百六十万个 1.2x0.8 米的光伏组件,以及

一百五十个太阳能光伏逆变器。其还将拥有四十公里的太阳能光伏轨道，以及三个太阳能光伏互连变电站，包含开关和变压器。

一份 DP Energy 公告表示，风能项目将主要由陆地和海洋之间的温差推动，而非天气系统，这意味着他们有着晚高峰，符合电力需求的晚高峰。DP Energy 称，他们还在夏天当需求较大时达到顶峰。这将得到太阳能发电中午高峰的补充。

在建设期间，该项目将创造两百五十个就业岗位，峰值期间达到六百个，拥有十五至二十个长期的工作机会。

该批准在关于是否可再生资源引起了南澳大利亚电力价格急剧上涨的主要全国性辩论后不久，新任能源部长 Josh Frydenburg 表示，主要原因是燃气价格上涨、互连维护以及寒流，他补充道，可再生能源在电价上涨中发挥的作用很小。

DP Energy 首席执行官 Simon De Pietro 表示：“该州在风能和太阳能方面拥有巨大的自然资源，此外还拥有明确的监管框架、一个卓越的案例管理服务(通过南澳大利亚招商引资)以及一个专业并独立的规划评估过程。”

维多利亚州就可再生能源政策进行磋商

其他方面消息，维多利亚州政府正在就其可再生能源拍卖计划的设计进行磋商。该州瞄准到 2020 年 25% 可再生能源，到 2025 年 40%。

该磋商文件旨在寻求对整体方案结构设计的反馈，以及具体的方案组成部分，其中包括支付结构、合同要素、计划管理、成本回收机制以及拍卖评估原则。

将在整个八月为重要的利益相关者和感兴趣的公众人士举办一系列研讨会，对磋商文件提供口头反馈。

India's SECI releases draft scheme for 1GW rooftop solar on government buildings

Solar Energy Corporation of India (SECI) has published a draft scheme for setting up 1GW of grid-connected rooftop solar on government buildings.

The list of eligible rooftops of various government buildings and government institutions is to be provided by SECI. The draft scheme will also involve two models, Capex and Resco.

An incentive scheme is in place, which rewards developers on the basis of what percentage of capacity they have completed within a sanctioned period. This starts at INR18,750 (US\$281) per kW for projects 80% complete or more. No incentive will be given for projects completed six months after the sanctioned date.

Capacity will be awarded through competitive tendering. No bidder will be allocated more than 40% of each state's capacity, according to the new scheme.

Consultancy firm Bridge to India recently forecast that SECI will only install 250-300MW from another recent 500MW rooftop tender after a lack of interest in the segment of projects of greater than 25kW and commissioned on an OPEX basis.

India's rooftop PV ambitions have seen slow progress compared to the booming utility-scale sector, although the State Bank of India (SBI) recently signed agreements with the World Bank for a US\$625 million facility specifically to support India's grid-connected rooftop solar programme.

印度 SECI 对政府大楼 1GW 屋顶太阳能发布计划草案

Mcanxixun Information

印度太阳能公司(SECI)日前对在政府大楼设立 1GW 并网屋顶太阳能发布一份计划草案。

SECI 提供各种政府建筑和政府机构的合格屋顶名单。该计划草案还将涉及两种型号 Capex 和 Resco。

一项补贴计划到位，其根据开发商在核准期限内完成的装机容量的比例，给予开发商奖励。这以每千瓦 18,750 印度卢比(281 美元)开始，针对完成 80%或以上的项目。对于在核准日期后六个月完成的项目，没有补贴。

将通过竞标授予装机容量。根据新计划，将不会分配给一个投标人超过各邦装机容量的 40%。

咨询公司 Bridge to India 最近预计，在对大于 25kW 的项目缺乏兴趣后，SECI 最近另一个 500MW 屋顶招标将仅安装 250-300MW，并在 OPEX 基础上投产。

尽管印度国家银行(SBI)最近与世界银行(World Bank)就 6.25 亿美元设施签署协议，专门用于支持印度并网屋顶太阳能计划，但是印度屋顶光伏看到，相较于蓬勃发展的公共事业领域，进展缓慢。

Daqo sets new polysilicon production and revenue records

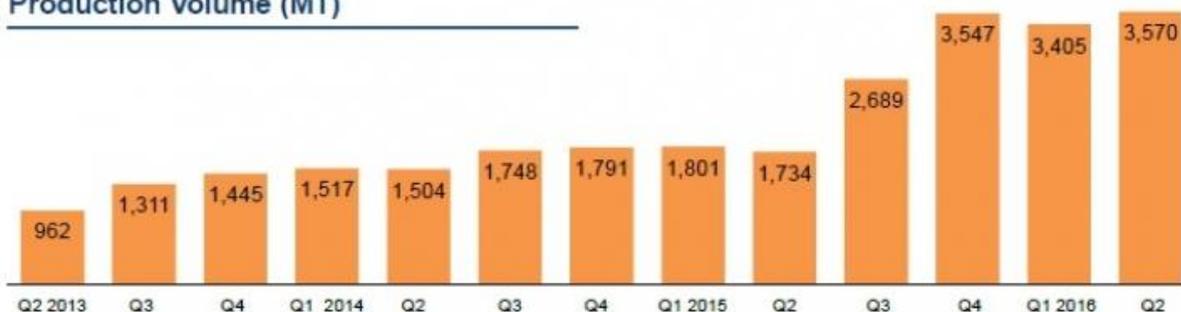
China-based polysilicon and wafer producer Daqo New Energy has reported record production and financial metrics on strong demand in the second quarter of 2016.

Daqo exceeded its nameplate polysilicon capacity in the quarter with production reaching 3,570MT, compared to 3,405MT in the previous quarter, which surpassed its annual name plate capacity of 12,150MT. The company has produced a total of over 13,200 MT of polysilicon over the past four quarters.

As a result, Daqo set a new global Siemens-based polysilicon production cost benchmark of US\$9.43/kg, compared to US\$9.65/kg in the previous quarter.

Polysilicon manufacturing overview

Production Volume (MT)



The company has produced a total of over 13,200 MT of polysilicon over the past four quarters.

Dr. Gongda Yao, CEO of Daqo New Energy said, "During the quarter, we produced a record-high of 3,570 MT of polysilicon, which surpassed our annual name plate capacity of 12,150 MT. With our continuous effort on cost reduction, we reached our lowest ever cost structure with US\$9.43/kg in total cost and US\$7.42/kg in cash cost. Our current cost structure is 27% below Q2 2015 level, which at the time was already one of the lowest in the world. We believe we continue to be one of the lowest cost producers of polysilicon in the world in Q2 2016, and with further technology upgrades and process improvements, we believe we have a roadmap to reduce our cost even lower. "

However, Daqo noted that it would be undertaking annual maintenance work on its polysilicon facilities in the

third quarter, significantly reducing production.

The company noted that aside from the scheduled maintenance during the third quarter it was planning to do the interconnection work with between its existing facilities and its Phase 3A polysilicon production expansion facilities. This would result in a 15 to 20 day suspension of polysilicon production in the third quarter of 2016. Due to the scheduled delivery of specialty materials and equipment for the connection, Daqo noted that the maintenance start date may be delayed beyond the second half of September.

Daqo expects to sell approximately 2,550MT to 2,600MT of polysilicon to external customers during Q3 2016.

The company also noted that other China-based polysilicon producers were also planning annual maintenance shutdowns in the third quarter, keeping polysilicon supply tight.

"Entering into the third quarter, we continue to see strong demand and robust orders from customers," added Dr. Yao. "The market for polysilicon within China remain [in] tight suppl[y], with low levels of inventory across domestic suppliers and customers. Based on current market demand trends, we are seeing a stable pricing environment, and we anticipate Q3 ASP to be similar to Q2 levels. Considering several of the major Chinese polysilicon producers including Daqo plans to conduct annual facilities maintenance during the third quarter, we anticipate that the tight-supply situation for polysilicon sector within China should continue in 2016."

Financials

Daqo reported second quarter revenue of US\$71.0 million, a 23.1% increase from US\$57.7 million in the previous quarter. External polysilicon sales volume was 2,931MT in the quarter, compared to 2,905 MT in the previous quarter.

Polysilicon average selling price (ASP) was US\$17.24/kg, representing a 25.7% increase from US\$13.72/kg in the first quarter of 2016.

Solar wafer sales volume was 25.0 million pieces in the quarter, a 13.1% increase from 22.1 million pieces in the previous quarter.

Non-GAAP gross margin was 43.9%, up from 32.6% in the previous quarter with EBITDA reaching US\$34.7 million, 58.5% increase from US\$21.9 million in the prior quarter. EBITDA margin was 48.9%, compared to 38.0% in the first quarter of 2016.

Daqo's quarterly polysilicon Average Selling Prices

Quarterly Polysilicon ASPs(\$/kg)



PRIVATE & CONFIDENTIAL P. 7



Polysilicon average selling price (ASP) was US\$17.24/kg, representing a 25.7% increase from US\$13.72/kg in the first quarter of 2016.

大全多晶硅生产和收入创新纪录

中国多晶硅和硅片生产商大全新能源(NYSE:DQ)日前报告, 由于 2016 年第二季度需求强劲, 生产和财务指标创纪录。

大全该季度产量达 3,570MT, 超越额定多晶硅产量, 而上季度为 3,405MT, 这超越其 12,150MT 的年度额定产量。该公司过去四个季度生产总计超过 13,200MT 的多晶硅。

因此, 大全创下新的全球西门子多晶硅生产成本基准, 为每千克 9.43 美元, 而上季度为每千克 9.65 美元。

大全新能源首席执行官姚公达博士表示: “该季度, 我们生产的多晶硅创纪录新高, 达到 3,570 MT, 这超越我们 12,150 MT 的年度额定产能。鉴于我们不断努力降低成本, 我们的成本结构达到历史最低, 总成本为每千克 9.43 美元, 现金成本为每千克 7.42 美元。我们目前的成本结构低于 2015 年第二季度水平 27%, 而当时已处于世界最低行列。我们相信, 我们 2016 年第二季度继续成为世界多晶硅成本最低的生产商之一, 并进行进一步技术升级和工艺改进, 我们相信, 我们的路线图将进一步降低我们的成本。”

然而, 大全指出, 其将在第三季度开展多晶硅设施的年度维护工作, 故而大幅降低生产。

该公司指出, 第三季度除了计划的维护, 其还计划现有设施和其 Phase 3A 多晶硅产能扩张设施之间的互联工作。这将导致 2016 年第三季度多晶硅生产暂停十五至二十天。由于计划为此次连接交付特殊材料和设备, 大全指出, 维护开始日期可能推迟至超出九月下半月。

大全预计，2016年第三季度向外部客户出售约 2,550MT 至 2,600MT 的多晶硅。

该公司还指出，其他中国多晶硅生产商也计划在第三季度进行年度停产维护，多晶硅供应保持紧张。

姚公达博士补充道：“进入第三季度，我们继续看到客户强劲的需求和强大的订单。中国多晶硅市场保持供应紧张，国内供应商和客户的库存水平低。基于目前的市场需求趋势，我们看到一个稳定的定价环境，我们预计第三季度平均销售价格将与第二季度水平类似。考虑到包括大全在内的几家主流中国多晶硅生产商计划在第三季度进行年度设备维护，我们预计 2016 年中国多晶硅行业的供应吃紧局面应继续。”

财务业绩

大全报告，第二季度收入为七千一百万美元，较上季度五千七百七十万美元提高 23.1%。该季度对外多晶硅销量为 2,931MT，而上季度为 2,905MT。

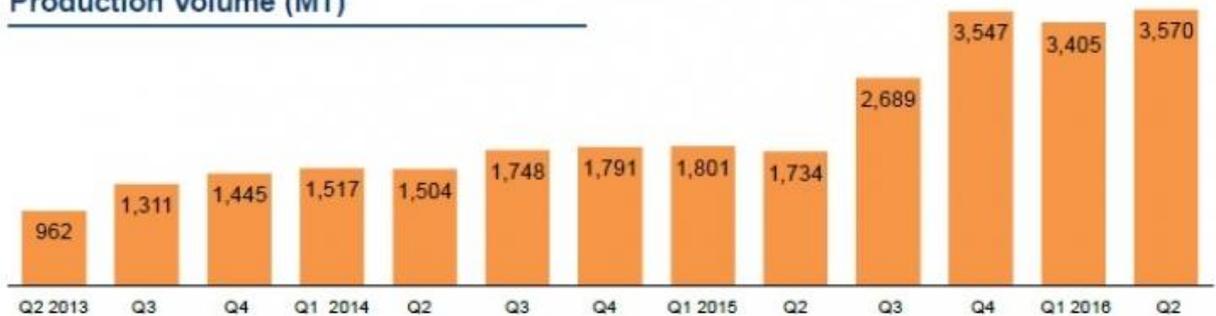
多晶硅平均销售价格为每千克 17.24 美元，较 2016 年第一季度每千克 13.72 美元提高 25.7%。

该季度太阳能硅片销量为两千五百万片，较上季度两千两百一十片增加 13.1%。

非 GAAP 毛利率为 43.9%，较上季度 32.6% 有所提高，EBITDA 达到三千四百七十万美元，较上季度两千一百九十万美元提高 58.5%。EBITDA 利率为 48.9%，而 2016 年第一季度为 38.0%。

Polysilicon manufacturing overview

Production Volume (MT)



该公司过去四个季度生产总计超过 13,200MT 的多晶硅

Daqo's quarterly polysilicon Average Selling Prices

Quarterly Polysilicon ASPs(\$/kg)



PRIVATE & CONFIDENTIAL P. 7



多晶硅平均销售价格为每千克 17.24 美元，较 2016 年第一季度每千克 13.72 美元提高 25.7%

Vivint Solar raising prices as growth flattens

US residential PV installer Vivint Solar expects installations to be flat through the second-half of 2016, while it recovers from the failed merger with bankrupt SunEdison and introduces higher prices and selection criteria on rooftop solar projects.

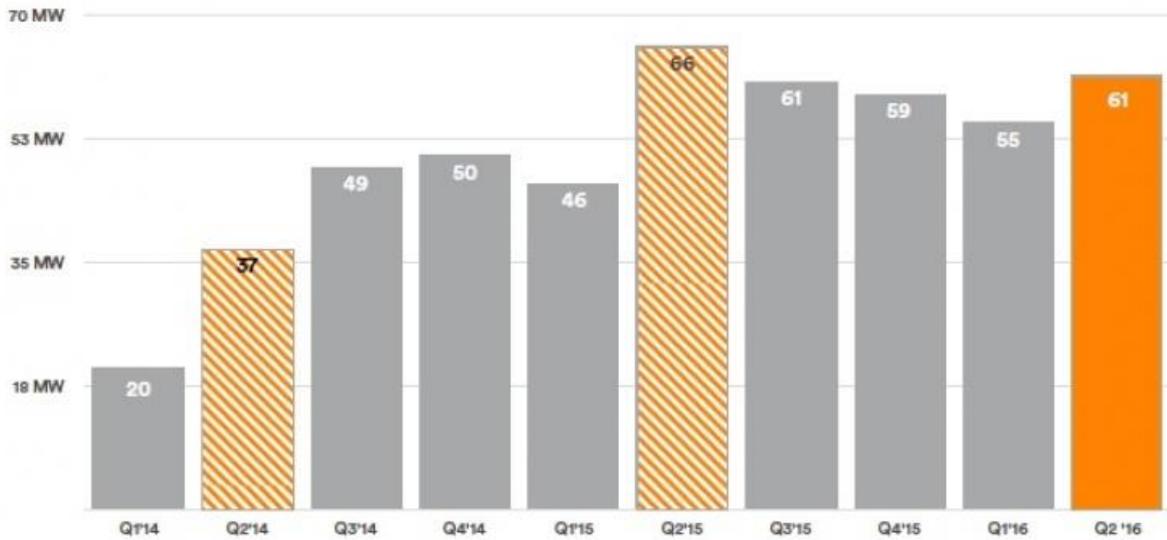
Management noted in an earnings call with financial analysts that it would take several more quarters to return to 'sustainable' growth after the SunEdison merger failure and the introduction of new strategies that include better selection of projects that maximise returns and higher prices in around half of its served markets, inline with other competitors could limit growth.

Financials

Vivint Solar reported second quarter total revenue of US\$34.9 million, up 116% from US\$16.1 million in prior year period on installations of 61MW, down 6% year-over-year. Cumulative installations reached 575MW with contracted payments reaching around US\$2.3 billion, up 56% year-over-year.

Installations in the quarter were 8,641, down 7% year-over-year, while cumulative installations reached 84,872. The company reported a cost per-watt of US\$2.94, down from US\$3.34 in the first quarter of 2016, and down from us\$3.00 in the second quarter of 2015.

MW Installed — HISTORICAL GROWTH —



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The company did not provide installation guidance for the third quarter and noted that it did not expect to meet previous full-year installation guidance of 260MW.

Loss from operations was US\$36.5 million compared to US\$72.3 million in the same period of 2015.

The company also noted that its new cash and loan sales were trending upwards as traditional lease market is changing with customers choosing better financing deals.

Cost Per Watt — HISTORICAL TREND —



*Note: The Q3 2014 sales and marketing cost per watt benefits from a change related to Vivint Solar's sales commission policies. On a non-normalized basis sales and marketing cost per watt would have been \$0.25.

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Vivint Solar 由于增长趋平提高价格

美国住宅光伏安装商 Vivint Solar(NYSE:VSLR)预计，2016 年下半年安装量将趋平，而其从与破产的 SunEdison 合并失败中恢复，对屋顶太阳能项目推出较高的价格及选择标准。

管理层在与金融分析师的收入电话会议中指出，在 SunEdison 合并失败后，其将花费几个季度来恢复“可持续”发展，并引进新的战略，其中包括项目的更好选择，在其服务的约一半的市场最大限度提高回报并且提高价格。

财务业绩

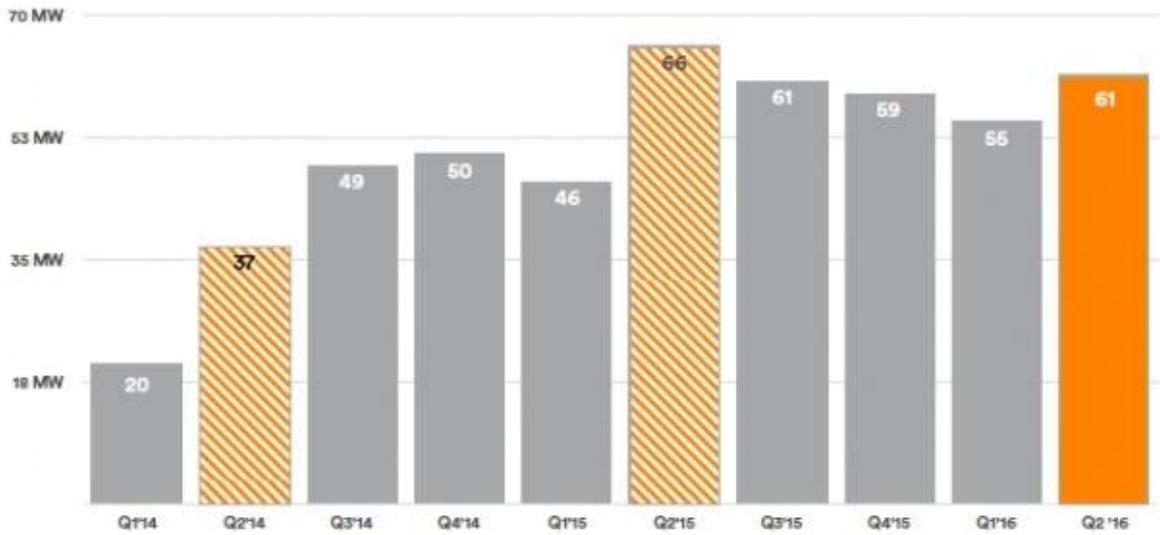
Vivint Solar 报告，第二季度总收入为三千四百九十万美元，较去年同期一千六百一十万美元提高 116%，安装量为 61MW，年同比下降 6%。累计安装量达到 575MW，合同款项达二十三亿美元左右，年同比提高 56%。

该季度安装项目为 8,641 个，年同比减少 7%，而累计安装项目达到 84,872 个。该公司报告，每瓦成本为 2.94 美元，较 2016 年第一季度 3.34 美元有所降低，较 2015 年第二季度 3.00 美元也有所下降。

运营亏损为三千六百五十万美元，而 2015 年同期为七千两百三十万美元。

该公司还指出，由于传统租赁市场正在随着客户选择更好的融资协议而发生变化，其新的现金和贷款销售趋势上扬。

MW Installed — HISTORICAL GROWTH —



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该公司没有提供第三季度安装量目标，指出其预计不会达到此前 260MW 的全年安装量目标。

Cost Per Watt — HISTORICAL TREND —



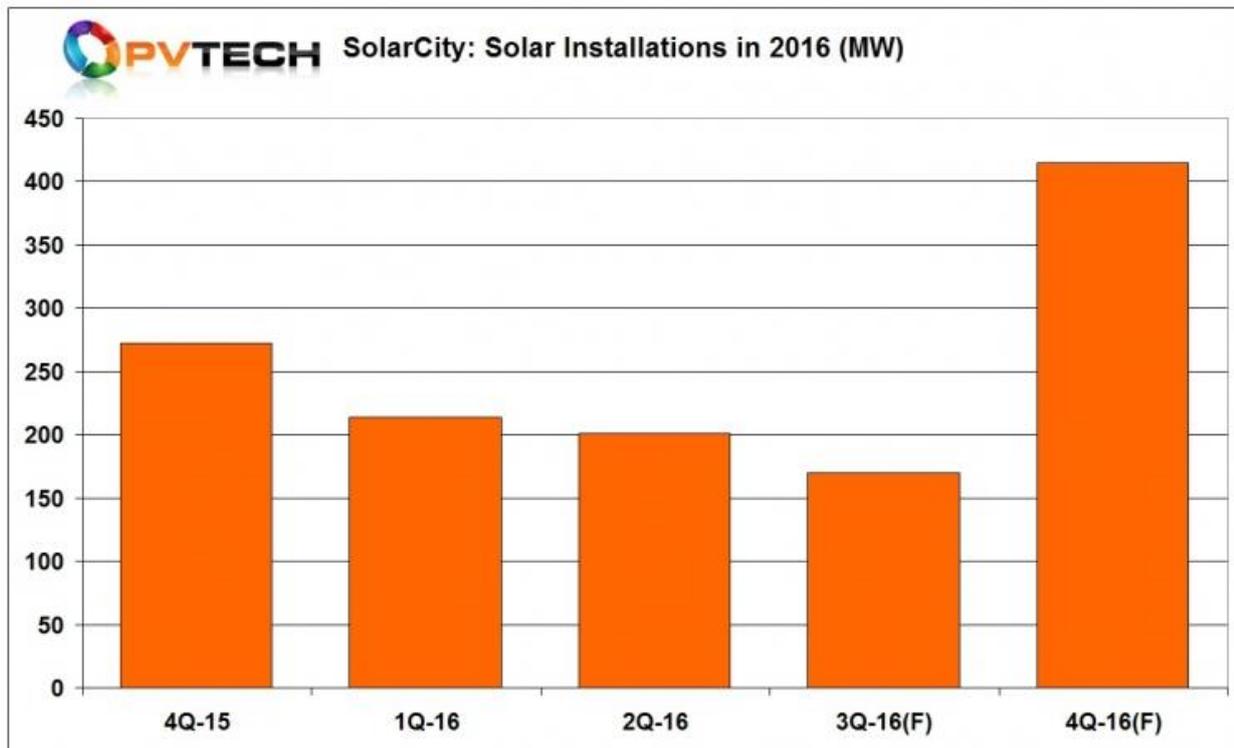
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该公司报告，每瓦成本为 2.94 美元，较 2016 年第一季度 3.34 美元有所降低，较 2015 年第二季度 3.00 美元也有所下降

SolarCity sets up rollercoaster ride for installations in 2016



The largest US solar installer SolarCity recently lowered its megawatt (MW) installation guidance that depicts a rollercoaster ride through the year.

The largest US solar installer SolarCity recently lowered its megawatt (MW) installation guidance that depicts a rollercoaster ride through the year.

The company recently revised installations to a range of 900MW to 1,000MW for the full-year, compared to 1,000MW to 1,100MW, previously.

However the quarterly deployments are anything but lumpy. SolarCity previously reported first quarter installs of 184MW, up 32% from the prior year period but down from 221MW in the fourth quarter of 2015.

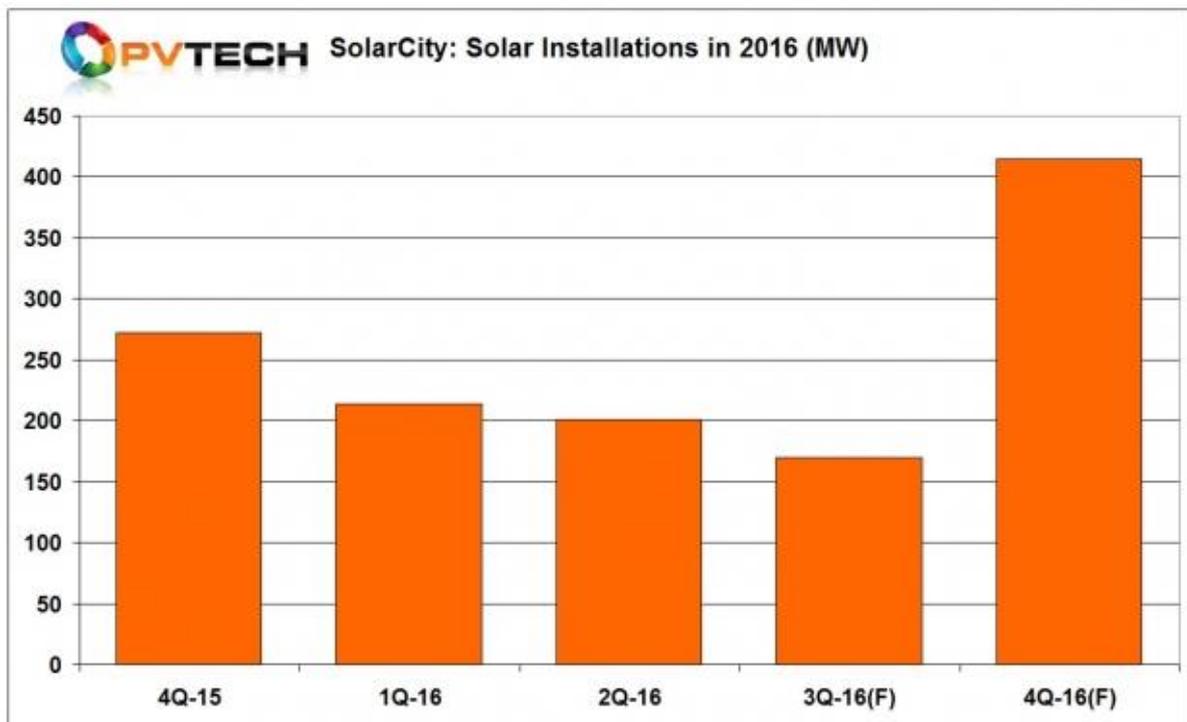
In releasing second quarter results, installations picked-up to 201MW, but guided third quarter installs at around 170MW. As the company noted, to meet lowered guidance, fourth quarter installs would have to be in the range of 315MW to 415MW, both figures being much higher than the company had ever achieved to date.

SolarCity 2016 年安装量呈过山车式发展

美国最大太阳能安装商 SolarCity(NASDAQ:SCTY)最近下调其安装量目标,描绘全年呈过山车式发展。该公司最近将全年安装量修改为 900MW 至 1,000MW, 而此前为 1,000MW 至 1,100MW。

然而,季度部署一点也不波浪起伏。SolarCity 此前报告,第一季度安装量为 184MW,较去年同期提高 32%,但是较 2015 年第四季度 221MW 有所下降。

在发布第二季度业绩中,安装量提升至 201MW,但是预计第三季度安装量为 170MW 左右。由于该公司指出,为了适应降低的目标,第四季度安装量将为 315MW 至 415MW,两个数字都远高于该公司迄今所取得的。



美国最大太阳能安装商 SolarCity 最近下调其安装量目标，描绘全年呈过山车式发展

ROUND UP: Powerway and Steelcons in Brazil, California Metropolitan solar, NTPC and CSIRO partner

Steelcons and Powerway partner in Brazil

Steelcons and Powerway Renewable Energy Company are partnering on EPC and O&M solutions for the Brazilian solar market.

Powerway will offer its single-axis tracker system, the PowerTracker, while Steelcons will provide installation, construction, operation and maintenance of the trackers.

The PowerTracker will be deployed in Sandylons' 90MW projects in Acquiraz, which are due to kick off in Q4 of 2016. Sandylon Investment has a further 300MW project pipeline.

Powerway chief executive Benson Wu said: "The fully integrated one stop solution created by the partnership brings value to solar investors in Brazil, making solar power consumption easy, simple, inexpensive and long lasting."

Southern California Metropolitan Water District gets 3MW solar

The Metropolitan Water District of Southern California has commissioned a 3MW solar plant at its Weymouth Water Treatment Plant in La Verne.

The plant will offset nearly half of the water treatment centre's energy demand.

Metropolitan board chairman Randy Record said: "As public stewards of our natural resources, Metropolitan is ever-conscious of the impact our operations have on the environment, from the delivery and treatment of water to the day-to-day operation of our facilities."

“Just as we have assumed a leadership role in promoting conservation and other water-wise activities such as recycling and groundwater clean-up, we are also working hard to reduce our carbon footprint.”

The two separate solar fields feature a total of 539 sun-tracking stations, each supporting a string of 20x315W panels. The stations employ a tracking system that allows the panels to follow the sun’s path from east to west, producing 25% more power than fixed panels, the firm claims.

India’s NTPC and Australia’s CSIRO to partner on R&D

India’s largest utility NTPC and Australia’s national science organisation Commonwealth Scientific and Industrial Research Organization (CSIRO) have signed a “Letter of Intent” (LOI) for scientific collaboration and joint research activities in the area of low emission energy technologies.

Areas of investigation include advance combustion and gasification technologies as well as renewables.

Powerway 和 Steelcons 在巴西取得合作, 加州 Metropolitan 安装太阳能, NTPC 与 CSIRO 取得合作

Steelcons 和 Powerway 在巴西取得合作

(PV-Tech 讯)Steelcons 和 Powerway Renewable Energy Company 正在就巴西太阳能市场的 EPC 和运维解决方案取得合作。

Powerway 将提供其单轴跟踪系统 PowerTracker, 而 Steelcons 将提供跟踪器的安装、建设、运行和维护。

PowerTracker 将部署在 Acquiraz 的 Sandylons 90MW 项目, 这些项目将于 2016 年第四季度启动。

Sandylon Investment 拥有另外 300MW 项目储备。

Powerway 首席执行官 Benson Wu 表示: “该合作伙伴关系创造的完全集成的一站式解决方案, 为巴西太阳能投资者带来价值, 使太阳能电力消耗方便、简单、廉价并持久。”

南加州 Metropolitan Water District 获得 3MW 太阳能

南加州 Metropolitan Water District 日前在 La Verne 的 Weymouth 水处理厂投产一座 3MW 太阳能电站。

该电站将抵消该水处理中心近一半的能源需求。

Metropolitan 董事会主席 Randy Record 表示: “作为我们自然资源的公共管家, Metropolitan 从水的交付和处理到我们设施的日常运作, 都意识到我们运营对环境的影响。”

“就像我们在促进节约和其他水方面活动中承担领导作用, 如循环利用和地下水清理, 我们还努力降低我们的碳足迹。”

该公司称, 两个独立的太阳能场地, 设立总计五百三十九个太阳跟踪站, 各支撑一系列 20x315W 电池板。这些电站采用一个跟踪系统, 使电池板能够跟随太阳能的轨迹从东到西, 比固定式电池板多产生 25% 的电力。

印度 NTPC 和澳大利亚 CSIRO 就研发取得合作

印度最大的公共部门 NTPC 与澳大利亚国家科学机构 Commonwealth Scientific and Industrial Research Organization (CSIRO), 日前就在低排放能源技术领域开展科学合作和联合研究活动, 签署“意向书”。

调查范围包括先进的燃烧和气化技术, 以及可再生能源。

BlackRock closes on €650 million for European renewables fund

Mcanxixun Information

The world's biggest asset manager BlackRock Real Assets has secured €650 million (US\$726 million) from more than 25 institutional investors in Europe and Asia for its Renewable Income Europe fund.

It exceeded the initial fund target size of €500 million, reflecting strong investor demand for long-term income from the renewable power asset class, according to a BlackRock release.

Since the Renewable Income Europe fund's first close in February this year, it has invested in nine wind and solar projects across the UK and Ireland with a long-term aim to build a diversified portfolio of European wind and solar projects, expected to be primarily in Western Europe.

Rory O'Connor, head of European renewables investment for BlackRock and manager of the fund, said: "We are very pleased with the final close for the Renewable Income Europe fund, and its investment progress on behalf of our clients. Since 2012 BlackRock has invested in 80 wind and solar projects globally, and manages over US\$2.5 billion of equity assets in the renewable power sector, through strategies designed to meet client needs and preferences."

Patrick Liedtke, head of BlackRock's Financial Institutions Group for EMEA, added: "In an increasingly volatile market, real asset investments are ideally suited to institutions that have a long-time horizon, and are looking for income-producing assets with inflation-protection and low correlations. Renewable power provides further portfolio diversification by providing varying local drivers of return, such as those derived by wind and solar resource."

BlackRock 欧洲可再生能源基金达 6.5 亿欧元

世界最大的资产经理 BlackRock Real Assets 的 Renewable Income Europe 基金，日前从欧洲和亚洲逾二十五家机构投资者获得 6.5 亿欧元(7.26 亿美元)。

根据一份 BlackRock 公告，其超越了五亿欧元的初始资金目标规模，反映出投资者对可再生能源电力资产类别长期收益的强劲需求。

自今年二月以来，Renewable Income Europe 已为整个英国和爱尔兰九个风能和太阳能项目投资，长期目标是建立一个多元化的欧洲风能和太阳能项目投资组合，预计主要在西欧。

BlackRock 欧洲可再生能源投资负责人兼该基金的经理罗里·奥康纳(Rory O'Connor)表示：“我们非常高兴 Renewable Income Europe 基金最终完成，其投资进度代表我们的客户。自 2012 年以来，BlackRock 已在全球投资八十个风能和太阳能项目，并通过旨在满足客户需求和偏好的战略，管理可再生能源行业逾二十五亿美元股权资产。”

BlackRock 的 Financial Institutions Group 欧洲、中东和非洲负责人帕特里克·利特克(Patrick Liedtke)补充道：“在一个日益动荡的市场，不动产投资非常适合于具有长期时间跨度、并且寻求产生收入的资产能够抵御通货膨胀并具有低相关性的机构。可再生能源发电通过提供各种回报，进一步促进投资组合多元化。”

Manz solar sales increase on continued demand for automation in China

PV and electronics equipment manufacturing and automation specialist Manz AG has reported continued demand for automation system in China for solar manufacturing applications that have generated €17.5 million in first half year revenue, up 66.7% from the prior year period.

Manz reported that Solar segment sales accounted for 14.1% of total Group sales of €124.0 million in the

reporting period, up from 8.6% or €10.6 million in the first half of 2015.

The company also noted that its Solar segment earnings were influenced by the maintenance of production capacities in CIGS thin-film technology. Manz is also in a development program with new investor, Shaghai Electric in commercialising CIGS its CIGS technology.

However, Solar segment sales were below profitable thresholds, generating a negative EBIT of €4.9 million, down from negative €7 million in the prior year period.

Dieter Manz, CEO and founder of Manz AG, commented: "We have had a good start into the year and initially were also able to continue this development in the second quarter. Our operating business showed a slight upturn which could be felt in revenues of around EUR 124 million. With our restructuring measures, we have successfully implemented the first steps for lowering our cost basis. But unfortunately the preliminary order stop of a major customer in the Energy Storage business segment caught us off guard, and therefore we are missing revenue in the middle single-digit millions range. This resulted in a negative EBITDA in the first six months of EUR -4.5 million."

The company said it would provide a detailed update on its strategic partnership with Shanghai Electric later in the third quarter. This should result in a 'significant increase in revenues with significantly improved earnings before interest and taxes (EBIT) for the full year,' according to Manz AG's financial statement.

Manz 太阳能销售额提高

光伏和电子设备制造及自动化专家 Manz AG(ETR:M5Z)日前报告，中国对于自动化系统的持续需求，使得今年上半年太阳能制造应用已产生一千七百五十万欧元的收入，较去年同期提高 66.7%。

Manz 报告，在该报告期内，太阳能部门销售额占 1.24 亿欧元集团总销售额的 14.1%，较 2015 年上半年 8.6%或一千零六十万欧元有所提高。

该公司还指出，其太阳能部门收入受到 CIGS 薄膜技术产能维护的影响。Manz 还与新投资者上海电气(Shanghai Electric)实施开发计划，商业化其 CIGS 技术。

然而，太阳能部门销售额低于盈利门槛，EBIT 为负四百九十万欧元，较去年同期负七百万欧元有所下降。

Manz AG 首席执行官兼创始人迪特尔·曼茨(Dieter Manz)评论道：“我们今年有一个良好的开端，第二季度能够继续这一发展。我们的运营业务呈现小幅回升，这在约 1.24 亿欧元的收入中能够感觉得到。随着我们的重组措施，我们已经为降低成本基础成功实现了第一步。但不幸的是，储能业务部门一家主要客户的临时订单停止，让我们措手不及，因此我们错失五百万左右的收入。这导致前六个月的 EBITDA 为负四百五十万欧元。”

根据 Manz AG 的财务报表，该公司表示，其将在第三季度早些时候对其与上海电气的战略合作伙伴关系提供详细说明。这应该使得“收入大幅提高，全年息税前利润显著改善”。

Brazil registers 13.4GW solar for 2016's sole PV and wind auction

Brazil's energy agency EPE has registered 1,260 wind and solar projects for its 2nd Reserve Energy Auction 2016 to be held on 16 December, the only solar auction in Brazil this year.

There are now 841 wind projects (21,760MW) and 419 solar PV projects (13,388MW) registered and cleared to participate in the auction.

Mcanxixun Information

The top six states for solar capacity registered were:

- Bahi - 101 projects at 3,155MW
- Piaui - 55 projects at 2,057MW
- Rio Grande do Norte - 58 projects at 1,640MW
- Sao Paulo - 53 projects at 1,598MW
- Mato Grosso do Sul - 21 projects at 1,220MW
- Ceara - 36 projects at 1,046MW

Brazil recently removed solar from the first reserve energy auction, which is now solely for hydropower. It also significantly delayed the second reserve auction to December. Before this happened, EPE had accredited 12.5GW of wind and solar projects, of which 393 were solar-based. As a result of the auction shake up it allowed for more projects to be submitted in the second auction

巴西为 2016 年唯一的光伏和风能拍卖登记 13.4GW 太阳能

巴西能源机构 EPE 日前为将于十二月十六日举行的 2016 年第二次储备能源拍卖，登记一千两百六十个风能和太阳能项目，这是今年巴西唯一一场太阳能拍卖。

此次拍卖现有八百四十一个风能项目(21,760MW)和四百一十九个太阳能光伏项目(13,388MW)登记并准许参与。

太阳能装机容量登记的前六个州为：

Bahi——一百零一个项目 3,155MW

皮奥伊州——五十五个项目 2,057MW

北里奥格兰德州——五十八个项目 1,640MW

圣保罗州——五十三个项目 1,598MW

南马托格罗索州——二十一个项目 1,220MW

塞阿拉州——三十六个项目 1,046MW

巴西最近在首个储备能源拍卖中取消太阳能，该拍卖目前仅针对水电。其还大幅推迟第二轮储备拍卖至十二月。在这发生之前，EPE 曾认可 12.5GW 风能和太阳能项目，其中三百九十三个为太阳能项目。由于该拍卖重组，其允许第二轮提交更多项目。

SolarCity's 1GW Buffalo fab to produce complete BIPV residential roofing system

The largest US residential PV installer SolarCity is to launch and produce a complete BIPV (Building Integrated Photovoltaic) residential roofing system for the new home building sector at its 1GW Buffalo fab in New York state when the facilities comes on stream.

Responding to financial analyst questions in its second quarter earnings call, regarding updates on the progress of the 1GW Buffalo fab management, Elon Musk let slip that one of the two new products to be fabricated at the facility including a BIPV product.

“I think, this is really a fundamental part of achieving a differentiated product strategy where you have a – it's not a beautiful roof, that it is a solar roof, it's not a thing on a roof, it is the roof. That's – which is quite a difficult

engineering challenge, and not something that is available really anywhere else that is at all good. I think this will be something that's quite a standout and so one of the things I'm really very excited about the future,” noted SolarCity’s chairman.

Peter Rive, co-founder & CTO added: “So we're actually going to be able to start making modules a lot faster than we had anticipated. Right now, we're actually expecting to ramp the module lines by Q2 of 2017. So – and we're going to be making a pretty interesting product and I'm excited to kind of reveal to you all at some point, but it is not just your typical module, it is both very efficient and it looks really, really good.

Management noted that there were 5 million new roofs installed every year in the US and they wanted to provide a product specifically for that market.

The BIPV system would be custom-made to the individual customer and come in a kit form that would be delivered and installed by SolarCity.

“And the cool thing is that it doesn't cannibalize the existing business, because you got two classes of customers – like, customers that where their roof is nearing end-of-life and customers where they've just put in a new roof. And so, you actually get to – this is a great situation where you get to introduce new product without cannibalizing the existing product,” added Musk.

Buffalo expansion plans?

According to management, design work was already underway on the next expansion phase of the Buffalo fab, primarily from possible manufacturing line upgrades and layout optimisation.

“So we're going to take the time to make the equipment modifications as you get the layouts exactly right. We don't have to rush to actually initiate some of the equipment installation for the cell line and then have that be a regretful layoffs only months later,” added CTO, Rive.

Regrettably, ROTH Capital analyst, Philip Shen’s questions on when the fab would hit its 1GW production target and what the PV module cost structures would look like at that time, were lost in the maze of BIPV.

SolarCity 的 1GW 布法罗工厂拟生产完整的 BIPV 住宅屋顶系统

美国最大的住宅光伏安装商 SolarCity(NASDAQ:SCTY)将在纽约州 1GW 布法罗工厂投产时，为新的住房建筑部分推出并生产一款完整的光伏建筑一体化(BIPV)住宅屋顶系统。

在其第二季度收入电话会议中回应财务分析师关于该 1GW 布法罗工厂管理最新进展的问题，伊隆·马斯克(Elon Musk)表示，将在该工厂制造的两个新产品之一包括一个 BIPV 产品。

SolarCity 的董事长指出：“我认为，这真的是实现一个差异化产品战略的基本组成部分——它不是一个美丽的屋顶，它是一个太阳能屋顶，它不是在屋顶上的一个东西，它本身就是屋顶。这是——相当艰巨的工程挑战——不是任何其他地方都能够提供的。我认为，这是相当出色的，因此我真的对未来感到兴奋。”

联合创始人兼首席技术官彼得·赖夫(Peter Rive)补充道：“我们实际上能够比我们的预期快得多地制造组件。现在，我们实际上期待到 2017 年第二季度提高组件生产线产能——我们将制造一个相当令人感兴趣的产品，我很高兴在某些时候向你们透露，它不仅仅是标准的组件，它非常有效，并且看起来真的真的好。”

管理层指出，美国每年安装五百万个新屋顶，他们希望提供一款专门针对该市场的产品。

BIPV 系统将是个人客户定制，以套件的形式出现，将由 SolarCity 交付和安装。

马斯克补充道：“而且很酷的事情是，它不会冲击现有的业务，你得到两类客户——屋顶即将寿命终止的客户，以及刚刚安装一个新屋顶的客户。因此，实际上推出新的产品，而没有冲击现有产品，这是绝佳的情况。”

布法罗扩张计划？

Mcanxixun Information

根据管理层，布法罗工厂下一扩张阶段的设计工作已经开始，主要是来自可能的生产线升级和布局优化。

首席技术官赖夫补充道：“因此，我们将花时间来改造设备。我们不急于实际上启动一些电池生产线的设备安装，以免仅几个月后进行令人遗憾的裁员。”

遗憾的是，ROTH Capital 分析师 Philip Shen 关于该工厂何时达到 1GW 产能目标，届时光伏组件成本结构会如何的问题，迷失在 BIPV 的迷宫中。

Alabama regulator who rejected NEM seeks US\$5 million for PV installation on family land - reports

A member of the Alabama Public Service Commission (PSC) sought a lease for a community solar plant on his land, that would pay US\$5.6 million over a 25-year lease, despite previously voting against net metering for the state, according to reports.

Commissioner Chip Beeker requested an advisor opinion on whether he could lease his 451 acres in Greene County, Alabama, to an energy company called Coronal Development Group. According to a report from local news outlet AL.com, the proposed lease would pay US\$500 per acre, per year over 25 years, totalling US\$225,500 a year.

Beeker filed a request earlier this month to the Alabama Ethics Commission, asking whether leasing land to the Coronal Development Group, that plans to sell electricity to utility Alabama Power Company, which the PSC regulates, would be a conflict of interest and a violation of ethics. Energy news site Electrek has outlined some of Beeker's other positions on energy and climate issues.

The Ethics Commission ultimately deadlocked on the decision on 3 August, with certain commissioners ruling that Beeker could not enter the lease agreement, and others voting in favour of it, according to AL.com's report.

It is particularly of note that whilst state law prohibits public authority figures, such as Beeker, from having business interests that are a conflict of interest and from using their offices for personal gain, Beeker was actually operational in blocking residential solar in Alabama; another reason why his request is controversial.

Previous anti-renewable sentiment

Furthermore, Beeker, whose son is employed by a firm that hires for Alabama Power, has also made dubious comments about the effect, and existence, of climate change: “I believe that no matter what you call it, a myth is still a myth, and the so-called ‘climate change crisis’ is about as real as unicorns and little green men from Mars,” Beeker said in media reports from 2014.

In addition, Beeker was also reported denying the public's place in deciding the fate of state electricity rates. “Do not give the court system and the PSC over to the environmentalists,” Beeker reportedly said at a Republican dinner meeting in 2014 when he was running for his now assumed PSC position. “Do not have them come to present their cause. When you do that they take over. They will send a bunch of lawyers and then send another bunch of lawyers. After a while the EPA or the radical environmentalists get their way. That is what happened in Georgia. They closed down 15 coal plants in Georgia. I will never vote to give them a platform here.”

Solar in Alabama

One of the main issues Alabama regulators had with net metering was the idea that solar users were not paying to maintain their use of the grid. Community solar, however, arguably bypasses such a problem; by selling electricity directly to the utility, at a fixed contract rate, whilst taking into consideration the appropriate interconnection costs.

Alabama does not presently have a net metering policy; with Alabama Power charging residential customers a surplus fee to use solar power, and paying customers comparatively less for the solar energy they sell back to the grid, compared with other states. The fixed fee costs customers US\$5/kW based on the size of the solar system. As residential systems are typically between four and five kW, the fee costs solar customers US\$20-25 per month. Additionally, Alabama Power customers have to sell three to four kW/h back to the grid to offset the charge of one hour used when their systems are not producing.

Evidently, state policy in Alabama gives users little to no incentive to go solar, prompted by rulings made by regulatory bodies such as the PSC.

As the PSC and Ethics Commission have not come to a firm decision on whether or not Beeker can enter the lease, it might still be possible for him to do so in future, if he abstains from any PSC decisions involving Coronal Development Group and Alabama Power.

阿拉巴马监管者寻求收取光伏安装项目五百万美元租赁费

据报道，阿拉巴马州公共服务委员会(PSC)一位成员寻求向一座社区太阳能电站租赁其土地，二十五年租期将支付五百六十万美元，但是其此前投票反对该州净计量。

专员 Chip Beeker 向一位顾问询问意见，关于他是否可以向一家名为 Coronal Development Group 的能源公司租赁其位于阿拉巴马格林县的四百五十一英亩土地。根据当地新闻媒体 AL.com 的报道，拟议的租赁将每年每亩支付五百美元，为期二十五年，总计每年 225,500 美元。

Beeker 本月初向阿拉巴马州道德委员会提出请求，询问向 Coronal Development Group 租赁土地，计划向电力公司 Alabama Power Company 出售电力是否会产生利益冲突并违反道德。能源新闻网站 Electrek 日前概述 Beeker 关于能源和气候问题的一些其他姿态。

根据 AL.com 的报道，道德委员会八月三日关于这一决定陷入僵局，某些委员裁定，Beeker 不能达成租赁协议，而其他人士却表示赞成。

特别值得注意的是，尽管该州法律禁止 Beeker 等公共权威人物，追求具有利益冲突的商业利益，以及利用自己的办公室谋求个人利益，但 Beeker 实际上阻碍阿拉巴马运营住宅太阳能，这是他的要求具有争议的另一个原因。

此前反对可再生能源

此外，Beeker 的儿子被一家为 Alabama Power 聘请的公司招聘，Beeker 对气候变化的影响和存在表示怀疑，在 2014 年的媒体报道中表示：“我认为，无论您称呼它什么，谬见就是谬见，所谓的‘气候变化危机’的真实性大约就像是独角兽，以及火星上的小绿人。”

此外，据报道 Beeker 还否认公众在决定各州电价命运中的位置。据报道 Beeker 在 2014 年的一个共和党人晚餐会上表示：“不要将法庭系统和 PSC 交到环保人士手上”，当时他正竞选现在承担的 PSC 职位。“不要让他们展示他们的事业。当你这样做，他们就会接管。他们将派出一群律师，然后派出另一群律师。不久，EPA 或激进的环保主义者达到自己的目的。这就是在佐治亚州发生的。他们在佐治亚州关闭十五座燃煤电站。我将永远不会投票支持在这里为他们提供一个平台。”

阿拉巴马太阳能

阿拉巴马州监管机构关于净计量的一个主要问题是，太阳能用户不支付电网使用维护费。然而，社区太阳能，通过直接向电力公司以固定的合同价格出售电力，同时考虑合适的互连费用，可能绕开这一问题。

阿拉巴马目前没有净计量政策，Alabama Power 向住宅客户收取使用太阳能电力的附加费，并且对将太阳能售回电网的客户支付的比其他州少。固定费用基于太阳能系统的规模，使客户支付每千瓦五美元。由于住宅系统通常是四至五千瓦，每月收取太阳能客户的费用为二十至二十五美元。此外，Alabama Power 客户必须将三至四千瓦时售回电网，以抵消其系统不生产时一个小时的费用。

显然，阿拉巴马州的政策给予用户使用太阳能的补贴很少或没有，由 PSC 等监管机构作出的裁决推动。

Mcanxixun Information

PSC 和道德委员会尚未对是否 Beeker 可以进行租赁达成决定，如果他放弃涉及 Coronal Development Group 和 Alabama Power 的 PSC 决定，未来他有可能实现租赁。

SolarWorld confirms flat shipments and revenue for Q2

SolarWorld's Q2 results have confirmed their preliminary figures with revenue and shipments flat for successive quarters.

The company posted quarterly revenue of €221.5 million (US\$247.4 million) and shipments of 338MW. SolarWorld reports sales of modules and solar systems together in the same figure.

Shipments of modules and systems for H1 were 682MW with the US representing 344MW of that total.

A full year earnings before interest and taxes (EBIT) range of plus or minus US\$10 million was retained from the preliminary results.

The company's stock price lost around a quarter of its value during the period, a fact the company blamed on negative media reporting of its case with Hemlock.

A US court of first instance awarded Hemlock damages of US\$793 million over an unfulfilled polysilicon contract. Once all appeal options were exhausted in the US, Hemlock would then have to seek the damages through a German court. SolarWorld insists the ruling would be unenforceable in German courts because of EU anti-trust laws but continues to look for a settlement. "Expert legal opinion" has offered differing interpretations of the anti-trust defence.

Without an agreement SolarWorld would face in excess of two years of legal wrangling and associated uncertainty.

SolarWorld 证实第二季度出货量和收入持平

SolarWorld 第二季度业绩日前证实其初步数字，收入和出货量连续几个季度持平。

该公司公布，季度收入为 2.215 亿欧元(2.474 亿美元)，出货量为 338MW。SolarWorld 报告，组件和太阳能系统销售额数字相同。

上半年组件和系统出货量为 682MW，美国在该总数中占 344MW。

全年息税前利润率(EBIT)为一千万美元左右，从初步业绩保留下来。

在此期间该公司股价损失其价值的四分之一左右，该公司将此归咎于其与 Hemlock 案的负面媒体报道。

美国初审法院批准 Hemlock 关于未完成多晶硅合同的损害赔偿为 7.93 亿美元。一旦在美国所有上诉都用尽，Hemlock 之后将必须通过德国法院寻求损害赔偿。SolarWorld 坚称，由于欧盟反垄断法，该裁决将不能在德国法院强制执行，但继续寻找解决方案。“专家法律意见”日前提出该反垄断辩护的不同解释。

没有达成协议，SolarWorld 将面临超过两年的法律纠纷及相关不确定性。

Scatec hopeful of compromise deal to keep Egypt solar scheme

A group of developers, including Scatec Solar, are renegotiating the terms of their power purchase agreements (PPA) with the Egyptian government in an effort to keep them on the existing timetable.

Enel Green Power had previously confirmed that it had put its operations in the country on hold. A second consortium that won capacity in Egypt's oversubscribed solar tender was also reported to be ready to walk away. Talks between investors, developers and authorities have sought to address concerns.

The main objection is the use of local arbitration, which investors want to see moved overseas. This particular issue has seen development banks and other international investors including the EBRD, EIB and Saudi Arabia's Islamic Development Bank put their involvement on hold.

The EBRD had set aside US\$500 million for Egypt's 2GW solar programme.

Scatec Solar, which is the lead developer on one 50MW project and the finance partner for five others, told PV Tech it is hopeful that an agreement can be found.

"Scatec Solar, along with several other developers, is prepared to accept a reasonable compromise to enable the planned investments," Terje Osmundsen, SVP business development at Scatec Solar told PV Tech. "A compromise would need to be found taking into account the interests of Egyptian Electricity Holding Company (EEHC), the developers and the lenders. We assume this would entail an adjustment of the main commercial terms of the PPA, including the tariff, for an acceptable offshore dispute resolution and, potentially, added security related to the conversion of currency."

All the successful parties in the tender have until October to obtain financing. With many international players unwilling to participate under the current conditions, Scatec and others are left to look elsewhere.

"We are currently working with Egyptian commercial banks to obtain financing," said Osmundsen, "but we still believe international funding in partnership with local banks clearly is the best solution for the success of the solar power programme and for Egypt in general.

"We trust Egypt's authorities are still well aware of the multiple benefits of the solar programme, and therefore is interested in finding a reasonable compromise that will ensure the successful implementation of the impressive and ambitious programme, which will contribute to drive national development and improve the country's infrastructure," added Osmundsen.

Scatec 寄希望于折衷协议以保持埃及太阳能计划

一组开发商，其中包括 Scatec Solar，正与埃及政府重新协商其购电协议的条款，以努力保持他们目前的时间表。

Enel Green Power 此前曾证实，其已经将全国的业务搁置。据报道，在埃及超额认购的太阳能招标中，第二个赢得装机容量的财团也准备离开。投资者、开发商和当局之间的会谈设法解决这些问题。

主要的反对是利用当地的仲裁，投资者希望看到仲裁转向海外。这一特殊的问题看到了开发银行及其他国际投资者，其中包括欧洲复兴开发银行(EBRD)、欧洲投资银行(EIB)和沙特阿拉伯的伊斯兰开发银行(Islamic Development Bank)参与搁置。

EBRD 已经为埃及的 2GW 太阳能项目拨出五亿美元。

Scatec Solar，一个 50MW 项目的主要开发商，也是五个其他项目的融资合作伙伴，在接受 PV-Tech 采访时表示，希望可以达成一份协议。

Scatec Solar 的业务开发高级副总裁 Terje Osmundsen 在接受 PV-Tech 采访时表示：“Scatec Solar，及其他几家开发商，准备接受合理的妥协，使计划内的投资成为可能。需要找到一个折衷方法，考虑埃及电力控股公司(EEHC)、开发商和贷款方的利益。我们认为这将需要调整购电协议的主要商业条款，其中包括价格，达成可接受的离岸争端解决，并且可能增加涉及货币转换的安全性。”

此次招标中所有的成功参与者直至十月才获得融资。在当前条件下，许多国际参与者不愿意参与，Scatec 及其他方想离开到别处看看。

Osmundsen 表示：“我们目前正在与埃及商业银行合作，以获得融资，但是我们仍相信，与当地银行

合作的国际资金显然是太阳能发电计划及整个埃及获得成功的最佳解决方案。”

Osmundsen 补充道：“我们相信埃及当局仍然清楚地认识到太阳能计划的多重利益，并因此有兴趣找到一个合理的折衷方案，以确保令人印象深刻并雄心勃勃的计划成功实现，这将有助于推动国家发展并且改善该国的基础设施。”

Tata completes India's largest local content solar project

Indian renewable energy firm, Tata Power Solar, a subsidiary of Tata Power, has commissioned the largest Indian solar project under local content requirements so far in Anantapur, Andhra Pradesh.

The 100MW solar project has been developed for India's largest utility NTPC, under the Domestic Content Requirement (DCR), a policy reserved for some central government solar tenders that requires solar modules and cells to be procured from domestic manufacturers.

Tata delivered the project three months ahead of schedule according to a company statement. It is located on a 202-hectare site and has created 50 jobs for local people.

Ashish Khanna, executive director and chief executive of Tata Power Solar, said: “Today, pace of delivery and quality have become crucial benchmarks in the industry and we are especially proud to have delivered a project of this scale in record time. By bringing together our core strengths in domestic manufacturing and EPC services over the last 25 years, this 100MW plant is the largest project commissioned by us to date.”

Tata Power Solar has commissioned over 250MW of ground-mount utility-scale projects across India and delivered a 50MW project using domestically made cells and modules in Rajgarh, Madhya Pradesh in 2014.

India's DCR policy has come under attack after the US took India to the World Trade Organisation (WTO) claiming that the policy breaches international trade rules. The WTO ruled in favour of the US, but India has been able to continue its DCR tenders during the appeal stage. Some commentators have said the DCR is flawed and India can use other means to advance its domestic manufacturing under the 'Make in India' programme.

Tata 完成印度最大符合本地生产配额要求的太阳能项目

Tata Power 旗下子公司、印度可再生能源公司 Tata Power Solar，日前根据本地生产配额要求，投产迄今印度最大太阳能项目，位于安得拉邦阿嫩达布尔。

该 100MW 太阳能项目根据本地生产配额要求，为印度最大电力公司 NTPC 开发，本地生产配额要求是一项为中央政府一些太阳能招标保留的政策，要求太阳能组件和电池采购自国内制造商。

根据一份公司声明，Tata 提前三个月交付该项目。其占地面积两百零二公顷，为当地民众创造五十个就业岗位。

Tata Power Solar 执行董事兼首席执行官阿希什·卡纳(Ashish Khanna)表示：“今天，交付的速度和质量已成为该行业的重要标准，我们感到特别自豪的是，在创纪录的时间内交付这一规模的项目。通过整合我们在国内制造业的核心优势以及过去二十五年的 EPC 服务，这一 100MW 电站是我们迄今投产的最大项目。”

Tata Power Solar 已经在印度投产超过 250MW 的地面安装公共事业规模项目，并且于 2014 年在中央邦 Rajgarh 交付一个采用国内制造的电池和组件的 50MW 项目。

在美国向世界贸易组织(WTO)投诉印度，称印度的本地生产配额要求政策违背国际贸易规则后，该政策遭到抨击。WTO 裁决支持美国，但是印度能够在上诉阶段继续其本地生产配额要求招标。一些评论家

日前表示，本地生产配额要求存在缺陷，印度可以使用其他方式，在“印度制造”计划下推进其国内制造。

SunLink to deploy 1.4GW of solar in India

California-based solar solutions company SunLink has formed a joint venture with Indian engineering firm Ganges Internationale to deploy 1.4GW of solar power in India.

Ganges Internationale will manufacture and install SunLink's TechTrack single-axis trackers, as well as provide ongoing operations and maintenance support. Meanwhile, SunLink will provide engineering services and its Supervisory Control and Data Acquisition (SCADA) system, known as VERTEX.

The two companies are currently working on a tracker project located northwest of Bangalore in the state of Karnataka, with several more projects in the design stages.

Vinay Goyal, chief executive of Ganges Internationale, said: "Ganges has demonstrated a commitment to solar energy by diversifying our business to become a major provider of fixed tilt systems in India.

"Integrating SunLink's tracker technology with our well-established manufacturing capabilities promises to bring not only more local jobs but increased solar capacity to help meet our country's clean energy goals."

India recently surpassed 8GW of solar deployments.

SunLink 拟在印度部署 1.4GW 太阳能

加州太阳能解决方案公司 SunLink 日前与印度工程公司 Ganges Internationale 设立一家合资企业，在印度部署 1.4GW 太阳能发电。

Ganges Internationale 将制造并安装 SunLink 的 TechTrack 单轴跟踪器，并且提供持续的运营和维护支持。与此同时，SunLink 将提供工程服务以及其名为 VERTEX 的数据采集与监视控制系统。

两家公司目前正就一个位于卡纳塔克邦班加罗尔西北部的跟踪器项目取得合作，另外几个项目处于设计阶段。

Ganges Internationale 首席执行官维奈·戈亚尔(Vinay Goyal)表示：“Ganges 日前通过多元化我们的业务，成为印度固定倾角系统的主要供应商，显示出对太阳能的承诺。”

“整合 SunLink 的跟踪技术与我们成熟的制造能力，不仅有望带来更多当地就业机会，还增加了太阳能装机容量，帮助满足我国的清洁能源目标。”

ROUND UP: Masdar Mauritania progress, BHEL West Bengal order , Argentina

Masdar surpasses 50% of 16MW Maritania solar project

17 August: Abu Dhabi-based renewable energy firm Masdar has surpassed the half way mark of constructing its 16.6MW solar PV plant in Mauritania

Masdar has already commissioned a US\$31.99 million, 15MW PV power plant in Mauritania in April 2013. The Sheikh Zayed Solar Power Plant is located in the Mauritanian capital city of Nouakchott and is expected to account for 10% of Mauritania's energy capacity.

BHEL bags EPC order for 30MW of PV plants in West Bengal

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16 August: Bharat Heavy Electricals Limited (BHEL) is to perform EPC services for 30MW of solar PV projects for West Bengal State Electricity Distribution Corporation (WBSEDCL).

The order is valued at INR1.69 billion (US\$25 million). The three 10MW plants will be set up at Mejia (Bankura), Santaldih (Purulia) and Chharrah (Purulia) in West Bengal.

BHEL has already bagged orders of 80MW from mining and power firm Neyveli Lignite and BEL earlier this month and 50MW from Indian utility NTPC in April.

Argentina expects US\$4 billion solar investment in five years

15 August: Argentina expects more than US\$4 billion to be invested in solar energy over the next five years, according to state news portal Latam.

“Companies will invest between US\$4-5 billion and will generate some 2GW of additional power to incorporate to the national electric system,” said Adrián Kolonski, head of energy solutions firm Intermepro.

As part of a new plan to bring in 1GW worth of capacity from renewable energy sources, the country has set aside 300MW worth of solar for an upcoming October auction.

Consumers Energy completes 1MW Michigan community solar plant

15 August: Consumers Energy has started operations at its second solar power plant of 1MW capacity at Western Michigan University.

Dan Malone, Consumers Energy's senior vice president of energy resources, said: "This solar power plant represents our commitment to powering our state reliably and sustainably, using our state's own natural resources."

The project is part of Consumers Energy's Solar Gardens programme, in which customers support the development of new renewable energy in Michigan and reduce their carbon footprint. Participants who subscribe to Solar Gardens will receive a credit on monthly bills based on electricity that's generated at Solar Gardens locations.

新闻综述：Masdar 毛里塔尼亚进展、BHEL 西孟加拉邦合同、阿根廷

Masdar 16MW 毛里塔尼亚太阳能项目过半

八月十七日：阿布扎比可再生能源公司 Masdar 在毛里塔尼亚的 16.6MW 太阳能光伏电站的建设已经过半。

Masdar 已于 2013 年四月在毛里塔尼亚投产一座价值三千一百九十九万美元的 15MW 光伏电站。Sheikh Zayed 太阳能发电站坐落于毛里塔尼亚首都努瓦克肖特，预计将占毛里塔尼亚能源产量的 10%。

BHEL 获得西孟加拉邦 30MW 光伏电站 EPC 合同

八月十六日：Bharat Heavy Electricals Limited (BHEL)将为西孟加拉邦供电公司(WBSEDCL)的 30MW 太阳能光伏项目提供 EPC 服务。

该订单价值 16.9 亿印度卢比(两千五百五万美元)。三座 10MW 电站将设立在西孟加拉邦 Mejia(Bankura)、Santaldih(Purulia)和 Chharrah(Purulia)。

BHEL 本月早些时候已经从采矿和电力公司 Neyveli Lignite 和 BEL 获得 80MW 合同，并且四月从印度电力公司 NTPC 获得 50MW。

天合光能与太阳马戏团合作

阿根廷预计五年内四十亿美元投资太阳能

八月十五日：根据国家新闻门户 Latam，阿根廷预计，未来五年逾四十亿美元将投资于太阳能。

能源解决方案公司 Intermepro 的负责人 Adrián Kolonski 表示：“各家公司将投资四十亿至五十亿美元，

将产生约 2GW 的额外电力，纳入国家电力系统。”

作为 1GW 装机容量来自可再生能源的新计划的一部分，该国为即将到来的十月拍卖保留 300MW 太阳能。

Consumers Energy 完成 1MW 密歇根社区太阳能电站

八月十五日：Consumers Energy 位于西密歇根大学、装机容量 1GW 的第二座太阳能发电站，日前投入运营。

Consumers Energy 的能源资源高级副总裁丹·马龙(Dan Malone)：“该太阳能发电站代表我们的承诺，利用我们州自己的自然资源，可靠并可持续地为我们州供电。”

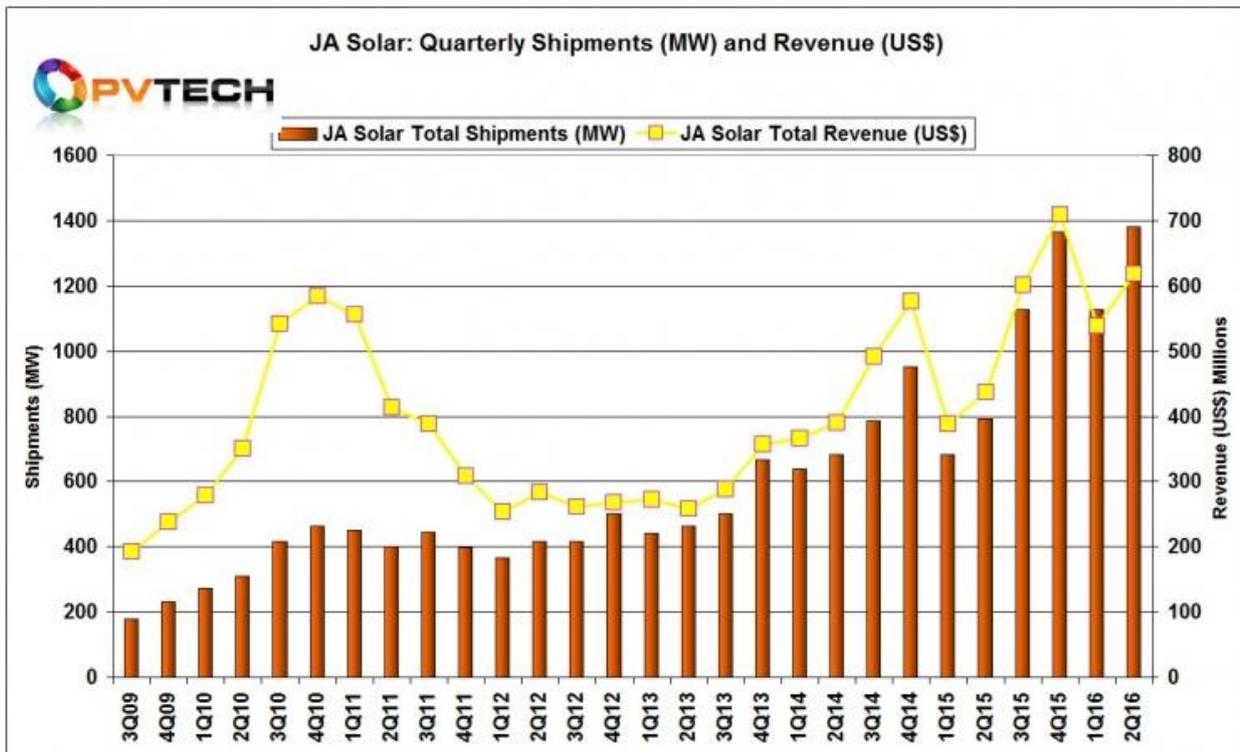
该项目是 Consumers Energy 的 Solar Gardens 计划的一部分，客户支持在密歇根开发新的可再生能源并且减少其碳足迹。Solar Gardens 的参与者将基于在 Solar Gardens 位置产生的电力，使每月账单获得补助。

JA Solar reports record shipments in Q2 on accelerated China demand

‘Silicon Module Super League’ (SMSL) member reported record quarterly shipments but missed guidance on total shipments, while reiterating combined cell and module full-year shipment guidance at 5.2GW to 5.5GW.

JA Solar reported second quarter 2016 net revenue of US\$619.0 million, an increase of 51.9% from the prior year period and up 18.6% from the previous quarter. Gross margin was 15.3%, a decrease of 110 basis points, compared with prior year period and a decrease of 130 basis points from the first quarter of 2016.

The company reported an operating profit of US\$28.3 million, compared US\$23.5 million in the second quarter of 2015, and US\$33.6 million in the first quarter of 2016. Net income was US\$24.7 million, compared to US\$20.5 million in the second quarter of 2015, and US\$23.8 million in the previous quarter.



Total shipments were 1,380.8MW, below guidance of 1,400MW to 1,500MW, which included 151.5MW of

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modules to its own downstream projects, compared to previous guidance of around 100MW to its downstream business for the second quarter.

Shipments

JA Solar reported shipments of cells and cell tolling reached 95.1MW, an increase of 29.6% over the prior year period but a 20% decline from the previous quarter as the company continues to reduce third party solar cell sales.

Shipments of modules and module tolling were 1,134.2MW, an increase of 58.1% year-on-year and an increase of 23.4% over the previous quarter.

However, total shipments were 1,380.8MW, below guidance of 1,400MW to 1,500MW, which included 151.5MW of modules to its own downstream projects, compared to previous guidance of around 100MW to its downstream business for the second quarter. External shipments were up 55.5% from the prior year period and up 18.4% sequentially.

Baofang Jin, chairman and CEO of JA Solar, commented: “Second quarter results were in line with our expectations, with shipments and revenue growing over 50% year-over-year. We are also encouraged by our downstream project development achievements as we successfully connected approximately 250MW of solar projects to the grid in the quarter. As expected, China was our strongest market in the quarter, driven by accelerated activity ahead of subsidy reductions that occurred this summer.”

JA Solar management were cautious over second half 2016 market dynamics, noting potential China end-market weakness.

“While regulatory change should slow the domestic Chinese market in the second half of the year, we believe our balanced global footprint and flexible business model will allow us to adjust to evolving market conditions. We are carefully controlling capital expenditures and staffing, and selling effort is focused on more robust markets outside of China. Our project business provides flexibility in our business model, since we can accelerate or slow down activity in order to balance demand for our modules,” added Jin.

Guidance

JA Solar guided lower third quarter total shipments, despite retaining previous full-year guidance. The company expected shipments of 1,200MW to 1,300MW, which included 250MW to 300MW of module shipments to its own downstream projects.

晶澳太阳能报告第二季度出货量创纪录

“硅基组件超级联盟”成员晶澳太阳能(NASDAQ:JASO)报告，季度出货量创纪录，但是未达到总出货量目标，同时重申，电池和组件全年出货量目标为 5.2GW 至 5.5GW。

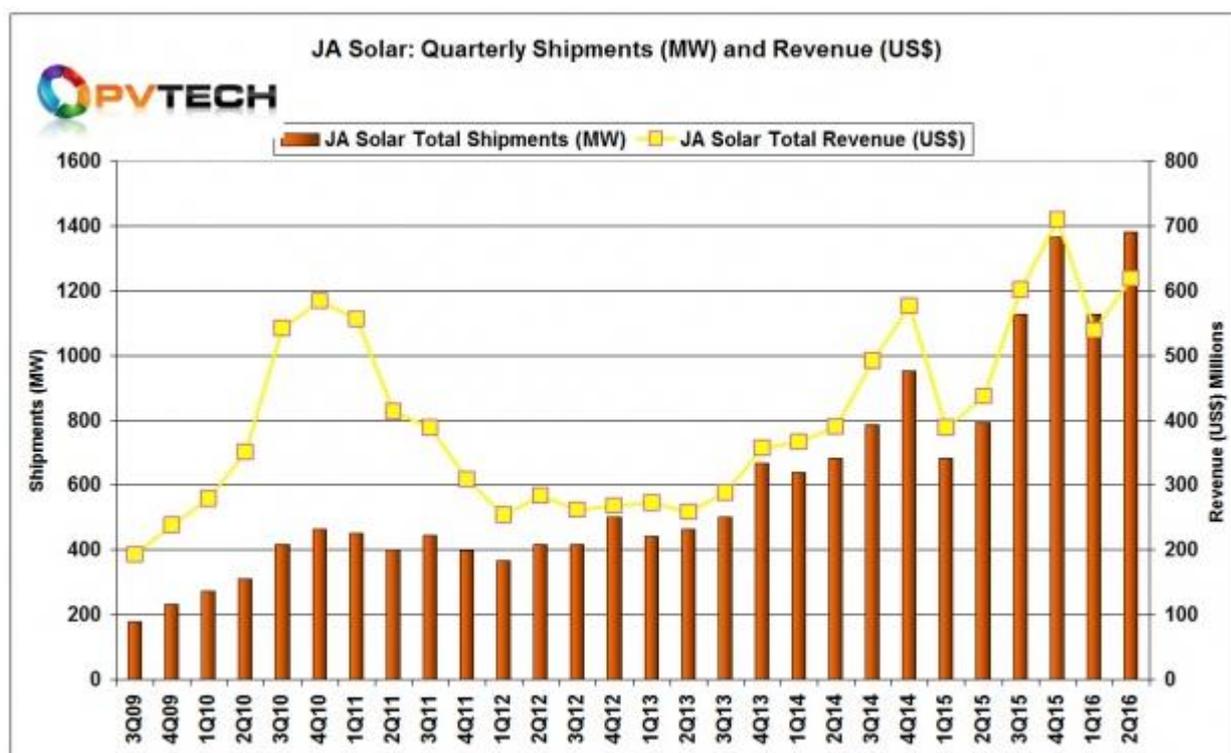
晶澳太阳能报告，2016 年第二季度净收入为 6.19 亿美元，较去年同期提高 51.9%，较上季度提高 18.6%。毛利率为 15.3%，较去年同期下降一百一十个基本点，而较 2016 年第一季度下降一百三十个基本点。

该公司报告，运营利润为两千八百三十万美元，而 2015 年第二季度为两千三百五十万美元，2016 年第一季度为三千三百六十万美元。净收益为两千四百七十万美元，而 2015 年第二季度为两千零五十万美元，上季度为两千三百八十万美元。

出货量

晶澳太阳能报告，由于该公司不断降低第三方太阳能电池销量，电池和电池来料加工出货量达到 95.1MW，较去年同期提高 29.6%，但是较上季度下降 20%。

组件和组件来料加工出货量为 1,134.2MW，年同比提高 58.1%，较上季度提高 23.4%。



然而，总出货量为 1,380.8MW，低于 1,400MW 至 1,500MW 的目标，其中包括对其自己的下游项目出货 151.5MW 组件，而此前目标是第二季度对其自己的下游业务出货约 100MW。对外出货量较去年同期提高 55.5%，季度同比提高 18.4%。

晶澳太阳能董事长兼首席执行官靳保芳评论道：“第二季度业绩符合我们的预期，出货量和收入年同比增长超过 50%。由于我们在该季度成功并网约 250MW 太阳能项目，我们下游项目开发成就给予我们极大鼓励。正如预期，中国是该季度我们最强劲的市场，由夏季补贴削减之前的活动加速所推动。”

晶澳太阳能管理层对于 2016 年下半年的市场动态持谨慎态度，指出潜在在中国终端市场的疲软。

靳保芳补充道：“尽管今年下半年监管改革应该会放缓中国国内市场，但是我们相信，我们平衡的全球足迹以及灵活的业务模式，将使我们能够适应不断变化的市场条件。我们仔细控制资本支出和员工配备，并且销售集中在中国之外较为强大的市场。我们的项目业务在我们的商业模式中提供了灵活性，我们可以加快或放缓活动，以平衡对于我们组件的需求。”

目标

晶澳太阳能预计，尽管保留此前的全年目标，但第三季度总出货量较低。该公司预计出货量为 1200MW 至 1300MW，其中包括对其自己的下游项目出货组件 250MW 至 300MW。

Natural Gas (天然气)

Russian pipeline natural gas flows to Northwest Europe in July dip 1% on month

The amount of natural gas exported from Russia to Northwest Europe in July dipped 1% month on month, posting

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a more severe 8% fall year on year, data from Platts Analytics' Eclipse Energy showed.

Total gas flows from the East through the Nord Stream, Yamal and Brotherhood pipelines combined fell to 9.43 Bcm last month, down from 9.55 Bcm in June and a 10.27 Bcm record high set in July 2015.

Gas flows via the Brotherhood pipeline, transiting Russian gas through Ukraine, in July fell by over 500 million cu m month on month and by more than 1.1 Bcm year on year to 3.17 Bcm.

Flows via Yamal, transiting Russian gas through Poland, and Nord Stream, transiting Russian gas direct to northeast Germany, in July both rose on the month to 2.58 Bcm and 3.68 Bcm respectively.

Despite the month-on-month decrease, Russian pipeline gas deliveries to Northwest Europe remain comfortably above previous levels for the time of year.

Between January-July, flows totaled 66.52 Bcm, 16% higher than the cumulative total for the same period last year and 13% up on the previous record high for the January-July period of 58.73 Bcm from 2014.

Indeed, flows for the first seven months of the year stand marginally higher than the total for the first eight months of last year of 66.07 Bcm.

With the recent bullish turn on longer-term European hub pricing due to the extension of the Rough outage on July 15, allied to oil prices dropping back in July to three-month lows, Russian gas priced off oil-indexed mechanisms look set to remain competitive, with hub contracts in the next quarter and for the whole of 2017.

七月运输至欧洲西北部的俄罗斯管道天然气下降 1%

七月，根据普氏能源资讯数据显示，天然气从俄罗斯到欧洲西北部的出口量下降了 1%，环比下降更加严重，下降 8%。

总气体从东流经北溪、亚马尔半岛和兄弟情谊的管道，上个月，从 2015 年的六月 9.55Bcm 和七月 10.27Bcm 纪录高点下跌至 9.43BCM。

气体流经兄弟情谊管道，通过乌克兰运输俄罗斯天然气，七月下降了超过 5 亿立方米，与去年同期相比下降了超过 1.1 Bcm，下降至每年 3.17 Bcm。

流经亚马尔半岛，过境波兰和北溪，俄罗斯天然气直接运输到德国东北部，在七月分别上涨至 2.58Bcm 和 3.68Bcm。

尽管月度环比下降，俄罗斯输送到欧洲西北部的管道天然气仍然高于之前的水平。

在一月至七月，流量总计 66.52Bcm，比去年同期高 16%，比先前 2014 年一月-七月纪录的 58.73 Bcm 高 13%。

的确，今年的前七个月的流量比为去年前八个月 66.07Bcm 的总量略高。

近期对长期的欧洲中心定价的上涨，是由于 7 月 15 日的粗糙中断的扩展，以及石油价格在七月回落至 3 个月前的低点，与下一季度的中心合同以及 2017 年相比，俄罗斯天然气价格下降的石油索引机制看起来具有竞争力。

Minerals (矿产)

China metals entrepreneur plans to buy Aleris

A controversial Chinese metals entrepreneur plans to acquire Aleris, a privately held American rolled aluminium

products producer, for \$1.11bn in cash plus \$1.22bn in net debt.

The buyer Liu Zhongtian is the founder of China Zhongwang, a Hong Kong-listed, mainland based company that makes and exports aluminium products. Mr Liu has been controversial since Zhongwang's 2009 Hong Kong IPO, most recently for allegations that the company was primarily responsible for flooding world markets with Chinese aluminium products, writes Lucy Hornby in Beijing.

The Hong Kong listed firm was also accused last summer by a previously-unknown short seller of inflating sales.

Mr Liu will acquire Aleris through his investment company, Zhongwang USA, his statement said. Aleris was formed from several metals and recycling firms. It declared Chapter 11 bankruptcy in 2009, brought down by the global financial crisis and heavy debt taken out by its private equity owners.

中国忠旺拟收购美国铝制品企业

创始人刘忠田表示，将通过旗下投资公司忠旺美国，以 11.1 亿美元现金加 12.2 亿美元净债务方式收购 Aleris。

一位引发争议的中国金属制品企业家计划以 11.1 亿美元现金外加约 12.2 亿美元净债务收购私有的美国铝压延产品生产商 Aleris。

买家刘忠田是中国忠旺(China Zhongwang)创始人，中国忠旺是一家在香港上市的内地公司，主要制造和出口铝产品。自 2009 年忠旺在香港首次公开发行(IPO)以来，关于刘忠田一直都存在争议，其最近受到的指控是，该公司要对中国铝制品潮水般涌入国际市场负首要责任。

去年夏天，香港上市的中国忠旺还被一家此前不为人知的做空机构指责进行虚假销售。

刘忠田在一份声明中表示，他将通过旗下投资公司忠旺美国(Zhongwang USA)收购 Aleris。Aleris 当初由多家金属制品和回收公司组建而成。在全球金融危机以及公司私人股本所有者负担的沉重债务的冲击下，Aleris 在 2009 年宣布进入美国破产法第 11 章(Chapter 11)的破产保护程序。

Clean Energy (清洁能源)

An unwelcome nuclear reprocessing plant

On August 6, in the coastal city of Lianyungang in Jiangsu province, thousands of locals took to the streets in opposition to a proposed Sino-French nuclear reprocessing plant, prompted by environmental and health concerns. This is another of the large “not-in-my-backyard” protests that have influenced China's environmental governance in recent years.

The project is a joint venture between French firm Areva and the China National Nuclear Corporation designed to reprocess spent fuel from Chinese reactors, extracting valuable uranium and plutonium. Back in 2013 chinadialogue looked at the pros and cons of the project. Lianyungang was decided to be the most eligible location for the plant, but the scale of the protests has created uncertainty over its future.

In August, the city government opted to remove its name from the list of possible sites. This decision was an echo of the way in which such protests develop in China; information escapes into the public domain, people protest, the government orders work to stop. In July 2013 a similar reprocessing project in the Guangdong city of Jiangmen was halted for the same reason.

Recent postings made on social media show how the Chinese public feel about projects that bring environmental

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and health risks. (See WeiXin or WeChat account Elephant News: Lianyungang “Terror Plot”)

The biggest challenge when choosing a site for the project on China’s developed southeastern coastal region was in avoiding densely populated areas. In 2006, the Bureau of Defence Technologies and Industries summing up examples of failed projects in other nations as thus: “Some countries fail to communicate with the public during decision-making processes, leaving the public with inadequate understanding and trust. The failure to win public trust and support has caused projects to bury highly radioactive waste, suffer setbacks or fail.”

Many people believe that opposition to these types of projects is a natural response. If nuclear waste is (often toxic) rubbish, who wants rubbish dumped on their doorstep? The dominant view is that, “if people in other cities have successfully protected their homes from the dangers of nearby nuclear development, why can’t we? (See WeiXin or WeChat account Nuclear Power Observer: The Lianyungang anti-nuclear waste protests)

The explanation [from China National Nuclear Corporation subsidiary, China Nuclear Fuel Reprocessing] is very disappointing, and a classic example of a PR failure. It’s a statement issued entirely from the point of view of the company, putting state and corporate interests before those of local residents, and failing to directly address their concerns.

Aside from that one, short statement, the state-owned enterprise involved has remained silent. In an age of mobile internet defined by interactive communication, when will these types of companies stop issuing lectures from on high?

Also, specialist publications for the nuclear industry have attempted to change people’s minds by offering explanations and lessons on how nuclear fuel reprocessing is “harmless”.

But, close to the plant, emotions are running high and such messages hold little weight. (See WeiXin or WeChat account “Old new commentary”: Liangangyun anti-nuclear protests: No information, no communication, and a need for dialogue.)

Looking back over the environmental protests of recent years, we can see that the Chinese public aren’t scared of particular technologies – they’re scared the technology won’t be managed properly.

Panic

Meanwhile, the secretive way in which the government approves projects often increases distrust. Thus, the majority of these protests are sparked by management failures. The government just goes on offering assurances that the technology is safe, which just increases public doubts and deepens divisions and the cycle continues.

In a society where a local electricity sub-station can create panic, the government will only scare an already nervous public by supporting nuclear projects without providing full explanations.

Society has a memory, as does social media. Yet it appears government does not – every time it is the same crude approach we have seen for a long time now, as it backs the developers of the project and makes the situation worse.

不受欢迎的“核循环”项目

一个中法合作的核燃料再处理项目遭到连云港市民激烈的抵制，来自中国社交媒体的声音提供了观察这一事件的独特视角。

8月6日，中国东部江苏省的海滨城市连云港，成千上万的连云港市民走上街头，反对一个可能落户该市的中法合作“核循环”项目。人们担心项目对环境和健康的影响。这成为近些年来影响中国环境治理进程的最新一起大规模“邻避事件”。

该项目由法国核燃料集团阿海珐(Areva)与中国核工业集团(China National Nuclear Corporatio)合作，用以对中国国内核电站产生的乏燃料(spent fuel)进行再处理(reprocessing)，提高其中的铀和钚元素的再利用

率。早在 2013 年，中外对话网站就曾对它的利弊进行过探讨。连云港原本是该项目最有希望落户的地点之一。但大规模的市民抗议之后，这个项目在中国的未来充满变数。

8 月 11 日，连云港市决定退出该项目的选址名单。这似乎延续了近年来中国“邻避”事件的发展套路（消息传播-市民反对-政府叫停）。2013 年 7 月，同样因为民众反对，广东省江门市叫停了一个类似的核燃料加工项目。

来自中国社交媒体的声音反映了中国公众面对此类具有环境和健康风险的工业项目时的心态。

东南沿海选址最大的困难是，如何避开密集的居民生活区。2006 年，国防科工局在总结他国失败的建设经验时，第一条便是“有些国家在决策过程中缺乏与公众的沟通，公众对其缺乏足够的理解和信任，因此未能获得公众的信任和支持，使得高放废物地质处置进程出现挫折或反复”。

如果核废料是垃圾，要找地方放，可不就是讨人嫌嘛，谁愿意把排泄物放在自家门口呢？这似乎不是不少人的声音，“南京市民抵制一个垃圾处理厂能成功，（我们）怎么这么不争气，说出牺牲整个连云港这样的混账话。从心底爱着这片土地，不希望谈到家乡会是过去式，反对！”

[中核集团下属的中瑞核能(CNFR)的]说明内容非常令人失望，是公关失败的典型案例。这是一份典型的站在企业角度的声明：把对国家、企业的利益强调在地方和民众利益之前，更没有直面当地居民的疑虑。除了这份简短的声明，涉事央企一直保持沉默，至午夜在官方微博上发出一条不知所云的微博，实在让人匪夷所思，移动互联网时代了，你们何时能够放弃高高在上的说教？

此外，亦有核能行业的媒体在事件爆发之后，希望通过进一步说明和科普核废料处置场的“无害”，来说服民众。在当地民众群情激奋的当下，这种沟通方式效果亦尚不明显。

总结这些年来环境维权事件可以看出，民众担心的倒不是技术，而是对技术的管理水平非常不放心。而政府采取讳莫如深的立场上马项目时，往往加重民众的不信任，所以大多数环境事件的肇始，都深植于管理荒。政府越是单向度地做技术无忧的保证，反而会加重社会疑虑，从而隔阂深化，恶性循环。

对一个小区建设变电站都会心惊胆战的社会来说，政府不由分说地为核废物项目作背书，其触发的将是民众非常脆弱的安全神经。社会是有记忆的，社交媒体也有记忆，但恰恰是无记忆的政府每每拉响引线，用多少年都不长进的行政为项目护航的粗糙手法，导致事态恶化。

New York approves 50% renewable energy target and subsidises nuclear

The New York Public Service Commission (PSC) has approved an ambitious plan for the state to generate half of its power from renewable energy sources by 2030, and will rely on nuclear to get there.

The plan includes the guarantee of subsidy for three nuclear power plants to lessen the state's reliance on fossil fuels. The new energy standard, approved Monday, will now divert US\$965 million in additional subsidies to the upstate nuclear power plants Fitzpatrick, Ginna and Nine Mile over the first two years of the programme, with reported adjustments every two years until 2029.

Aside from providing additional revenue to nuclear, New York means business and already requires utility and energy service providers to ramp up renewable power to 26.31% starting next year, which will jump to 30.54% by 2021.

This new clean energy standard will catapult New York, which currently generates roughly a quarter of its energy from clean sources, into the league of California, Hawaii and Vermont – which have similarly strong renewable targets.

“The solar industry applauds Governor Cuomo and the New York Public Service Commission, chaired by Audrey Zibelman, for their bold efforts to transform New York into a clean energy powerhouse,” said Sean

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Gallagher, vice president of state affairs at the Solar Energy Industries Association (SEIA). "Based on today's Commission session, a 50% Clean Energy Standard (CES) is a huge win for New Yorkers, and solar power is going to be key in making this win a reality."

"With this vote, the Empire State is sending a strong message to the rest of the nation that it's time to replace dirty energy with clean, reliable, affordable 21st century solutions, like solar. As the implementation process begins, SEIA looks forward to working with governor Cuomo and the Commission to ensure the new policy meets the 50% goal."

The standard is also set to reduce greenhouse gas (GHG) emissions by 40% by 2030 as well as attracting billions of dollars in clean energy investment.

"This Clean Energy Standard shows you can generate the power necessary for supporting the modern economy while combatting climate change," said New York governor Andrew Cuomo in a statement. "Make no mistake, this is a very real threat that continues to grow by the day and I urge all other states to join us in this fight for our very future."

纽约州批准 50%可再生能源目标并且补贴核能

纽约州公共服务委员会(PSC)日前批准该州一项雄心勃勃的计划,到2030年其电力的一半来自可再生能源,并且将依靠核能实现这一目标。

该计划包括担保补贴三座核能发电站,以减轻该州对于化石燃料的依赖。这一新的能源标准,周一获得批准,在该计划的前两年将向北部核能发电站 Fitzpatrick、Ginna 和 Nine Mile 转移 9.65 亿美元额外补贴,据报道每两年进行调整,直至 2029 年。

除了为核能提供额外收入,纽约州还要求电力公司和能源服务供应商明年开始将可再生能源发电提高至 26.31%,到 2021 年增至 30.54%。

这一新的清洁能源标准将使目前四分之一左右的能源产生自清洁能源的纽约州,进入加州、夏威夷州和佛蒙特州的联盟——该联盟具有类似强劲的可再生能源目标。

太阳能产业协会州事务副总裁 Sean Gallagher 表示:“太阳能行业赞同州长库默和 Audrey Zibelman 主持的纽约州公共服务委员会,勇于将纽约州转化为清洁能源重地。根据今天委员会的会议,50%清洁能源标准是纽约州人的一项巨大胜利,太阳能发电将是使这一胜利成为现实的关键。”

“纽约州正在向全国其他州发送一个强劲的信息,是时候利用太阳能等清洁、可靠、经济实惠的二十一世纪解决方案,取代具有污染的能源。由于该实施进程开始,SEIA 期待与州长库默和委员会合作,确保新政策符合 50%目标。”

该标准还设置到 2030 年温室气体排放减少 40%,同时吸引数十亿美元清洁能源投资。

纽约州州长安德鲁·库默(Andrew Cuomo)在一份声明中表示:“这一清洁能源标准显示,人们能够在支持现代经济的同时应对气候变化。毫无疑问,气候变化继续发展是真正的威胁,我敦促所有州加入我们,为我们的未来而战。”

Hinkley supporters in last-ditch push for approval

Supporters of the proposed Hinkley Point nuclear power station have launched a last-ditch push for approval as Theresa May, prime minister, nears a decision on whether to go ahead with the £18bn project.

UK union leaders on Sunday called for an end to the “faffing” over a scheme they say is crucial to keeping Britain’s lights on, after EDF, the French company planning to build the Somerset plant, sought to ease security concerns over Chinese involvement.

The comments signalled a fight back against critics of Hinkley, whose arguments have appeared to be in the ascendancy since Mrs May ordered a review of the politically sensitive project last month.

Justin Bowden, national secretary of the GMB, one of the UK's largest unions, said it was "wishful thinking" to believe that alternatives such as wind and solar power could fill the gap if Hinkley was cancelled.

"The faffing must stop now and the go-ahead on Hinkley must be given," he said. "Until there is a scientific breakthrough on carbon capture or solar storage, then nuclear and gas are the only reliable, and cost-effective, shows in town."

He was speaking after Vincent de Rivaz, EDF chief executive, issued assurances over the one-third stake to be held in Hinkley by state-owned Chinese investors.

"We know and trust our Chinese partners," he wrote in The Sunday Telegraph, pointing to EDF's 30-year partnership with China General Nuclear Power Corporation.

UK officials acknowledge that concern about Chinese influence over critical British infrastructure was one of the reasons Mrs May delayed a decision on Hinkley after taking over as prime minister last month.

Mr de Rivaz said there would be safeguards against hacking and other security risks. "All staff on nuclear projects are rigorously vetted, wherever they come from," he wrote. "As is standard practice, the control systems at Hinkley Point C will be isolated from IT systems and the internet."

Hinkley is likely to be discussed when Mrs May visits China for the G20 summit in Hangzhou next weekend, where she is expected to have a face-to-face meeting with her Chinese counterpart. The decision to put Hinkley on hold has been interpreted as a break from concerted UK efforts to woo Chinese investment when David Cameron was prime minister.

UK officials say a final decision on Hinkley is due in "early autumn", with many expecting it before the Conservative party conference starts on October 2.

Allies of EDF say they are cautiously optimistic that the debate is moving in their favour behind the scenes. One senior person in the nuclear industry said: "Many of those in government who were previously sceptical are now better informed of the reality and are realising that a lot of the claims on cost, China, and alternatives for meeting [electricity] demand without nuclear are exaggerated and spurious."

英国工会呼吁政府通过欣克利核电项目

英国首相梅即将决定这个有中国投资者参与的大型项目是否上马。支持者称，对幕后的辩论走向保持谨慎乐观。

欣克利角核电站的支持者发起最后努力，争取这一拟议中的项目获得批准。英国首相特里萨·梅(Theresa May)不久将必须拍板决定这个 180 亿英镑的项目是否上马。

英国工会领袖们周日呼吁结束“瞎折腾”，他们声称，该项目对于保持英国灯火通明是至关重要的。此前，承建这个萨默塞特郡项目的法国电力(EDF)寻求缓解人们对中资参与的安全担忧。

这些言论代表着针对欣克利项目批评者的回击，自梅上月下令重新评估这个政治敏感项目以来，欣克利项目批评者的意见似乎占了上风。

英国最大工会之一 GMB 的全国秘书长贾斯汀·鲍登(Justin Bowden)表示，如果欣克利项目被取消，相信替代能源如风电和太阳能发电可以填补供应空白是“一厢情愿”。

“这种瞎折腾必须马上停止，作出让欣克利项目上马的决定，”他说，“在碳捕获或太阳能储存领域取得科学上的突破之前，唯有核电和天然气是可靠、成本效益较好的选项。”

他发表讲话之前，围绕欣克利项目三分之一股份将由中国国有投资者持有这一点，EDF 首席执行官文森特·德里瓦兹(Vincent de Rivaz)发出保证。

“我们了解并信任我们的中国合作伙伴，”他在《星期日电讯报》(Sunday Telegraph)撰文写道。他指出，EDF 与中国广核集团(China General Nuclear Power)有 30 年的合作伙伴关系。

英国官员承认，担忧中国对英国关键基础设施的影响力，是梅上月接任首相后决定推迟拍板欣克利项目的的原因之一。

德里瓦兹表示，在防范黑客攻击和其它安全风险方面会有保障措施。“核电项目的所有工作人员都经过严格审核，无论他们来自何方，”他写道。“按照标准做法，欣克利角 C 的控制系统将与 IT 系统和互联网隔离。”

梅下周末访问中国出席在杭州举行的 20 国集团(G20)峰会时，很可能会讨论欣克利角核电站项目，预计她届时将会晤中国领导人。搁置欣克利角项目的决定被解读为告别了戴维·卡梅伦(David Cameron)担任首相时英国方面吸引中国投资的协同努力。

英国官员们表示，有关欣克利角的最后决定将在“初秋”作出，许多人预期这个决定将在 10 月 2 日保守党大会开幕之前出炉。

EDF 的盟友们表示，他们对于这场辩论在幕后正向着有利于他们的方向发展持谨慎乐观态度。核电行业一位资深人士表示：“政府内部以前持怀疑态度的很多人，现在更好地明白了现实，认识到很多说法是夸大和胡扯的，这些说法涉及成本、中国以及在不依靠核电的情况下满足电力需求的替代选择。”

Energy: Generating criticism

In a field in a remote part of north-west Wales, a lone farmer cuts the grass, parcelling it up into hay bales which can be sold for a modest profit. His farm, and even the hill on which it sits, will soon be demolished by the Japanese-owned company Horizon — ground zero in an ambitious scheme to build one of a string of nuclear power stations across the UK.

Wylfa, on the island of Anglesey, is one of several sites designated for the plants, which could cost up to £100bn and, if all goes to plan, will replace the UK's ageing coal power stations. But despite the billions of pounds about to be poured into nuclear energy in Britain, only some is likely to stay in the UK. Of the six plants being planned, none will be owned by a British company.

For nuclear power groups from France, China, the US and Japan, the UK's ambitious plans represent a ripe opportunity in an otherwise difficult global market. Following the meltdowns at the Fukushima plant in Japan in 2011, several countries, including Japan and Germany, scaled back or cancelled their nuclear energy plans.

The lack of British participation in such a massive domestic programme has drawn opposition. Critics say the project represents yet another example of the country's propensity to allow foreign companies and governments to profit from the UK's most sensitive — and lucrative — infrastructure projects.

That critique appears to be shared by some in the UK government. When Theresa May, the prime minister, unexpectedly delayed the £18bn plant planned for Hinkley Point in south-west England, allies said it was over concerns about the involvement of two Chinese state-backed companies alongside France's EDF, the state-backed utility. Some officials see the plant as a matter of national security, warning that the Chinese state could have the power to turn off a large chunk of Britain's electricity supply.

Mrs May's decision has caused consternation in Beijing, where officials had been reassured by the previous government's unflagging support for the project. She will travel to China next month to steady bilateral relations, and is expected to make a decision over the project around the time of that trip.

It is not just the country's nuclear reactors that are being built, financed or purchased by overseas backers. The owners of Heathrow airport include Spain's Ferrovial as well as Chinese, Qatari and Singaporean sovereign wealth funds.

Arriva, one of the country's biggest train and bus operators, is owned by Deutsche Bahn. David Cameron, the former prime minister, tried to attract investment in the HS2 high-speed rail line from Chinese backers.

Made in Japan

At Wylfa, the Hitachi branding on the cranes involved in initial groundworks give a signal of how integral the Japanese company, which owns Horizon, is to every stage of the process. The entire station will be built in Hitachi City in Japan before being shipped over, piece by piece, to north Wales. Horizon has submitted its design to regulators for approval, and will only make the final decision to go ahead after it has funding in place and made the necessary planning applications.

At Moorside, in the northern county of Cumbria, a company called NuGen is developing another site over the road from Sellafield power station. NuGen is a joint venture of Japan's Toshiba and Engie, the French utility, whose biggest shareholder is the French state. Its reactor has been designed by Westinghouse, the US industrial company, most of which is owned by Toshiba.

If Mrs May is worried about the Chinese being able to shut down Hinkley Point, she might be even more concerned with the plans of EDF, China General Nuclear Power and China National Nuclear Corp in eastern England. After the consortium develops another plant at Sizewell, in Suffolk, the Chinese groups are hoping to design and build the plant at Bradwell in Essex.

Yet the UK was left with little choice but to source the new power stations from elsewhere, having seen its own skillbase dry up over decades of aversion to the construction of new reactors.

Politicians have sought to make a virtue of this, saying it shows how open the UK is to outside investment. John Hutton, a champion of nuclear power while serving in Labour cabinets in the previous decade and now chairman of the Nuclear Industry Association, says: "The government decided not to choose the technology. Our position was that anyone with a viable technology can submit it for licensing, and the simple truth was that EDF were in a better place than anyone else to start the renaissance."

Others argue that there was a different way to go about regenerating the country's nuclear power sector. Ministers could, for example, have asked companies to bid to build the stations and then negotiated on price and the benefit to the UK workforce, before building it at public expense.

Peter Atherton, an analyst at Cornwall Energy, a consultancy, says: "We could have a government-driven nuclear programme to get it for the cheapest cost. But what we did instead was say whoever wants to build nuclear can do. That's why we're seeing a free-for-all right now."

Others are more critical. One nuclear industry executive told the Financial Times: "The government is happy for our energy infrastructure to be state-owned, as long as it is not the British state."

Scaling up

At Horizon's site in north Wales, the fact the project is being designed and built more than 9,000km away brings unique challenges. On one edge of the site a small dockyard services the 45-year-old existing plant, which is being decommissioned. That dockyard will be transformed into a deepwater port able to receive the 600-tonne reactor unit when it arrives from Japan.

To move the 600-tonne reactor from the port will require the construction of the world's biggest crane: a 200 metre-high vehicle that will carry it on specially built rail tracks across the 1,000-acre site, a process which could take several weeks.

The scale of the work will create up to 10,000 jobs at its peak but Horizon says only 2,500 of them are likely to be sourced locally. The company is in talks to hire two-thirds of a planned holiday village nearby to house workers from outside the area.

So much of the work will be done in Japan that Horizon is hoping to receive a government guarantee from the Japanese state to help finance it.

Mcanxixun Information

Among the local community on Anglesey, there is some concern over the sense that the project is being led by foreign companies. The island has an area of about 715 sq km and is home to 70,000 residents, many of whom have lived there for generations. It has one of the highest concentrations of Welsh speakers in the country, at more than 50 per cent.

“Are they going to bring people in from away?” asks Bethan Roberts, who has lived on Anglesey all her life. “It could change the area — maybe the jobs that will come will not go to locals.”

“We see this as a threat to the Welsh language,” says Dylan Morgan, one of the organisers of the local campaign against the plant. “It is no coincidence that the building of the first Wylfa plant led to a reduction in the percentage of Welsh speakers,” he adds.

Horizon is sensitive to these concerns. Greg Evans, its site director, comes from the US but has lived on Anglesey since 2001 and is chairman of Amlwch Town, the local football club. He says: “A lot of Anglesey’s young people have to leave in order to get work at the moment. This is a key opportunity to allow quite a few of them to stay.”

For the likes of EDF, Hitachi and Toshiba, the UK’s willingness to press ahead with building nuclear power plants after Fukushima presents a rare opportunity to provide work for their engineers.

The other main reason for international developers to build in Britain is that the UK’s Office for Nuclear Regulation, which must approve all plant designs, is seen as one of the most rigorous in the world. One of the main motivations for EDF’s Chinese partners to invest in the UK is the stamp of quality they would gain as they market their Hualong One design internationally.

The major hurdle for Horizon and NuGen is that they must sell their visions to global investors. Both developers say they will build their plants for less than the £ 18bn it will cost to build Hinkley Point, but they will not say by how much.

For investors, the risks and the rewards are significant. Building a nuclear plant means spending billions of pounds, with no hope of a return until it is operational. But if the scheme reaches that point, the returns are generous, long-term and underpinned by government guarantees. The UK has agreed to pay EDF £ 92.50 for every unit of electricity it produces at Hinkley Point, more than double the current wholesale price.

“Infrastructure provides long-term, low-risk, high-yield return — providing it gets built,” says Cornwall Energy’s Mr Atherton.

Import drivers

For many of those instrumental in shaping Britain’s attitude to outside investment, this is all a sign of a healthy approach to building infrastructure.

Sir Malcolm Rifkind, the former foreign secretary, has warned about the security implications of letting Chinese groups help develop Hinkley Point. But he defends the wider strategy behind the nuclear programme: “I doubt you could get real value for money by limiting the number of companies or countries you allow to be involved in projects like this. That has never been the British approach.”

For others, it is a sign of a more general failure that has exacerbated the country’s long-term industrial decline.

“We are now using four different technologies from five different manufacturers simultaneously,” says Mr Atherton. “By doing that you minimise the opportunities for the UK supply chain. The builders will have to reduce the risk by importing lock stock and barrel from their home countries.”

In north Anglesey, locals are preparing for part of their island to be changed unrecognisably. Many worked on the construction of the original plant in the 1960s, and are hoping the reactors will provide a similar burst of employment and investment.

Geraint Jones used to teach at Coleg Menai, a local college which is helping train nuclear engineers and is backed by Hitachi. “My son works at the old Wylfa plant. The new one is essential. I just hope he can find a new job

there.”

前途未卜的英国核项目

英国计划修建的 6 座核电站中，没有一座由英国公司所有。如此大规模的国内计划缺乏英国公司的参与招致了批评。

在威尔士偏远的西北角，一个农民正独自在田里割草，他把草捆成草垛，干草垛可以卖掉，换取微薄的收入。他的农场乃至农场所在的那座山，都将很快被 Horizon 公司（日本人所有）夷平，修建一座核电站的宏伟计划就将在这里付诸实施。不仅在这里，英国还计划在全国各地修建一系列核电站。

位于安格尔西岛(Anglesey)上的威尔法(Wylfa)是这些核电站的指定选址之一，这些核电站可能耗资高达 1000 亿英镑，如果一切按计划进行，它们将取代英国日益老化的燃煤电站。尽管将有数十亿英镑投入英国的核能领域，可能只有一部分钱会留在英国。在计划修建的 6 座核电站中，没有一座是由英国公司所有的。

英国雄心勃勃的计划为来自法国、中国、美国和日本的核能集团提供了一个大好机会，而除英国以外的全球市场形势严峻。在 2011 年日本福岛(Fukushima)核事故后，包括日本和德国在内的多个国家削减或取消了它们的核能计划。

如此大规模的国内计划缺乏英国公司的参与，这招致了批评。批评人士表示，该项目代表着另一个例子，表明英国往往放任外国企业和政府从英国最敏感（也最有利可图）的基础设施项目中获利。

一些英国政府内部人士似乎也持有同样的看法。当英国首相特里萨·梅(Theresa May)出人意料地推迟放行 180 亿英镑的英格兰西南部欣克利角(Hinkley Point)核电站计划时，支持者们表示，其原因是英国对国有的法国电力(EDF)以及两家中国国有企业的参与有顾虑。一些英国官员认为该核电站事关国家安全，他们警告称，这或许会让中国政府拥有切断英国很大一部分电力供应的能力。

梅的决定令中国方面感到惶恐，之前那届英国政府对该项目的持续支持让中国官员感到安心。梅下月将访华，以稳定英中双边关系，预计她将在访华前后就该项目作出决定。

不只是英国的核反应堆由海外投资者建造、出资或买下。希斯罗机场的所有者包括西班牙的法罗里奥集团(Ferrovial)以及中国、卡塔尔和新加坡的主权财富基金。英国的大型火车和巴士运营商 Arriva 由德国铁路(Deutsche Bahn)所有。英国前首相戴维·卡梅伦(David Cameron)曾试图吸引中国支持者投资英国 HS2 高铁。

日本制造

在威尔法，初始土方作业中使用的吊车上的日立(Hitachi)品牌标识，表明日立在工程的每个阶段都多么不可或缺（日立是 Horizon 的东家）。整个核电站都将在日本的日立市建造，然后一块块运到威尔士北部。Horizon 已将其设计递交监管机构审批，在资金到位并完成必要的规划申请后才会做出最终的开工决定。

在英国北部坎布里亚郡(Cumbria)的穆尔赛德(Moorside)，一家名为 NuGen 的公司正在通往塞拉菲尔德核电站(Sellafield)的道路附近开发另一座核电站。NuGen 是日本东芝(Toshiba)与法国公用事业单位 Engie 共同组建的一家合资企业，Engie 最大股东是法国政府。该核反应堆由美国工业企业西屋电气(Westinghouse)设计，东芝持有西屋电气多数股权。

如果梅担心中国有能力关闭欣克利角核电站，她可能更担心法国电力、中国广核集团(China General Nuclear Power)以及中国核工业集团(China National Nuclear Corp)组成的财团在英格兰东部的计划。该财团将在萨福克郡(Suffolk)的赛兹韦尔(Sizewell)开发一座新的核电站，之后两家中国企业还希望设计和建造位于埃塞克斯郡(Essex)布拉德韦尔(Bradwell)的那座核电站。

然而，英国别无选择，只能把新的核电站外包给别的国家建造——英国舆论几十年来反对新建核电站，其本国的技能储备已枯竭。

政治人士试图把这变成件好事，称此事展现了英国对外部投资多么开放。10 年前效力于工党(Labour)

内阁时支持核能、现任英国核工业协会(Nuclear Industry Association)主席的约翰·赫顿(John Hutton)表示：“政府决定不去选择技术。我们的立场是任何具备可行技术的企业都能申请许可，而一个简单的事实是，法国电力比其他任何企业都更适合来启动这一复兴。”

还有一些人辩称，振兴英国的核能行业有不同的方法。例如，在花费纳税人的钱修建核电站之前，政府大臣们可以要求企业就修建核电站竞标，然后就价格以及带给英国劳动力的好处进行谈判。

咨询机构 Cornwall Energy 分析师彼得·阿瑟顿(Peter Atherton)表示：“我们本可以制定一个由政府推动的核计划，将成本降至最低。但我们所做的是跟大家说谁想建就可以建。这就是为什么我们现在会看到这种混战的局面。”

还有一些人的批评更为严厉。一位核电行业高管告诉英国《金融时报》：“政府乐意看到我们的能源基础设施变为国有——只要不是英国政府所有就好。”

工程浩大

在 Horizon 位于威尔士北部的核电站选址，这一事实带来了独特的挑战，即该项目在 9000 公里以外的地方设计和建造。在该选址边上，一个小型造船厂为已有 45 年历史、即将退役的现有发电站提供服务。这个船厂将被改造成一个深水港，足以接收将从日本运来的 600 吨的反应堆。

将这座 600 吨的反应堆从港口移出，将需要建造全世界最大的起重机：200 米高的起重机将通过专门铺设的铁轨，运载反应堆穿过 1000 英亩的场地，这一过程可能要花费数周。

在巅峰期，这项工程将提供多达 1 万个工作岗位，但是 Horizon 称其中仅有 2500 个岗位可能从本地招聘。该公司正在讨论租用附近一家计划建设的度假村 2/3 的房间，用来为外地来的工人提供住宿。

太多工作将在日本完成，Horizon 希望日本政府可以提供担保，帮助 Horizon 为项目融资。

在安格尔西岛的当地社区，有人对这一点有一些顾虑，即该项目由外国企业主导。该岛面积约 715 平方公里，有 7 万人口，其中很多人是世代生活在这里。这里是整个英国讲威尔士语的人口最集中的地区——超过一半的人口讲威尔士语。

“他们会把外面的人带到这里来吗？”一辈子都生活在安格尔西的贝森·罗伯茨(Bethan Roberts)问，“这会改变这个地方——项目带来的就业机会或许不会落到本地人头上。”

“我们认为这会威胁威尔士语，”当地反对核电站运动的一个组织者迪伦·摩根(Dylan Morgan)称，“修建第一座威尔士核电站就曾导致讲威尔士语的人口比例下滑，这并非巧合。”

Horizon 对这些顾虑十分敏感。核电站的负责人格雷格·埃文斯(Greg Evans)来自美国，但是他自 2001 年以来便一直生活在安格尔西，并且是当地足球俱乐部阿姆卢赫镇(Amlwch Town)的主席。他称：“目前安格尔西很多年轻人为了找到工作不得不离开。这是让他们中的不少人能够留下来的关键机会。”

在经历过福岛事件后的今天，英国推进核电站建设的意愿，为法国电力、日立和东芝等公司的工程师提供了一个难得的工作机会。

各国际开发商在英国承接工程的另一个主要原因是，英国核能管理办公室(Office for Nuclear Regulation)被视为全球同类机构中最严格的之一。所有核电站设计都必须得到该办公室的批准。法国电力的中国合作伙伴在英国投资的主要动机之一就是，当他们在国际上推广自己的“华龙一号”(Hualong One)设计时，他们将被视为质量过硬。

Horizon 和 NuGen 面临的主要障碍是，他们必须让全球投资者相信他们的构想。两家开发商都表示，他们将以低于 180 亿英镑（修建欣克利角核电站的花费）的造价建成自己的核电站，但是他们都不肯透露具体低多少。

对于投资者来说，风险和回报都很显著。修建核电站意味着要花费数十亿英镑，在核电站投入运营前不会获得回报。但是，如果项目成功投入运营，企业将得到由政府担保的长期丰厚回报。英国同意为欣克利角核电站生产的每单位电力向法国电力支付 92.50 英镑，比目前的批发价高一倍多。

“一旦建成，基础设施项目将提供长期、低风险、高收益的回报，” Cornwall Energy 的阿瑟顿表示。

促进进口

很多影响着英国对外投资态度的人士认为，上述事态都表明英国建设基础设施的方式是健康的。

前外交大臣马尔科姆·里夫金德爵士(Sir Malcolm Rifkind)曾就让中国企业帮助修建欣克利角核电站带来的安全影响发出过警告。但是他支持该核电站项目所遵从的整体战略：“我怀疑，限制允许参与这类项目的企业或国家的数量，可能会让你无法用最少的钱办最多的事。英国人从来都不这么做事。”

其他人认为，上述事态标志着一种整体的失败，这种失败加剧了英国长期的工业衰退。

“我们现在同时使用着来自 5 家不同制造商的 4 种不同的技术，”阿瑟顿称，“这种做法极大地减少了这些项目带给英国供应链的机会。不同国家的建设方不得不完全从本国进口材料以降低风险。”

在安格尔西北部，当地人正准备迎接这一前景：他们所生活的这个岛，有一部分区域要变得面目全非了。很多人在上世纪 60 年代曾参与原来那座核电站的建设，现在他们希望这些核反应堆能再次带来就业和投资热潮。

杰兰特·琼斯(Geraint Jones)曾经在当地大学 Coleg Menai 教书，该学校得到日立的资金支持，帮助培训核工程师。“我儿子在老的威尔法核电站工作。新核电站非常重要。我只希望他能在那里找到新工作。”

Theresa May confirms visit to China to steady relations

Theresa May has confirmed that she will travel to China next month to steady relations with Beijing and to press for stronger trading relations.

In a letter to Xi Jinping, the Chinese president, and Li Keqiang, the premier, Mrs May said she supported the hosting of the Group of 20 leaders' summit in Hangzhou, and wanted to build stronger trade relationship.

Alok Sharma, the Foreign Office minister who is on a visit to China, called the bilateral relationship “strong, growing and delivering benefits for both our countries”.

British-Chinese relations, warm under David Cameron and George Osborne, have been thrown into doubt since Mrs May's appointment as prime minister last month.

Mrs May's decision to review the £18bn project to build a nuclear power plant at Hinkley Point, with Chinese investment, led China's ambassador to the UK to say the relationship was “at a crucial historical juncture”. The UK government, he added, should “come to a decision as soon as possible so that the project can proceed smoothly”.

Some of Mrs May's advisers have aired security concerns over China's involvement in the project, Malcolm Rifkind, the former foreign secretary who was critical of a deal to allow Huawei, the Chinese telecoms company, to provide equipment for an upgrade of the national telecoms network, warned on Tuesday that Beijing could turn off the plant in any dispute with the UK.

Nick Timothy, Mrs May's joint chief of staff, has written that Chinese investment was buying “British silence on human rights abuses” and that “rational concerns about national security” were being “swept to one side”.

But the China Britain Business Council said British companies should not be deterred from doing business in China, which was a “huge potential market for UK companies as well as a source for much needed investment”.

The G20 summit takes place on September 4 and 5; Mrs May has promised to announce a decision on Hinkley Point in September. Downing Street said Mrs May's letter, which was first reported by Bloomberg, was private correspondence and would not be published.

China General Nuclear Power Group and China National Nuclear Corporation have agreed to take a minority stake in the Hinkley Point plant, which could pave the way for further investments in Britain's nuclear industry and the construction of additional Chinese facilities.

That £6bn commitment was a large proportion of the investment announced during Mr Xi's visit last year. In

total the British government heralded £40bn of Chinese investment pledges, although that figure appeared to include extra investment by France's EDF in Hinkley Point as well as other questionable assumptions. On a stricter interpretation only £18bn of deals were announced.

The uncertainty over Hinkley Point may make it harder for the UK to raise any concerns with the Chinese government. "They certainly won't take any lectures from the British on Hong Kong in the current climate," said Kerry Brown, an associate fellow at Chatham House.

英国首相将前往中国“稳关系”

特里萨·梅在致习近平和李克强的信中表示，她支持在杭州举办 G20 峰会，并希望打造更加强有力的英中贸易关系。

特里萨·梅(Theresa May)证实她下月将前往中国，以便稳住英中关系，同时推动更强有力的经贸往来。

梅在致中国国家主席习近平和总理李克强的一封信中表示，她支持在杭州举办 20 国集团(G20)领导人峰会，并希望打造更加强有力的英中贸易关系。

正在访华的英国外交部政务次官阿洛克·夏尔马(Alok Sharma)形容两国关系“强大且不断发展壮大，造福于我们两国。”

在前首相戴维·卡梅伦(David Cameron)和前财相乔治·奥斯本(George Osborne)主政时期相当热络的英中关系，自梅上月出任首相以来出现了变数。

梅决定重审有中资参与的 180 亿英镑欣克利角核电站建设项目，促使中国驻英国大使称两国关系“处在一个重要历史时刻”。他补充说，英国政府应当“尽早做出决定，确保项目顺利实施”。

梅的一些顾问表达了对于中资参与该项目的安全担忧，前外交大臣马尔科姆·里夫金德(Malcolm Rifkind)周二警告称，若与英国发生任何纠纷，北京方面可能关闭这座核电站；里夫金德曾批评英国允许中国电信设备制造商华为(Huawei)为全国电信网络的升级改造供应设备。

梅的联席幕僚长尼克·蒂莫西(Nick Timothy)曾撰文指出，中国的投资正在收买“英国在人权侵犯问题上的沉默”，同时“对国家安全的合理担忧”正被“扫到一边”。

但是，英中贸易协会(China Britain Business Council)表示，英国企业不应惧怕在中国开展业务，中国是“英国企业巨大的潜在市场，也是急需的投资的一个来源”。

G20 峰会将在 9 月 4 日和 5 日举行；梅已承诺在 9 月宣布有关欣克利角项目的决定。唐宁街表示，梅的信是私人信件，不会被发表。关于这封信的消息最初是由彭博社(Bloomberg)报道的。

中国广核集团(CGN)和中国核工业集团公司(CNNC)同意购入欣克利角核电站的少数股权，该项目有望为英国核电行业的进一步投资，为建造更多中国投资的设施铺平道路。

60 亿英镑的投资承诺在习近平去年访英期间宣布的总投资中占有相当大比重。当时英国政府欢迎中国作出总计 400 亿英镑的投资承诺，但这一数字似乎包括法国电力(EDF)在欣克利角的投资，以及其他有问题的假设。若采用更严格的解读，双方只宣布了 180 亿英镑的交易。

围绕欣克利角的不确定性，可能使英国更难向中国政府交涉任何关切的问题。“当前气氛下他们肯定不会聆听英方在香港问题上的高见，”皇家国际事务研究所(Chatham House)副研究员克里·布朗(Kerry Brown)表示。

Coal (煤炭)

Chinese banks braced over industrial restructuring

China's banks are set to be the biggest losers in the sweeping bailouts of the country's steel and coal industries.

Local governments hoping to save their steel mills and coal miners have announced a series of restructuring plans, enlisting the banks to take the hit by improving the terms of the loans or swapping them for bonds or equity in the struggling groups.

The reliance on the banking system to shoulder the burden comes at an inopportune moment, with China's banks already mired in bad debt — about Rmb15tn (\$2.25tn), or 19 per cent of total commercial lending by some accounts.

Profit growth at the banks has also fallen over the past two years and could deteriorate further as many of the country's largest industrial players renege on loans for better state-brokered deals.

“With the finances of local governments being weak, the China Banking Regulatory Commission has been ordering Chinese banks to ‘rescue’ these companies, and we believe that banks are likely to suffer from the government's plans,” said Chua Han Teng, a senior analyst at Fitch Group's BMI Research.

“Not only do banks have to restructure the debt at the discretion of the government, these banks also purchase the bonds issued by these poor performing companies.”

China's State Council outlined in February that it would cut 500m tonnes of annual coal output over the next three to five years and 100m-150m tonnes of steel output over the next five years.

Progress, however, has been stunted. Two of the country's top industry regulators said recently that steel mills had hit just 47 per cent of the cutback target for the year by the end of July, while coal miners had achieved only 38 per cent.

The cutbacks to production have led to a series of government-brokered bailouts.

In the biggest restructuring deal to surface since the global financial crisis, Bohai Steel is reported to be in talks with local government on restructuring \$29bn in bank and trust loans. The municipal government of Tianjin will establish a fund to help work out the debt to 105 creditors, according to Caixin, the financial magazine.

“I suspect there will be a haircut on the debt and also a debt-for-equity swap,” Christopher Lee, an analyst at S&P Global, said on the Bohai restructuring plan, although he noted that few details were yet available.

“There's no way for the banks to not take a hit here. There's no going back to the good old days when growth was 8-10 per cent.”

The contentious debt-for-equity programme announced earlier this year, in which banks will be asked to swap debt in exchange for equity in ailing companies, would help the banks remove bad debt from their loan books in the near term, Mr Lee noted.

But the plan would only prolong the recognition of toxic assets and eventually surface at banks when the companies in which they hold equity began to falter, he said.

Bohai Steel was just one example of how a local government was calling on its lenders to avoid the collapse of a state-owned industrial group. Earlier this month, the government of Shanxi, China's most coal-dependent province, said it planned to extend the maturity on as much as Rmb400bn in loans to the region's seven biggest coal groups.

Distress in the coal sector in Shanxi was set to take a heavy toll on the province's economy.

At the end of last year, Shanxi's seven largest coal groups had Rmb1.18tn in debt, almost matching the province's Rmb1.28tn gross domestic product in 2015, according to analysts at Everbright Securities.

Baosteel Group and Wuhan Iron & Steel Group, China second and sixth-largest steelmakers, announced in June that they were partnering on a restructuring plan. The following month, three big coal groups including the world's largest coal producer, Shenhua Group, set up a joint coal asset management company to help consolidate state-owned coal resources.

中国银行业将为煤企钢企债务重组买单

中国的银行将成为对国内钢铁、煤炭行业全面纾困的最大牺牲品。

希望挽救本地钢厂、煤矿的中国地方政府已经宣布了一系列重组计划，拟向这些苦苦挣扎的集团提供更优惠的贷款条件，或将贷款转换成债券或股权，让银行来承担后果。

现在依靠银行系统负起这一重担并不是时候，因为中国的银行早已深陷坏账泥潭——根据一些计算，坏账约为 15 万亿元人民币（合 2.25 万亿美元），即商业贷款总额的 19%。

过去两年，银行的利润增速也有所下滑，而且可能进一步恶化，因为中国许多大型工业企业都出现了贷款违约，以期由政府出面斡旋达成条件更优的交易。

惠誉(Fitch)旗下研究机构 BMI Research 的高级分析师 Chua Han Teng 表示：“鉴于地方政府脆弱的财政状况，中国银监会一直在要求中国的银行‘救助’这些企业，而我们认为，政府的计划很可能让银行遭受巨大损失。

“银行不仅不得不根据政府的意志重组债务，还得购买这些业绩不佳的公司发行的债券。”

今年 2 月，中国国务院提出，在未来 3 至 5 年削减煤炭产能 5 亿吨，并在未来 5 年削减 1 亿至 1.5 亿吨的钢产能。

然而，这一进程受到了阻碍。中国两家最高工业监管机构最近表示，截至 7 月底，钢厂只实现了今年削减产能目标的 47%，而煤矿减产只实现了 38%。

产能削减已经使得各地政府纷纷出面斡旋纾困计划。

渤海钢铁集团(Bohai Steel)据报道正在与当地政府就重组其 290 亿美元的银行和信托贷款进行商谈，这是自全球金融危机以来最大的一笔重组协议。据财经媒体“财新网”(Caixin)报道，天津市政府将设立一个基金，帮助解决涉及 105 家债权人的债务问题。

针对渤钢的债务重组计划，标普全球(S&P Global)分析师李国宜(Christopher Lee)说：“我猜测可能会对债务进行减记，也会进行债转股。”不过他指出，很多细节还不得而知。

“在这一点上，银行不可能不受到冲击。再也回不到过去保持 8% 至 10% 利润增速的好日子了。”

李国宜表示，今年早些时候宣布的引发争议的债转股计划——银行将被要求把债权转换成境况不佳的公司的股权——将有助于银行在短期内消除账上的不良贷款。

但该计划只会延缓对有毒资产的确认，当银行持有股权的公司开始崩溃时，这些有毒资产最终将在银行浮出水面，他说。

渤钢只是地方政府要求银行防止国有工业集团倒闭的实例之一。本月早些时候，经济极其依赖煤炭的山西省的政府表示，计划展期该省七大煤炭集团高达 4000 亿元人民币的贷款。

山西煤炭行业的惨状将令该省经济遭受重创。

光大证券(Everbright Securities)分析师表示，截至去年底，山西七家最大的煤炭集团已经负债 1.18 万亿元人民币，几乎与该省 2015 年 1.28 万亿元人民币的 GDP 相当。

今年 6 月，中国第二与第六大钢铁企业——宝钢集团(Baosteel Group)、武汉钢铁集团(Wuhan Iron & Steel Group)——宣布正在合作筹划重组计划。次月，包括世界最大煤炭企业神华集团(Shenhua Group)在内的三家中国大型煤炭集团成立了一家联合煤炭资产管理公司，以帮助整合国有煤炭资源。

Electricity (电力)

The new green grid

'Virtual power plants' will bring down energy demand and increase the supply of renewables in the future, writes Maria Galluci

The tens of thousands of tons of natural gas that surged into the southern California sky late last year were supposed to have fueled the region's power plants and heated its homes.

Instead, the massive leak at the Aliso Canyon storage site left California electricity providers racing to replace the lost supplies to avoid blackouts and recurring outages in the coming months.

But Los Angeles area utilities aren't solely seeking more fossil fuels to fill the gap in natural gas. They are also turning to "virtual power plants": sprawling networks of independent batteries, solar panels, and energy-efficient buildings that are tied together and remotely controlled by software and data systems.

The goal of these virtual power plants is to collectively reduce customers' energy demand at peak hours and provide renewable energy supplies in targeted areas. This would allow utilities to offset some of the needs for power from conventional sources and avoid disruption on the grid.

Energy experts say that the ongoing response to California's natural gas shortfall may serve as a high-profile test case for virtual power plants, an emerging field of clean energy that is projected to more than quintuple in size in the United States within a decade; rising from about 4,800 megawatts in capacity in 2014, to nearly 28,000 megawatts by 2023, according to Navigant Research, a consulting and market research firm. Power providers in the US and Europe are increasingly experimenting with these systems to help manage and harness the value of thousands of distributed energy systems – the various energy storage, efficiency, and renewable energy installations scattered across the grid.

"There's been a significant up-tick in interest from utilities and other power-sector shareholders to deploy these solutions for their different needs," said Omar Saadeh, a San Francisco-based senior analyst at GTM Research.

Propelling this demand overall is the nation's ongoing shift away from a centralized electricity market — where hulking, fossil fuel-fired power plants send electrons across state borders via transmission lines — toward a network of localized and lower-carbon supplies, Saadeh said. "The whole notion that utilities are transitioning into a decentralized system is where this interest in virtual power plants and other technologies has really emerged," he added.

In California, a natural gas shortfall from a major leak is speeding the adoption of these technologies

GTM Research projects that just the software component of virtual power plants – known as "distributed energy resource management systems" – will soon double in market value, from roughly US\$50 million (332 million yuan) in 2014 to US\$110 million in 2018. Add in the renewable energy technology, batteries, and other components, and the virtual power plant market could grow from US\$1.5 billion in annual revenue in 2016 to a US\$5.3 billion market by 2023, with the US taking US\$3.7 billion of that year's total and Europe snagging US\$1.3 billion, Navigant projected in 2014. Peter Asmus, principal research analyst for Navigant in San Francisco, said the market may actually be worth much more, given the recent growth in residential and commercial battery systems from companies such as LG Chem and Panasonic.

In California, the gas shortfall resulting from the Aliso Canyon leak is speeding the adoption of these emerging energy technologies. The California Public Utilities Commission in late May ordered Southern California Edison (SCE), the region's main power provider, to "expedite its purchase of energy storage" this summer to help "alleviate the electric reliability risks to the Los Angeles Basin," a process that's still ongoing. Utility commissioners also asked SCE to hasten the rate at which privately owned batteries, solar, and other distributed systems are connected to the grid.

SCE obtains most of its natural gas supplies from Southern California Gas Company, which owns the underground Aliso Canyon facility that leaked more than 97,000 metric tons of methane from late October 2015 through mid-February this year. Only about 15 billion cubic feet, or less than one-fifth of the facility's capacity, remains available for electricity and heating service in the region, California regulators estimated.

Mcanxixun Information

Stem Inc., an energy storage provider, says it expects to accelerate some of its existing virtual power plant projects in the Los Angeles area as a result of California's response efforts.

The startup uses batteries and software to help major retail and hospitality companies, such as Whole Foods and Marriott, reduce their electricity bills. In the last seven years, Stem has installed battery systems (occasionally paired with rooftop solar) in hundreds of large buildings across California. Batteries are charged when electricity rates are low. Stem's software systems then analyse a building's energy use along with information on utility rates. When power prices are most expensive, the system automatically reduces the use of utility-provided electricity and instead draws from the battery.

In this way, the owners of individual buildings can lower the "peak demand" fees that utilities charge them each month. But collectively, the benefits are even greater, John Carrington, Stem's chief executive officer, said in a phone interview.

Through its software, Stem can coordinate the systems in its customers' buildings to reduce area-wide energy demand when power is suddenly needed. Stem received a contract in 2014 to provide SCE with 85 megawatts of virtual power in densely populated areas where existing supplies are constrained.

Carrington said Stem is now working with "all the Los Angeles-area utilities on very fast-responding and quick installations of our product." For virtual power, he added, the response to Aliso Canyon "could really serve as an inflection point for the industry."

Not all virtual power plants work exactly like Stem's aggregated network of buildings, which use batteries and energy management systems. In fact, the definition of a "virtual power plant" is still a bit vague and subjective, especially since many of these technologies remain in the pilot and development stages. Generally, however, the systems follow one of three models.

The first is a supply-side system, which is more prevalent in European nations like Germany and Denmark, where small-scale renewable energy projects already abound. In this model, local governments and grid operators can coordinate the output of independent solar arrays and wind farms — which operate intermittently and at different hours — with hydropower, biogas, and other low-carbon resources, thus simulating the output of a 24-hour power plant. In November, German technology giant Siemens Corp. and the utility giant RWE said they would jointly build the IT backbone of a mass-market virtual power plant that will coordinate hundreds of megawatts' worth of distributed energy projects such as wind and solar farms.

The second model focuses primarily on "demand response" — cutting consumption, through energy efficiency systems and software, during hours when electricity demand is highest. This reduces the need for utilities to fire up costly fossil-fuel "peaker" plants to provide limited spikes of supplies.

The basic premise of demand response — utilities charge large energy users a lower rate year-round in exchange for powering down during peak hours — has existed for decades. But modern software and data systems take what used to be a building-by-building approach and spread it across thousands of sites into a reliable, scalable virtual power plant, according to Sarah McAuley, senior director of marketing for EnerNOC, an energy software and services firm in Boston.

EnerNOC dominates this field in the US. The company pays the owners of commercial and industrial buildings to let it periodically reduce their power consumption when the grid is overburdened, or to avoid high electricity prices. EnerNOC's software platform can notify manufacturers when they should switch into maintenance mode for a few hours, or advise office managers to scale back air conditioning use. A small device tied to the electricity metre then sends data to EnerNOC, which measures and tracks energy reductions at each individual site.

Virtual power plants make more economic sense in areas with high concentrations of wind and solar power

The company can offer those "negawatts" of reduced energy use to grid operators, which in turn pay EnerNOC for the service. EnerNOC's largest market is the PJM Interconnection, which coordinates the movement of wholesale electricity among 13 Eastern and Midwestern states.

"Instead of meeting consumer demand for electricity by adding more electricity to the system, we pay people to reduce their usage," McAuley explained in an email. "The effect is that there's enough power to go around."

The third model of virtual power plants is, like Stem's approach, a mixed bag of assets such as battery storage, solar power, and energy efficiency systems that both reduce consumption and supply clean power in targeted ways. Navigant's Asmus said this sector could see the most growth in the US, particularly as the cost of battery systems continues to plummet and solar panels proliferate across US rooftops.

Much of US growth, however, will initially be concentrated in only a handful of states — primarily California and Hawaii, but increasingly New York and the mid-Atlantic states, as well. Some state legislatures and utility regulators have adopted rules, or are developing policies, that make it easier to integrate small-scale renewables systems into the broader grid. But in other areas, including the Rocky Mountain states, regulations haven't caught up with the emergence of new electricity models.

"These are very nascent technologies," said GTM analyst Saadeh, "and it's a very nascent market, in terms of understanding from a utility and regulatory perspective."

Virtual power plants make more economic sense in areas with high concentrations of wind and solar power, according to Saadeh. On their own, managing thousands of independent, intermittent renewable energy systems can create logistical challenges for utilities, which have to ensure that too much solar power doesn't flood the grid at once or that customers can turn their lights on when the wind isn't blowing. Power companies thus have greater incentive to tap technologies that best coordinate the benefits of those disparate systems, especially in areas with higher concentrations of renewables.

"A distributed grid with a high penetration of renewable energy needs some sort of flexibility," Saadeh points out. "Virtual power plants offer that."

Technology firms, utilities and regulators are also still in the early stages of figuring out the right market value for virtual power plants and how they should compete in the electricity market. The startup Olivine has several pilot projects in California that aim to answer those kinds of questions.

"A lot of technologies are being developed, but there's a big gap between that and actually getting to money and providing services to the grid," said Beth Reid, Olivine's chief executive officer.

In one pilot project with the utility PG&E Corp, an array of various, aggregated assets – including battery storage, electric vehicles, and more – are participating in the wholesale electricity market, just like a conventional power plant. The idea is to show that virtual power plants can provide flexible, fast-responding power services to the grid to help plug the intermittent supply gaps from wind and solar power, akin to a gas-fired peaker plant. Participants receive monthly payments for providing their power supply capacities to the pilot market.

Reid said she expected virtual power plants will ramp up dramatically as pilot projects help to sort out the different technologies and systems, and states continue removing regulatory hurdles.

"There's still a lot of experimentation about who actually owns the resources of a virtual power plant and different mechanisms in different states," she said. "But I think it's going to significantly scale [up] – not even in the next decade, but the next three to five years."

新式绿色电网

虚拟电厂可以帮助能源企业降低高峰期能源需求，提高可再生能源电力供应，玛丽亚·加卢奇写道。

加利福尼亚州南部地区去年底泄漏的数万吨天然气本来足以满足这一地区电厂和家庭的供电、供暖需求。然而，阿里索大峡谷天然气储备基地发生的大规模天然气泄漏，让加利福尼亚州能源供应商们不得不开始纷纷寻找替代能源，以应对后面几个月可能出现的照明管制和再次泄露。

然而，洛杉矶地区的供电单位并没有将化石燃料当作填补天然气供应缺口的唯一选择。他们的新招数

就是“虚拟电厂”，具体来说就是将散落各地的独立电池设备、太阳能电池板和节能高效建筑用网络连接起来，然后通过软件和数据系统进行远程控制。这样做的目的就是总体上减少用户在高峰期间的能源需求，同时为目标地区提供可再生能源电力供应。这样一来，就部分抵消了对传统电厂的电力供应需求，以及对整个电网的破坏。

市场调查与咨询公司 Navigant Research 的研究显示，虚拟电厂将成为清洁能源的一个新兴领域，预计未来十年内，全美虚拟电厂规模将增长四倍多，装机容量将从 2014 年的 480 万千瓦增至 2023 年的 2800 万千瓦。能源专家认为，针对加利福尼亚天然气短缺的这种应对措施可以看作是对虚拟电厂进行的一次高调测试。欧美地区的电力供应商也在积极进行此类系统试验，希望借此对现有的上万个分布在电网各个角落的各式能源储备设施、能效设施、以及可再生能源发电装置等分布式能源系统进行管理和利用。

GTM Research 公司高级分析师奥马尔·萨德在旧金山通过电话表示：“近来，电力企业和能源领域的其他相关利益方对这些解决方案的兴趣渐浓，并希望能满足各自不同的需求。”

萨德表示，此类需求的增加恰好代表了美国电力市场去中心化的转变进程——传统模式下，笨重的化石燃料发电厂通过州际输电线路将电力输送到各地；而在新模式下，电力供应逐渐转向地方的低碳网络。此外，萨德还补充道：“供电企业去中心化系统的转型才是虚拟电厂和其他科技兴起的真正原因。”

GTM Research 预测，仅虚拟电厂软件部分（也就是人们常说的“分布式能源资源管理系统”）不久后就可以实现市值翻倍，将从 2014 年的 5000 万美元左右增长到 2018 年的 1.1 亿美元。咨询机构 Navigant 2014 年时曾预测，加上可再生能源技术、电池设备及其他组件，未来虚拟电厂市场年收益将有望从 2016 年的 15 亿美元增长到 2023 年的 53 亿美元，其中有 37 亿美元将来自美国市场，13 亿美元来自欧洲市场。同样来自旧金山咨询机构 Navigant 的首席研究分析师彼得·阿斯穆丝（Peter Asmus）指出，鉴于近来乐金化学（LG Chem）和松下集团等公司民用与商用电池系统销售的不断增长，未来这一市场的规模可能远比这个数字要大得多。

在加利福尼亚州，阿里索峡谷泄露导致的天然气短缺加快了当地新型能源技术的普及速度。今年 5 月底，加州公共事业委员会曾要求该区域主要电力供应商南加州爱迪生电力公司（Southern California Edison，后文简称 SCE）在今年夏天“加快能源储备设施购买速度”，帮助“减轻对洛杉矶盆地的电力依赖风险”（据悉，目前这一进程仍在继续）。此外，公共事业委员会委员还要求 SCE 加快私有电池设备、太阳能电池板和其他分布式系统的入网速度。

SCE 公司的天然气供应主要来自南加州天然气公司，而后者正是阿里索峡谷地下设施的拥有方。据统计，从 2015 年 10 月后期到 2016 年 2 月中旬，该设施累计泄露的甲烷总量超过 9.7 万公吨。加利福尼亚州监管机构预计，该设施总储量中仅有不到五分之一，或者说大约 150 亿立方英尺，可以用于该地区的供电和供热。

蓄能设备供应商 Stem 股份有限公司表示，鉴于加利福尼亚州方面的积极回应，该公司计划加快其在洛杉矶地区的几个现有虚拟电厂项目进程。

这家初创企业利用电池和软件帮助 Whole Foods 和万豪等大型零售与酒店服务公司削减电力支出。过去 7 年里，Stem 已经在全加州数百个大型建筑中安装了不少电池系统（有些时候可能还会同时配备屋顶太阳能电池板）。系统会在低电价期间对电池进行充电。Stem 的软件系统随后会参考实际利用率，对建筑的能源使用情况进行分析。当电价峰值期到来的时候，系统会自动减少使用来自电厂的电力供应需求，转而使用电池储备电能。

通过这种方式，单体建筑的业主每月向电力公司可少缴纳“峰值电费”。Stem 首席执行官约翰·卡林顿在一次电话采访中表示，总体来看，这种模式的好处其实还有许多。通过这个系统，Stem 可以协调用户建筑中的各个系统，在用电总量突然上升的时候，减少这一地区的能源需求。2014 年，Stem 从 SCE 手中接到了一笔大订单，为现有能源供应受限的人口高度密集区提供总量为 8.5 万千瓦的虚拟电厂服务。

卡林顿指出，目前 Stem 正与“洛杉矶地区所有的供电企业合作，为他们提供及时、快速的产品安装服务。”他补充道，对于虚拟电力来说，对阿里索峡谷事件的反应完全“可以看作这个行业的转折点”。

当然，并不是所有虚拟电厂使用的都是 Stem 公司这种电池加能源管理系统的建筑集成网络机制。其实，“虚拟电厂”这个定义还是有一些模糊和主观，特别是这其中很多技术其实还处于试验和研发阶段。不过通常来说，这些系统一般有以下三种基本模式。

第一种是供给侧系统。此类系统在盛行小型可再生能源项目的德国、丹麦等欧洲国家非常常见。在这种模式中，地方政府和电网运营商可以将不同时间段内间歇性运转的独立太阳能电池组和风力发电场的电力输出，与水力发电、生物沼气和和其他低碳资源整合起来，仿造出一个与 24 小时运转的发电厂同等的能源输出效果。去年 11 月，德国科技大鳄西门子集团与公共事业巨头莱茵集团就表示，两个公司将联合为大规模虚拟电厂市场构建 IT 技术支持，预计该市场覆盖的分布式能源项目（如风能和太阳能电场）总规模将达到数十万千瓦。

第二种模式侧重于“需求侧反馈”——通过能效系统和软件，削减用电高峰时期的电力消费，从而降低电力企业为提供有限峰值供应而启动高成本化石燃料峰值电厂的需要。

电力企业会向用电大户收取全年低电价，以换取在用电高峰期可以对后者进行停电限电的权利。而这种需求反馈的基本前提机制已经存在了数十年。EnerNOC 是一家来自波士顿的能源软件与服务公司。该公司高级市场总监莎拉·麦考利表示，现代软件与数据系统可以将以往的逐栋建筑管理模式推广到上万个地点中，并建立起一个可信赖的大规模虚拟电厂。

EnerNOC 目前在美国市场这一领域独占鳌头。该公司付钱给那些商业建筑和工业建筑的拥有者，从而让他们允许自己在电网超负荷的情况下定期削减其能源消费，或避免高昂电价。EnerNOC 的软件平台会通知这些制造企业，告诉他们应该在未来几小时开启维护模式或者建议办公室经理们降低空调使用频率。电表上附加的一个小设备会向 EnerNOC 传输数据，用于衡量和追踪每个地点的节能状况。

随后 EnerNOC 会将减少的能源消耗以“负瓦特”的形式提供给电网运营商，并从中收取回报。目前 EnerNOC 的最大市场来自马里兰电力联营体（PJM Interconnection），后者控制着美国东部和中西部 13 个州的电力批发动向。

麦考利（McAuley）在一封电子邮件中解释道：“我们不会在系统中增加更多电量来满足消费者需求，相反，我们对成功实现电力节能的人们进行奖励。这样做的效果非常好，目前市场上电力供应很充足。”

第三种虚拟电厂模式就是 Stem 所采用的包括电池蓄能、太阳能发电、节能系统在内的一套既能降低能源消费，又能用目标方式提供清洁能源的体系。Navignant 公司的阿斯穆丝指出，这一产业在美国的增长最为明显，因为目前电池系统的价格直线下降，而美国各地屋顶太阳能电池板也在迅速普及。

然而，美国地区虚拟电厂的增长初期主要集中在少数几个州，主要是加利福尼亚州和夏威夷州。不过，纽约地区和大西洋中部各州也会逐渐增长。有些州的立法机关和公共事业监管机构甚至已经出台了相关规定，或者说正在起草相关政策，希望降低小型可再生能源系统融入大规模电网的难度。然而，包括落基山附近的几个州在内的其他地区，相关监管机构仍然没有跟上电力模式更新的节奏。

GTM 分析师萨德表示：“这都是非常初期的技术。而且从公共事业和监管角度来说，这也是一个刚刚出现的市场。”

萨德（Saadeh）认为，在风能和太阳能更集中的地区，虚拟电厂的经济作用可能更明显。从其自身角度来说，管理这上万个独立的、间歇性运转的可再生能源系统可能会为公共事业单位带来巨大的物流挑战。他们必须确保不会有太多的太阳能一下子涌入电网，或者说在没有风的时候消费者一样可以正常使用电灯。因此，电力企业有更大的动力，来开发那些能协调多个不同系统领域利益的技术，特别是在可再生能源相对集中的地区。

萨德指出：“一个结合了高比例可再生能源技术的分布式电网需要的是灵活性。而虚拟电厂模式恰恰就可以提供这个帮助。”

无论是科技公司、供电企业，还是监管机构，大家还都处在探寻虚拟电厂真正的市场价值，以及如何借此在电力市场中进行竞争的早期阶段。初创企业 Olivine 在加利福尼亚州开展了几个试点项目，以期找到上述几个问题的答案。

Olivine 首席执行官贝斯·里德表示：“虽然现在我们开发出了很多技术，但是这些技术距离实际应用于电网服务和获得盈利还有一定差距。”

在与太平洋煤气电力集团（PG&E Corp.）合作的一项试点项目中，包括电池蓄能、电动汽车在内的多种聚合资产都参与到了电力批发市场中，这与传统电厂并无二致。该试点项目的理念就是为了证明，虚拟电厂可以弥合风能和太阳能的间断性供电缺口，可以像天然气驱动的峰值电厂一样，提供灵活、快速的电力供应。参与项目的各方会向试点市场提供电力，并按月收取电费。

里德说道，试点项目有助于理顺不同技术和系统之间的关系，各州也在积极去除监管障碍，因此她期待未来虚拟电厂模式可以实现突破性增长。

她指出：“目前还要尝试解决虚拟电厂资源归属权的问题，而不同州的运作机制也各不相同。但我认为，这一产业的整体规模一定会显著扩大——甚至用不了 10 年，可能近 3 到 5 年就会出现。”

Anbaric Renewable Electricity Transmission Using High-Voltage Direct Current Technology

In an era of producing multiple forms of renewable electricity, the transmission of this high-voltage energy is becoming increasingly important.

Anbaric often uses high-voltage direct current (HVDC) technology, heralded as one of the “advanced transmission technologies” in the 2005 Energy Policy Act, which provided for the development of a stronger energy infrastructure.

HVDC systems have been in use commercially worldwide since 1954, when the island of Gotland was connected to mainland Sweden via a 60-mile cable. Since then, more than 25 systems have been installed globally. Most often they are used in marine applications where the distance for AC installation is too great. Other times they are used in parallel with AC systems where they provide additional operating control for the system operator.

HVDC systems provide many advantages for installation and construction and can contribute greatly to reliable and flexible operation of an electrical grid. These include:

- Higher efficiency in moving large amounts of power over long distances
- Very high reliability with 98.5% availability
- Full controllability when needed to react quickly to changes in AC frequency
- System oscillations can be controlled independent of AC system variations or in response to AC system conditions
- Improving the stability of AC systems, including increasing the stability of parallel AC lines
- Overload capabilities and controllability that can be beneficial to overall system operations and reliability
- Ability to provide reactive power control and support of AC voltage, frequency control, limitation of short-circuit current, and transmission at reduced voltage
- Greatly reduced vulnerability to adverse weather conditions — such as hurricanes, tornadoes, or ice storms — for submarine and buried cable

Anbaric CEO Edward Krapels spent the first 30 years of his career as an energy consultant to governments and companies for Energy Security Analysis, Inc., a company he founded with Sarah Emerson. In 2000, Mr. Krapels left ESAI and founded Anbaric to participate in the development of electric transmission projects.

“The reason we are in the business of transmission is because we believe that improving and rebuilding our nation’s power infrastructure is a critical element of meeting our clean energy goals,” said Krapels. “It’s great to talk about innovation in solar, wind and hydro, but all the innovation in the world will amount to very little without reimagining, updating and investing in transmission infrastructure. In short, transmission is the key to unlocking a clean energy future.”

Backgrounder on HVDC and AC systems

HVDC systems have been in use commercially since 1954, and around 25 systems have been installed globally, but alternating current (AC) still dominates most transmission systems. In fact, America’s power grid was built on AC transmission nearly 100 years ago, coming out of the War of the Currents.

According to Krapels, in the 2005 Energy Policy Act, HVDC technology has been cited as one of the advanced transmission technologies. “We now understand that next generation HVDC technology is the answer to present-day energy and infrastructure challenges,” said Krapels.

“It is controllable, efficient, and can help scale clean energy delivery. This means that there is a lot of work to be done to either augment existing AC systems or to create entirely new HVDC systems, and we’ve started to do that work through several projects, including but not limited to the Neptune Regional Transmission System and the Hudson Transmission System.”

Anbaric projects

The Neptune Regional Transmission System is a 65-mile 660-MW HVDC transmission line connecting Sayresville, New Jersey to Long Island, New York. It has been operational since 2007 and has been reported to be the largest source of imported electricity to Long Island.

The Hudson transmission line is a 660-MW electric transmission link between New York City and the PJM Interconnection. The line is both underground and underwater, and uses back-to-back HVDC technology across the Hudson River. It provided a new source of electric power for New York City customers of the New York Power Authority (NYPA).

The company has other proposed HVDC projects designed to bring renewable energy onto the grid connecting with major population centers. For example, the proposed Vermont Green Line will run from Beekmantown, New York, to New Haven, Vermont, and will provide New England with cost-effective renewable electricity.

Earlier this year, Anbaric and National Grid, along with Invenergy, the largest independent owner and operator of renewables, and Hydro-Québec, North America’s largest generator of hydropower, submitted a proposal in response to an RFP from Rhode Island, Connecticut, and Massachusetts for more clean energy.

“We mapped a plan for Invenergy to deliver its renewable energy to the ISO New England bulk transmission system through the Vermont Green Line, with Hydro-Québec to supplement these deliveries to ensure around the clock delivery,” said Krapels.

According to Krapels, a typical Anbaric project begins to transmit electricity within 24-36 months from the start of construction.

“The bottom line is that we wouldn’t be in this business if we didn’t believe strongly in the advantages of HVDC systems and their potential to help bring renewables online in a much broader way in order to effect change,” concluded Krapels.

Anbaric 可再生电力传输采用高压直流输电技术

在生产多种形式的可再生电力时代，高电压能量的传输正变得越来越重要。

Anbaric 经常使用高压直流输电技术(HVDC),在 2005 年的能源政策法案中象征着“先进的传输技术”,提供了一个更强有力的能源基础设施发展方向。

自 1954 年以来，当哥特兰岛是通过一条 60 英里的电缆与瑞典大陆相连，HVDC 系统一直用于全球的商业活动。从那时起，25 个以上的系统已经在全球安装。通常它们应用于海洋，其中交流安装距离非常棒。其他时候，它们在交流电系统并行使用，为操作系统提供额外运行控制。

高压直流输电系统在安装、施工方面有许多优点，并且可以大大提高电网的可靠性和灵活性。这些包括：

长距离大量传输的更高效率

“我们之所以致力于传输事业，是因为我们相信，改善和重建我们国家的电力基础设施对于满足我们清洁能源目标是一个关键的因素，” Krapels 说。“这是伟大的，谈论太阳能、风能和水电的创新，但在世界上所有的创新，如果在传输基础设施上没有重新塑造、更新和投资，这些创新将非常小。总之，传输的关键是解锁一个清洁能源的未来。”

高压直流系统和交流系统的背景资料

高压直流系统自 1954 年以来已经使用于商业，大约 25 个系统已在全球安装，但交流电（AC）仍然占据传输系统的主导地位。事实上，美国的电网在近 100 年前基于交流输电建立的，走出电流的战争。

非常高的可靠性，98.5%的可用性

当在交流频率发生变化时需要迅速作出反应，可控制全程

在交流系统或响应于交流系统条件时，系统振荡可以独立控制

提高交流系统的稳定性，包括增加平行交流线路的稳定性

过载的能力和可控性，对整个系统的操作性和可靠性有利

提供交流电压的无功功率控制和支持、频率控制、短路电流的限制，以及下降电压的传输

大大降低恶劣天气条件下的脆弱性——如飓风、龙卷风、冰冻灾害——海底和地下电缆

Anbaric 首席执行官 Edward Krapels 将他前 30 年的职业生涯致力于政府和企业的能源顾问，一个能源安全分析公司，他与萨拉艾默生创办了这家公司。在 2000 年，Krapels 先生离开了 ESAI，并创立 Anbaric 公司，参与电力运输项目的开发。

据 Krapels 说，在 2005 年的能源政策法案中，高压直流输电技术已被列为先进的传输技术之一。“我们现在明白了新一代高压直流输电技术是当今能源和基础设施挑战的答案，” Krapels 说。

“这是可控的，有效的，并且可以帮助小型清洁能源输送。这意味着大量的工作要做，要么加强现有交流系统或创建全新的高压直流系统，我们已经开始通过几个项目做这样的工作了，包括但不限于海王星区域传输系统和哈德森传输系统”。

Anbaric 项目

海王星区域传输系统是一条 65 英里 660 兆瓦的高压直流输电线路，横穿 Sayresville、新泽西州和长岛、纽约。自 2007 年以来一直运行，有关报道称其是长岛进口电力的最大来源。

哈德森传输线是一条 660 兆瓦的电力传输链路，横穿纽约市和马里兰电力联营体。该线路通过地下和海底，并采用背靠背的高压直流输电技术，跨越哈德逊河。它给纽约电力管理局（NYPA）的纽约客户提供了新的电力来源。

公司拥有其他高压直流输电项目，被设计为主要人口中心的电网链接带来使可再生能源。例如，佛蒙特州绿线提议，将从纽约 Beekmantown 到佛蒙特州纽黑文，并将为新英格兰提供高性价比的可再生能源电能。

今年早些时候，Anbaric 和国家电网，与 Invenenergy（可再生能源的最大独立所有者和经营者），以及魁北克水电公司（北美最大的水电发电机），为响应来自罗德岛、康涅狄格州和马萨诸塞州征求更多清洁能源建议书，提交了一份提案。

“我们部署了一个计划，Invenenergy 将它的可再生能源与 ISO 新英格兰批量传输系统连接，通过佛蒙特州绿线，魁北克水电公司来补充这些传输，以确保全天候传输，” Krapels 说。

据 Krapels 说，一个典型的 Anbaric 项目，从基建开始，需要 24-36 个月才能开始传输电能。

“底线是，如果我们不能坚定相信 HVDC 系统的优势，及其帮助实现可再生能源在更广泛的网上传输，以实现变革的潜力，我们不会致力于这个行业，” Krapels 总结道。

Chile enacts its largest ever power tender

Chile has received 84 domestic and international bidders with multiple renewable energy submissions in its latest power tender.

In its largest ever power tender, the Chile National Energy Commission (CNE) is looking to procure 12,430GWh of energy per year for 20 years covering 30% Chile's energy demand from 2021. This power will be supplied across the SIC and SING grids in the North and Central regions of the country.

Bids are invited for the supply of energy in 'time blocks'. For example, 'Supply block No 2-B' is for power supplied in the hours between 08:00 and 17:59. This policy has been praised for its acknowledgement of the intermittency of renewable energy sources.

Big name solar developers entering the tender included Acciona Energy, Solairedirect and Engie. The results of the tender will be published on 17 August.

The 84 bidders represented a significant step up from the 38 bidders in the previous auction in October 2015 where the government secured an average price of US\$79.3/MWh – all from renewable energy projects.

Minister of Energy, Maximo Pacheco, said: "We are fulfilling our goal to shake up a market that was lethargic and had become accustomed to operating with few actors, like an exclusive club. The state has regained its coordinating role in the energy sector and today is able to harness the private impetus towards greater competition that will benefit families and SMEs with lower prices on account of light."

Chile also recently passed a law involving a major upheaval of its transmission system that had been widely regarded as a critical hindrance to the deployment of renewables and the power sector at large. The power tender was actually delayed till July to ensure that the transmission law had been passed in time for the auction and thus give certainty to developers.

Solar power firms and some wind developers are already experiencing curtailment of their energy production in the north central regions of Chile, but many expect the transmission upgrades to resolve the issue in the coming years.

智利颁发有史以来最大的电力招标

智利最新的电力招标日前收到八十四国内和国际投标人提交的多个可再生能源标书。

在其有史以来最大的电力招标中，智利国家能源委员会(CNE)正寻求从 2021 年为期二十年每年获得 12,430GWh 的能源，覆盖智利能源需求的 30%。该国北部和中部地区 SIC 和 SING 电网将提供这一电力。

邀请投标来按“时段”供应能源。例如，“Supply block No 2-B”是在 08:00 至 17:59 之间的时段提供电力。这一政策由于承认可再生能源资源的间歇性，获得了称赞。

进入招标的大型太阳能开发商包括 Acciona Energy、Solairedirect 和 Engie。此次招标的结果将于八月十七日公布。

八十四个投标人代表着较此前 2015 年十月的拍卖中三十八个投标人的巨大提升，政府担保每兆瓦时 79.3 美元的平均价——所有都来自可再生能源项目。

能源部长马克西莫·帕切科(Maximo Pacheco)表示：“我们正在履行我们的目标，重组一个无生气并且习惯于利用类似一个独家俱乐部的少数参与者进行运营的市场。该国日前在能源领域恢复其协调作用，今天能够利用私人动力促进更大的竞争，这将有益于家庭和中小企业。”

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智利最近还通过一项法律，涉及其传输系统的大变革，传输系统曾被广泛视作部署可再生能源和广大电力部门的一个关键障碍。电力招标实际上推迟至七月，以确保输电法的通过及时赶上招标，由此为开发商提供确定性。

智利中北部地区的太阳能发电公司及一些风能开发商已经历了其能源生产的缩减，但是许多公司认为，未来几年输电升级将解决该问题。

Solar Frontier completes 30MW PV power plant next to Nagasaki airport

Leading CIS thin-film producer Solar Frontier said it had completed on schedule the largest PV power plant in Nagasaki Prefecture that resides next to Nagasaki airport runway.

Solar Frontier noted that the 30MW SOL de Omura Minojima project started construction in April, 2015, was completed on schedule in July, 2016, including a 10 kilometre submarine power cable to connect the power plant to the electric grid on mainland Kyushu.

Solar Frontier and Chopro jointly established a company, Nagasaki Solar Energy to develop and manage the new power plant. Chiyoda Corporate was said to have provided engineering, procurement and construction (EPC) services and the land for this project was leased by Nagasaki Prefecture.

The SOL de Omura Minojima plant is expected to generate approximately 37 gigawatt-hours of electricity per year, equivalent to the annual power consumption of 7,500 households in Japan.

Solar Frontier 完成长崎机场附近 30MW 光伏电站

领先的 CIS 薄膜生产商 Solar Frontier 表示，其已如期完成位于长崎机场跑道附近的长崎县最大光伏电站。

Solar Frontier 指出，该 30MW SOL de Omura Minojima 项目于 2015 年四月开工建设，如期于 2016 年七月竣工，其中包括一条连接该发电站与九州电网的十公里海底电缆。

Solar Frontier 与 Chopro 联合设立一家公司 Nagasaki Solar Energy，来开发和管理该新的发电站。据说 Chiyoda Corporate 提供设计、采购和施工服务，该项目的土地由长崎县租用。

预计 SOL de Omura Minojima 电站每年产生约三百七十亿千瓦时的电力，相当于日本每年七千五百户家庭的电力消耗。

Chernobyl solar plant has to be bankable and safe, warns EBRD

The European Bank has warned plans to redevelop the contaminated nuclear site at Chernobyl in Ukraine as a solar energy plant face hard questions in terms of its bankability and environmental standards.

The Ukrainian government is courting investors to build a 4GW solar plant within the Chernobyl 'exclusion zone', the 30 kilometre area cordoned off around the original nuclear reactor hall that exploded in 1986. It is pushing for a six-month schedule of work, including financing.

In recent months, Ukraine's environment minister Ostap Semerak has visited the European Bank for

Reconstruction and Development (EBRD). His plans for redevelopment of the site have also been issued to investment firms in the US, Canada and the UK.

The EBRD said it will consider co-funding provided other investors are in place, and the project addresses environmental risks.

“It has to be bankable, profitable and meet the highest environmental standards; it has to make sense and it has to bring something new to the market that doesn’t exist already,” said a spokesperson for the EBRD.

But it warned as well that excitement around the proposed project should not mask its realities. “Nothing is imminent. We are keeping an open mind. But it’s important not to read too much into it at this stage,” said the spokesperson.

“The Ukraine has indicated it will open the exclusion zone, and we welcome that. Renewables are one of our priorities, and as soon and as long as they secure investment then we will discuss the project and provide co-financing.”

Ukraine’s state radio station claimed last month Canadian investors have already expressed interest in the project. Semerak said in an interview with Bloomberg this week that two US investors and four Canadian energy firms have registered interest.

The Ukrainian ministry was unavailable for comment.

Meanwhile, The Guardian claims to have been passed a copy of Semerak’s plan for the site, distributed among major banks and investors. It sets out that 6,000 hectares within the exclusion zone could host facilities for 1GW of solar and 400MW of biogas production. In its day, Chernobyl produced 4GW of nuclear power.

EBRD 警告，切尔诺贝利太阳能电站必须具有可融资性并且安全

欧洲银行日前警告，在乌克兰切尔诺贝利核污染地点重新开发一座太阳能电站的计划，在其可融资性及环境标准方面面对严厉质疑。

乌克兰政府正在招揽投资者，在切尔诺贝利“禁区”内建设一座 4GW 太阳能电站，该禁区是 1986 年爆炸的核反应堆附近警戒封锁的三十公里区域。乌克兰政府正在推动为期六个月的工作计划，其中包括融资。

最近几个月，乌克兰环境部长 Ostap Semerak 访问了欧洲复兴开发银行(EBRD)。他的重新开发该地区的计划日前发放给美国、加拿大和英国的投资公司。

EBRD 表示，如果其他投资者到位，其将考虑共同筹资，此外该项目涉及环境风险。

EBRD 的一位发言人表示：“这个项目必须具有可融资性、可盈利并且符合最高的环境标准，这个项目必须有意义，且必须为市场带来新的气息。”

但是 EBRD 也警告，对于拟议项目的兴奋不应该掩盖其现实。该发言人表示：“没有什么是迫在眉睫的。我们保持开放的态度。但是这一阶段不要过度解读是很重要的。”

“乌克兰日前表明，其将开放该禁区，我们对此表示欢迎。可再生能源是我们的优先事项之一，一旦获得投资，我们将讨论该项目并且提供联合融资。”

乌克兰的国家广播电台上个月称，加拿大投资者已经表达了对该项目的兴趣。Semerak 本周在接受彭博社采访时表示，两个美国投资者和四家加拿大能源公司表现出兴趣。

乌克兰部长尚未发表评论。

与此同时，《卫报》称，该地点通过了 Semerak 的一份计划，在各大银行和投资者之间分配。该禁区的六百公顷可以承载 1GW 太阳能和 400MW 沼气生产设施。切尔诺贝利曾生产 4GW 核电。

Australian farmers can counter tariff hikes with renewables partnerships

Farmers in Australia are bearing the brunt of electricity price fluctuations, but they may benefit from partnering with renewables companies, according to Jacqueline Knowles, manager of natural resources policy with the National Farmers' Federation.

The cost of power for farmers has been driven up by high network charges, with farmers in New South Wales facing a 300% increase in electricity tariffs between 2009-2013, said Knowles. As a result, farmers have called for reform to the National Energy Market.

Knowles added: "Dedicated tariffs that suit the unique nature of farm energy usage, reliability standards and transparent price setting need to be part of the conversation for reform."

She said there are "clear opportunities" for farmers to diversify their income by partnering with renewable energy firms looking to build wind or solar farms.

However Knowles added: "It's important that energy policy and climate policy is integrated – and that as a nation we take the lowest cost pathway to delivering our emissions reduction goals. Piecemeal changes to policies – without consideration of how they interact – is not acceptable for the farm sector.

"More often than not, farmers bear the costs of a price squeeze between the rising cost of production and our competitiveness in domestic and international markets."

Regarding last week's national debate over what was causing the extreme electricity price hikes in South Australia, Knowles acknowledged the impact of the cold snap and the maintenance of an interconnector instead of blaming the integration of renewables.

澳大利亚农民能够利用可再生能源合作应对价格上涨

根据全国农民联盟的自然资源政策经理杰奎琳·诺尔斯(Jacqueline Knowles), 澳大利亚农民正在承受电价波动的冲击, 但是他们可能从与可再生能源公司的合作中获益。

诺尔斯表示, 对于农民而言, 电力成本一直由高电网费用推高, 2009-2013 年间, 新南威尔士州的农民面对电价上涨 300%。因此, 农民呼吁对于全国能源市场进行改革。

诺尔斯补充道: "价格需要符合农村能源使用的独特性、可靠性标准和并进行透明的价格设置, 这是改革谈话的一部分。"

她表示, 对于农民而言, "明显有机会" 通过与寻求建立风能太阳能电站的可再生能源公司合作, 多元化其收入。

然而, 诺尔斯补充道: "重要的是, 能源政策和气候政策的整合——作为一个国家, 我们采取成本最低的途径来交付我们的减排目标。对于政策的零碎改变——不考虑他们之间的相互影响——不为农业部门所接受。"

"通常, 农民承受着生产成本日益提高以及我们在国内和国际市场竞争所造成的价格挤压。"

至于上周的全国性辩论, 关于什么引起南澳大利亚电价急剧攀升, 诺尔斯承认, 寒潮的影响以及互联线路的维护, 而没有谴责可再生能源的整合。

Dominion Virginia Power to build 21MW solar plant at

Naval base

Dominion Virginia Power, a subsidiary of utility Dominion, is to construct a 21MW solar PV plant at Naval Air Station Oceana in Virginia Beach on behalf of the Department of the Navy and Commonwealth of Virginia.

The 18MWac facility, expected to be complete by the end of 2017, will be spread across 40 hectares and will include 179,000 solar panels. The navy will receive an alternative electric feed, to increase the energy resiliency of the base.

Dominion has already partnered the navy on another solar project, having completed construction of the 25MW Morgan's Corner plant in December 2015.

Thomas F. Farrell II, dominion chairman, president and chief executive, said: "Oceana solar facility, along with four other large solar facilities we have announced in Virginia, will bring clean energy to the state, new jobs and other economic benefits.

"Partnerships like the ones highlighted with the Department of Navy and the Commonwealth help to make our state a more attractive place to live, work and do business."

Secretary of the Navy Ray Mabus said: "Not only did we meet the 1GW goal ashore five years early, we surpassed it – reaching 1.1GW by the end of last year. In doing so we've achieved US\$90 million in nominal energy cost savings, US\$62 million in energy security hardware upgrades to bases, 170MW of access to power during outages and 22 million tons of CO2 abated. And we are just getting started."

Dominion Virginia Power 拟在海军基地建设 21MW 太阳能电站

电力公司 Dominion 旗下子公司 Dominion Virginia Power 将代表海军部和弗吉尼亚联邦在弗吉尼亚海滩 Oceana 海军航空站建设一座 21MW 太阳能光伏电站。

该 18MWac 设施, 预计将于 2017 年底竣工, 占地面积将达四十公顷, 将包括 17.9 万个太阳能电池板。海军将获得替代电力供给, 增加该基地的能源弹性。

Dominion 已经与海军在另一个太阳能项目取得合作, 2015 年十二月已经完成 25MW Morgan 的 Corner 电站的建设。

Dominion 董事长、总裁兼首席执行官 Thomas F. Farrell II 表示: "Oceana 太阳能设施, 连同我们已经在弗吉尼亚宣布的四个其他大型太阳能设施, 将为该州带来清洁能源、新的就业岗位和其他经济利益。"

"合作关系, 如海军部和该联邦的此次合作, 将有助于我们州成为一个更具吸引力的生活、工作和经商地点。"

海军部长雷·马布斯(Ray Mabus)表示: "我们不仅提前五年实现 1GW 目标, 我们还超越了该目标——到去年底达到 1.1GW。在这种情况下, 我们实现了节省九千万美元票面能源成本, 该基地六千两百万美元能源安全硬件升级, 断电期间可获得 170MW 电力, 以及减少两千两百万吨二氧化碳。我们才刚刚开始。"

Indian regulator asked to prioritise solar over thermal after Tamil Nadu curtailments

India's energy ministry has asked the power regulator to favour solar generation over thermal power in response to curtailment in the state of Tamil Nadu.

Tarun Kapoor, joint secretary of Ministry of New and Renewable Energy (MNRE), told PV Tech that curtailment

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of solar power has only been occurring in Tamil Nadu and it is expected to be a short-term issue.

Nevertheless, in a letter to the Central Electricity Regulatory Commission (CERC), which advises on regional transmission, Kapoor wrote that some solar PV project developers have been asked to back down by various load dispatch centres.

Kapoor stated: “Solar power projects have must run status as there is no fuel cost and if any backing down is to be done, thermal projects should be asked to back down so that some fuel is saved.”

At present, thermal projects in India are given two-part tariffs. One fixed tariff is paid even if the thermal plant is not generating energy. However, when the thermal plant is generating power, it is paid a variable tariff on top of the fixed tariff.

Kapoor pointed out that solar projects only have a single tariff and they do not get the benefit of a fixed tariff to fall back on if their energy production is curtailed.

He wrote: “This can make solar power unattractive particularly when projects are being allotted through competitive bidding and tariffs have come down drastically.”

When asked if such curtailments might affect the credit rating of affected solar projects, Kapoor said: “If it continues for a long time then it might. Right now, it’s just a short kind of a thing.”

Furthermore, some PV developers have now started lobbying for a two-part tariff, but Kapoor said this would be difficult as much of the cost of solar is fixed cost and is not subject to fuel price fluctuations.

Finally Kapoor wrote: “There is a need for clear regulations by appropriate commissions to enforce must run status for solar project. They should be paid full tariff if they are asked to back down in rare cases.”

He asked CERC to raise the issue with the Forum of Regulators to reach “some consensus” on the problem.

Kapoor also told PV Tech that the ministry is talking to other Indian states to ensure that curtailment of solar does not happen in the future, despite concern from various industry commentators about grid capacity in years to come.

Tamil Nadu chief minister Jayaraman Jayalalithaa recently wrote a letter to Indian prime minister Narendra Modi calling for a hasty build of the green energy corridor transmission systems to help the state deal with curtailment of wind energy.

印度能源部要求监管机构相较于火力发电，优先考虑太阳能

印度能源部日前回应泰米尔纳德邦的缩减，要求电力监管机构相较于火力发电，优先考虑太阳能发电。

新能源和可再生能源部联合秘书塔伦·卡普尔(Tarun Kapoor)在接受 PV-Tech 采访时表示，太阳能发电的缩减目前只是在泰米尔纳德邦发生，有望成为短期的问题。

然而，在致信中央电力监管委员会(CERC)对区域输电提出建议时，卡普尔写道，各个电力系统调度中心要求一些太阳能光伏项目开发商让步。

卡普尔表示：“由于没有燃料成本，太阳能发电项目必须处于运行状态，如果需要任何让步，应该要求火电项目让步，以便可以节省一些燃料。”

目前，印度向火电项目提供两部分的补贴。一个是固定补贴，即使火电站不产生能源，也会向其支付。然而，当火电站发电时，在固定补贴之外还会支付一个可变的补贴。

卡普尔指出，太阳能项目仅获得单一补贴，如果他们能源生产缩减，他们无法获益于固定补贴。

他写道：“这可能使太阳能发电不具有吸引力，特别是当项目通过竞标分配，并且价格大幅下降时。”

当问及是否这样的缩减可能影响太阳能项目的信用评级时，卡普尔表示：“如果其持续很长一段时间，那么可能产生影响。目前，这只是一个短期事件。”

此外，一些光伏开发商现在开始为两部分补贴进行游说，但是卡普尔表示，由于太阳能成本的大部分是固定成本，不遭遇燃料价格波动，将很难游说成功。

最后，卡普尔写道：“需要明确的规定强制太阳能项目必须处于运行状态。如果他们在极少的情况下被要求让步，他们应该被支付全额补贴。”

他要求 CERC 向监管机构论坛提出该问题，以在这一问题上达成“一定共识”。

卡普尔在接受 PV-Tech 采访时表示，该部正在与印度其他邦谈话，以确保未来不会发生太阳能缩减，但是各个行业评论家对未来几年电网装机容量表示担忧。

泰米尔纳德邦首席部长 Jayaraman Jayalithaa 最近致信印度总理纳伦德拉·莫迪(Narendra Modi)，呼吁加快建设绿色能源走廊传输系统，以帮助该邦应对风能发电的缩减。

Enphase Energy's competitive pricing strategy on microinverters takes hold

Leading microinverter firm Enphase Energy reported second quarter 2016 shipments up 30% and revenue 24% higher than the prior quarter as its strategy to offer more competitive pricing enabled by progressive product cost reductions, regained lost customers and market share across multiple regions.

Enphase Energy reported second quarter revenue of US\$79.2 million, compared to US\$64.1 million in the previous quarter.

Enphase reported microinverter sales of 186MW (AC) or 796,000 microinverters in the quarter, up from 143MW (AC) or 611,000 microinverters in the first quarter of 2016.

“At competitive prices we've been very successful in winning new customers based on our simplicity, quality and rich feature set,” noted Paul Nahi, president and CEO in the earnings call. “We have currently more than 500,000 Enphase systems deployed in over 100 countries. Since inception, we have shipped approximately 12 million microinverters representing more than 3 gigawatts of installed generating capacity. Enphase systems have produced over 6 terawatt hours of clean energy.”

According to Nahi, Enphase revenue in its key market of the US increased 20% quarter-on-quarter, due to strong demand for energy systems from existing PV installation customers, while the lower pricing levels attracted 8 new customers that represented around 70MW of new business over the next 12 months.

Outside of the US, management noted that it had increased sales in Mexico, Puerto Rico and across Latin America. In Europe sales had notably increased in France and the Netherlands. Revenue in Australia was said to up by 43%. International markets represent approximately 15% of Enphase's total revenue in the quarter.

However, the competitive pricing strategy continued to impact the company. GAAP gross margin in the quarter was 17.9%, while non-GAAP gross margin was 18.2%, slightly down from first quarter of 2016.

Enphase reported a GAAP operating loss of US\$15.8 million and a net loss of US\$16.7 million in the quarter, compared to a GAAP loss of US\$19.1 million and a non-GAAP operating loss of US\$16.0 million in the previous quarter.

However, the company was able to improve its cash flow by US\$7.3 million in the quarter, due to reduced inventory, which decreased from US\$45.6 million at the end of the first quarter to US\$39.3 million at the end of the second quarter.

Management and financial analysts said little in regards to its recent and controversial US\$25 million loan from Tennenbaum in the earnings call. Although, ROTH Capital's analysts, Philip Shen said in an investor note that the deal “provides some near-term relief, it is expensive at a ~10% rate, 3.3% commitment fee, and 10% closing fee,”

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he conceded that when including Enphase's Wells Fargo line of credit he estimated the company's liquidity situation stood at over US\$37 million, which could be sufficient for 3 to 4 quarters of operations.

Energy storage hitting Australia

Enphase noted that its new battery storage solution would be shipping to Australia and New Zealand in the next few weeks with pre-orders from installers having already exceeded 60,000 units (1.2 kWh per unit) with deliveries set over the next 12 months.

“We expect initial demand to be driven by installers looking to retrofit existing residential solar PV systems with the storage solutions as well as new system owners seeking a cost-effective energy solution that will support local regulatory requirements. We believe that with our AC coupled architecture we are uniquely suited to support both of these markets,” noted Nahi.

“The Enphase AC Battery storage solution has been very well received in the Australian market because of its elegance, simplicity, modularity with our 1.2 kWh building blocks, ease of design and installation and overall performance and architecture. In fact, a complete 4.8 kWh solution can be installed in less than one hour by just one technician in any retrofit or new installation. We believe this represents an unprecedented standard in installation simplicity compared to any competitive product on the market. And this is made possible only because of our latest microinverter technology,” added Nahi.

Management also said that by the end of 2016, battery shipments would have also started the US, beginning with Hawaii and selected Europe countries.

Enphase Energy 的微型逆变器竞价战略固定下来

领先的微型逆变器公司 Enphase Energy(NASDAQ:ENPH)报告，由于其渐进式降低生产成本，在多个地区重新获得失去的客户及市场份额，使得提供更具竞争力的价格的战略得以启动，2016 年第二季度出货量和收入分别较上季度提高 30% 和 24%。

Enphase Energy 报告，第二季度收入为七千九百二十万美元，而上季度为六千四百一十万美元。

Enphase 报告，该季度微型逆变器销售 186MW(AC)或 796,000 个，较 2016 年第一季度 143MW(AC)或 611,000 个有所提高。

总裁兼首席执行官保罗·纳希(Paul Nahi)在收入电话会议中指出：“以具有竞争力的价格，我们基于简单性、优质以及丰富的功能设置，已非常成功地赢得了新客户。我们目前在超过一百个国家部署逾五十万个 Enphase 系统。自创立以来，我们已出货约一千两百万个微型逆变器，代表超过三千兆瓦的安装量。Enphase 系统已经产生超过六太瓦时的清洁能源。”

根据纳希，由于现有光伏安装项目客户对于能源系统的强劲需求，Enphase 在其主要的美国市场的收入季度同比提高 20%，而较低的价格水平吸引八个新客户，代表未来十二个月约 70MW 的新业务。

管理层指出，在美国之外，其已经在墨西哥、波多黎各和整个拉丁美洲提高销售额。在欧洲，法国和荷兰的销售额显著提高。据说澳大利亚的收入提高 43%。国际市场占 Enphase 该季度总收入的 15% 左右。

然而，竞价战略继续影响该公司。该季度 GAAP 毛利率为 17.9%，非 GAAP 毛利率为 18.2%，较 2016 年第一季度略有下滑。

Enphase 报告，该季度 GAAP 运营亏损为一千五百八十万美元，净亏损一千六百七十万美元，而上季度 GAAP 亏损为一千九百一十万美元，非 GAAP 运营亏损为一千六百万美元。

然而，由于减少库存，该公司该季度能够将其现金流增加七百三十万美元，第二季度末，库存从第一季度末的四千五百六十万美元降至三千九百三十万美元。

管理层和财务分析师在电话会议中，关于其最近具有争议的来自 Tennenbaum 两千五百万美元的贷款说得很少。尽管 ROTH Capital 的分析师 Philip Shen 在投资者报告中指出，这笔交易“提供一定的短期缓解，但是其昂贵，利率为 10% 左右，承诺费为 3.3%，结算费 10%”，他承认当包括 Enphase 的富国银行(Wells

Fargo)信贷额度时，估计该公司的流动资金超过三千七百万美元，这足够三至四个季度的运营。

储能影响着澳大利亚

Enphase 指出，其新的电池储能解决方案将在未来几周运往澳大利亚和新西兰，安装商的预订已经超过六千个单位(每单位 1.2 kWh)，定于未来十二个月交付。

纳希指出：“我们预计，初期需求由寻求利用储能解决方案改进现有住宅太阳能光伏系统的安装商，以及寻求具有成本效益的能源解决方案的新系统所有者推动，这将支持当地的监管要求。我们认为，有了我们的交流耦合结构，我们特别适合于支持这些市场。”

纳希补充道：“Enphase AC Battery 储能解决方案由于其高雅、简约、模块化、易于设计和安装，以及整体性能和结构，在澳大利亚市场很受欢迎。事实上，一名技术人员可以在任何改造或新的安装项目，不到一个小时安装一个完整的 4.8 kWh 解决方案。我们认为，这代表较市场上任何相竞争的产品，前所未有的安装简化标准。这只是因为我们最新的微型逆变器技术才得以实现。”

管理层还表示，到 2016 年底，美国也将开始出货电池，以夏威夷开始，并选择了欧洲国家。

目标

Enphase 预计，2016 年第三季度收入为八千七百万美元至九千三百万美元，其中包括其 AC 电池储能解决方案的一些收入。

预计 GAAP 和非 GAAP 毛利率为 17%至 20%，表明利率下降触底。

India's GIPCL signs PPAs for 80MW solar in Gujarat

Indian power firm Gujarat Industries Power Company (GIPCL) has signed power purchase agreements (PPAs) with Solar Energy Corporation of India for 80MW of solar projects in Gujarat, according to a BSE filing.

GIPCL will now develop two 40MW projects at the Gujarat Solar Park, Charanka, the first set of solar parks in India, but also billed as some of the most expensive for developers.

The company has been involved in solar power generation since 2012 with 5MW PV commissioned at Vastan Mines of Surat Lignite Power Station. It has also recently commissioned 1MW of distributed generation solar at two locations in April.

It is now tendering for an EPC contractor.

The capacity is part of National Solar Mission (NSM), phase-II, batch-IV.

India is expected to approve a doubling of its solar parks policy to reach 40GW capacity by 2020 in the next two months.

印度 GIPCL 为古吉拉特邦 80MW 太阳能签署购电协议

根据一份 BSE 文件，印度电力公司 Gujarat Industries Power Company(GIPCL)日前与印度太阳能公司为古吉拉特邦 80MW 太阳能项目签署购电协议。

GIPCL 现将在 Charanka 古吉拉特邦太阳能园区开发两个 40MW 项目，这是印度首套太阳能园区，也被标榜为对于开发商而言最为昂贵的。

自 2012 年以来该公司一直参与太阳能发电，5MW 光伏在 Vastan Mines of Surat Lignite Power Station 投产。该公司四月还在两个地点投产 1MW 分布式发电太阳能。

该公司目前正在招标一个 EPC 承包商。

该装机容量是国家太阳能计划(NSM)第二阶段第四批的一部分。

预计印度将在未来两个月批准翻倍其太阳能园区政策，到 2020 年达到 40MW 装机容量。

India's SECI tendering for 100MW solar with battery storage in Andhra Pradesh

Solar Energy Corporation of India (SECI) has issued a request for selection (RfS) for 100MW of grid-connected solar PV projects with large-scale battery energy storage systems at Kadapa Solar Park, Andhra Pradesh.

The tender will be part of the National Solar Mission (NSM) Phase II, Batch IV, Tranche V.

In July PV Tech reported that SECI would soon be tendering for utility-scale solar-plus-storage projects with 100MW in Andhra Pradesh and 200MW in Karnataka, with each 50MW project connected to 2.5MWh of storage capacity.

Storage will become increasingly important in India as the rapid uptake of solar energy exerts strain on the grid.

印度 SECI 为安得拉邦 100MW 太阳能和电池储能招标

印度太阳能公司(SECI)日前对安得拉邦 Kadapa 太阳能园区 100MW 并网太阳能光伏项目和大规模电池储能系统发布选择的要求。

此次招标属于国家太阳能计划第二阶段第四批第五部分。

七月，PV-Tech 报告，SECI 将很快为公共事业规模太阳能加储能项目招标，安得拉邦 100MW，卡纳塔克邦 200MW，各 50MW 项目连接 2.5MWh 蓄电池容量。

在印度，由于太阳能的迅速采用为电网施加压力，储能将变得越来越重要。

SolarCity, Balfour Beatty Communities install 18,000 solar panels at US military housing

Balfour Beatty Communities — a managing member of military housing projects located at Fort Detrick, Maryland, and Fort Carson, Colorado — and SolarCity have finished the installation of over 18,000 PV panels at Army family housing.

The solar panels are located atop multi-family housing, community centers and maintenance facilities at both Fort Detrick and Fort Carson. The PV systems are expected to provide power to around 1,200 housing units across the two bases.

SolarCity designed, constructed and will oversee the solar power systems, while the military housing project companies will purchase the power produced by the panels. The systems account for more than 4.7MW of solar power generation capacity.

U.S. Senator Michael Bennet of Colorado noted: "This partnership is yet another example of Fort Carson's work to increase our nation's security through energy efficiency and home-grown clean energy solutions. It will support service members and their families while benefiting Colorado's economy and environment."

Congressman John K. Delaney of Maryland added: "This new solar panel installation at Fort Detrick is exactly what our country needs. Having renewable, off-the-grid electricity generation is strategically important at our military bases and preventing climate change is in the best interests of our national security.

"This gets us one step closer to the national goal of 50x30 - 50% clean and carbon free electricity by 2030 - that

Senator [Ben] Cardin and I have been working on together in Congress. I want to congratulate SolarCity for their SolarStrong initiative that plans on bringing solar power to more than 120,000 military homes in the U.S. This just goes to show that investments in clean energy are good for our economy, good for our national security, and good for the environment."

SolarCity 和 Balfour Beatty Communities 在美国军队住房安装一万八千个太阳能电池板

Balfour Beatty Communities——位于马里兰州迪特里克港和科罗拉多州卡森港的军队住房项目的管理成员——和 SolarCity，日前在军队家庭住房完成逾一万八千个光伏电池板的安装。

这些太阳能电池板位于迪特里克港和卡森港多户住宅、社区中心和维护设施的顶部。预计这些光伏系统将为两个基地约一千两百套住房提供电力。

SolarCity 设计、建设并将负责这些太阳能发电系统，而该军队住房项目公司将购买这些电池板产生的电力。这些系统的太阳能发电量超过 4.7MW。

美国科罗拉多州参议员麦克·班尼(Michael Bennet)指出：“这一合作伙伴关系是卡森港通过能源效率和本土清洁能源解决方案，提高我们国家安装性的又一典范。其将支持服务成员及其家庭，同时有益于科罗拉多的经济和环境。”

马里兰州议员 John K. Delaney 补充道：“位于迪特里克港的这一新的太阳能电池板安装项目，正是我们国家所需要的。拥有可再生能源、离网电力在我们的军事基地具有重要战略意义，并且防止气候变化符合我们国家安全的最大利益。”

“这使我们更进一步接近 50x30 的全国目标——到 2030 年 50% 清洁和无碳电力——参议员本·卡丹和我一直为此在国会努力。我要祝贺 SolarCity 的 SolarStrong 倡议，其计划为美国超过十二万军人家庭带来太阳能发电。这只是表明，投资清洁能源有益于我们的经济，有益于我们的国家安全，并且有益于环境。”

Sunworks sets new record in Q2 revenue with US\$31.5 million

Solar power solutions provider Sunworks announced its financial results for both second quarter of 2016 and six months through 30 June — as well as unveiling an increase to its full-year revenue guidance.

Among the highlights from the Q2 results are a record total revenue of US\$31.5 million, which stands as a 186% year-over-year growth due in large part to the acquisition of Elite Solar and organic growth.

Net income also increased to US\$744,000 — compared to a loss of US\$122,000 in the second quarter of 2015. The company also boasts a backlog of US\$43.5 million as of 30 June 2016, up 192% compared to the second quarter of 2016.

Jim Nelson, Chief Executive Officer of Sunworks, said: "We continue to build on the sales momentum that began in 2015 and delivered record revenues that are nearly 60% higher than our previous record. During the second quarter, growth of our commercial business outpaced residential. We expect this trend to continue in the near term as we capitalize on the growing momentum we are driving in the commercial market. Looking forward, we believe that the initiatives we have in place to accelerate residential sales will scale and that the distribution of revenues between our business lines will return to more historical levels in 2017."

Nelson added: "With a backlog of \$43.5 million at the end of the second quarter, we have increasing visibility into our business. This contracted business, coupled with our growing pipeline of opportunities, provides us with the

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confidence to increase our full year guidance by at least 10%. We now expect revenue growth of at least 105% compared to 2015, with a significant increase in profitability."

Sunworks announced a revision to its revenue guidance for the full year ending 31 December 2016. Company management now expects revenues in the range of US\$110-115 million — up from previous estimates of US\$100 million.

Sunworks also reported total PV installations in the second of 12.5MW that included commercial and residential markets, up from a combined 6.4MW of installations in the previous quarter.

Sunworks 第二季度收入创新纪录达三千一百五十万美元

太阳能发电解决方案供应商 Sunworks 宣布，其 2016 年第二季度和直至六月三十日的六个月的财务业绩——并且公布提高其全年收入目标。

第二季度业绩的亮点是总收入创纪录达三千一百五十万美元，年同比提高 186%，很大程度上得益于收购 Elite Solar 和有机发展。

净收入也提高至 74.4 万美元——而 2015 年第二季度亏损 12.2 万美元。该公司还公布截至 2016 年六月三十日，未完成订单四千三百五十万美元，较 2016 年第二季度增长 192%。

Sunworks 首席执行官吉姆·尼尔森(Jim Nelson)表示：“我们继续建立开始于 2015 年的销售势头，交付创纪录的收入，比我们此前的纪录高出近 60%。第二季度，我们商业业务的发展赶超住宅。由于我们利用在商业市场不断增长的势头，我们预计，在短期内这一增长趋势将继续。展望未来，我们相信，我们实施的加快住宅销售的举措将扩大，我们业务线之间的收入划分将在 2017 年恢复到更符合历史的水平。”

尼尔森补充道：“鉴于第二季度末四千三百五十万美元的未完成订单，我们提高了我们业务的可视性。承包业务，加上我们不断增加的机遇，为我们提供了信心，将我们的全年目标提高至少 10%。我们现在预计，较 2015 年收入增长至少 105%，盈利能力显著提高。”

Sunworks 宣布，修订其截至 2016 年十二月三十一日的全年收入目标。公司管理层目前预计，收入为 1.1 亿美元至 1.15 亿美元——较此前估计的一亿美元有所提高。

SMA Solar consolidates inverter production in Germany and China

PV inverter manufacturer SMA Solar Technology said it would close production facilities in Denver, US, and Cape Town, South Africa on continued competition issues and consolidate global inverter production in Germany and China.

SMA Solar noted that it expected further intensification of product pricing pressure in 2017 as competition in the inverter market increases. The closure of the production facilities is intended to help reduce its fixed costs and enhance its competitiveness.

The inverter manufacturer has been losing market share since the slowdown in end-market demand in its previously core and dominant position in the German market and the emergence of several China-based producers such as Sungrow Power and telecoms giant Huawei, to name a few in recent years.

The global PV end market demand could exceed 70GW in 2016, driven by strong growth in the US, which has around 10GW of utility-scale projects under construction, according to recent figures from GTM Research. SMA Solar had benefited from the US demand growth in the last two years as US competitors exited the sector due to aggressive pricing and evaporating margins.

However, the expected decline in end market demand in China, Japan and the US in 2017 is expected to lead to a period of overcapacity and ASP declines.

SMA Solar said that around 280 full-time jobs would be lost at the Denver facility when it is closed.

However, SMA's sales and service facility in Rocklin, California, would remain in operation and be expanded.

Pierre-Pascal Urbon, CEO of SMA Solar said, "The acceleration of price pressure in the solar industry has been unexpectedly strong in recent weeks. We therefore immediately initiated measures to lower our break-even point even further. The closure of our production locations in Denver and Cape Town was extremely difficult for us. However, this step is unavoidable if we are to lastingly counteract the persistent price pressure and to achieve better production capacity utilization in China and Germany in the future. The American market remains highly important to us. We will be maintaining our presence at the Californian location in Rocklin with Sales and Service moving ahead as well, and we will further boost our leading position on the American market."

The company has been reducing its headcount in Germany and internationally after announcing major restructuring just over a year ago, which included a 34% headcount reduction and in Germany around 1,300 jobs were planned to be cut, accompanied by 300 job losses from overseas operations.

SMA Solar 巩固在德国和中国的逆变器生产

光伏逆变器制造商 SMA Solar Technology(ETR:S92)表示, 由于持续的竞争问题, 其将关闭在美国丹佛和南非开普敦的生产设施, 并且巩固在德国和中国的全球逆变器生产。

SMA Solar 指出, 由于逆变器市场竞争加剧, 其预计 2017 年产品价格压力进一步激化。关闭这些生产设施旨在帮助降低其固定成本, 并且提高竞争力。

由于该逆变器制造商在此前占核心和主导地位的德国市场的终端市场需求放缓, 并且最近几年出现几家中国生产商, 如阳光电源和电信巨头华为, 该公司不断损失市场份额。

根据 GTM Research 最新数据, 2016 年全球光伏终端市场需求将超过 70GW, 由美国的强劲增长推动, 约 10GW 的公共事业规模项目在建。由于激进的定价以及利润蒸发, 美国竞争对手退出该行业, SMA Solar 过去两年获益于美国需求增长。

然而, 预期 2017 年中国、日本及美国终端市场需求的下降, 将导致一段时期的产能过剩以及平均销售价格下降。

SMA Solar 表示, 当丹佛工厂关闭后, 将损失约两百八十个全职工作。

然而, SMA 在加州罗克林的销售和服务设施将继续运营并扩大。

SMA Solar 首席执行官 Pierre-Pascal Urbon 表示: “最近几周太阳能行业价格压力的加剧出乎意料的强劲。因此我们立即采取措施, 进一步降低我们的收支平衡点。我们关闭丹佛和开普敦的生产设施, 对于我们而言是异常困难的。然而, 如果我们要持久抵消持续的价格压力, 以及未来在中国和德国实现更好的产能利用率, 这一步是不可避免的。对于我们而言, 美国市场仍非常重要。我们将保持位于罗克林的加州工厂的地位, 推进销售和服务, 我们还将进一步推动我们在美洲市场的领导地位。”

在差不多一年前宣布重大重组后, 该公司在德国和全球范围内不断裁员, 其中包括裁员 34%, 计划在德国削减一千三百个就业岗位, 海外业务削减三百个就业岗位。

Sungrow to supply 150MW inverters to Mytrah Energy in India

Renewable energy developer Mytrah Energy has awarded a contract to PV inverter manufacturer Sungrow to

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provide 150MW of central inverters for its projects in the Indian states of Telangana and Punjab.

Sungrow will supply its SG2500 turnkey solution, whose 10-foot container design enables easy and fast deployment, the company claims.

Girish Gelli, director, Mytrah Energy, said: “High efficiency, ease of installation and maintenance design of Sungrow central inverters, in addition to their local technical support and global acceptance were some of the important aspects of why Sungrow was selected as the inverter supplier. We would be happy to be associated with Sungrow for our future projects as well.”

Renxian Cao, president of Sungrow, said the contract gives Sungrow “enormous momentum” for its inverter business in India.

阳光电源拟向印度 Mytrah Energy 提供 150MW 逆变器

可再生能源开发商 Mytrah Energy 日前向光伏逆变器制造商阳光电源(Sungrow)授予一份合同，为其印度特伦甘纳邦和旁遮普邦项目提供 150MW 中央逆变器。

阳光电源将提供其 SG2500 交钥匙解决方案，该公司称，其十英尺的集装箱设计使得部署简单快捷。

Mytrah Energy 总监 Girish Gelli 表示：“阳光电源中央逆变器的高效、易于安装以及维护设计，加之其当地技术支持和全球认可，是阳光电源获选作为逆变器供应商的重要原因。我们也很高兴与阳光电源在未来项目取得合作。”

阳光电源总裁曹仁贤表示，此合同为阳光电源在印度的逆变器业务赋予“巨大动力”。

Indonesia solar FiT makes Java-Bali and Sumatra attractive for projects - BNEF

Indonesia’s first ever feed-in tariff (FiT) for solar PV projects should generate attractive project returns in Java-Bali and Sumatra, according to a Bloomberg New Energy Finance (BNEF) research note.

BNEF expects rates of returns in these two regions, which both have better grid infrastructure and potential project sites than other regions, of around 14-18.8%, said BNEF. Other regions may struggle to obtain such attractive rates.

Indonesia has seen very few support mechanisms for solar except for a half-baked solar auction process for 140MW in 2013, which only saw 14MW awarded. As of 2015 Indonesia had just 84MW of utility-scale solar capacity deployed. However, the Ministry of Energy and Mineral Resources (MEMR) introduced the country’s first ever FiT for solar in July this year to help kick-start the development 250MW of PV.

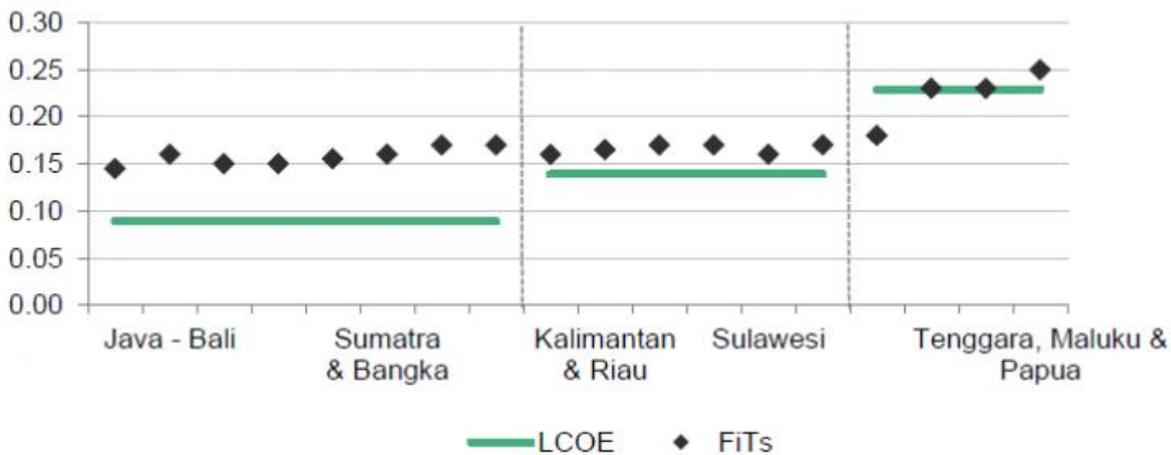
The original auctions were stopped in 2014 after being declared unconstitutional by the Supreme Court, Maggie Kuang, analyst at BNEF, told PV Tech. The Indonesian Solar Module Manufacturer Association (APAMSI) filed a lawsuit against auctions arguing that solar developers were not using enough local content; therefore violating Industry Ministry regulations. The criteria for the auctions also lacked clarity and were ineffective in attracting good project developers, adds Kuang.

Under the new decree, projects will have 20-year power purchase agreements (PPAs) and the tariff rates will range between US\$0.145-0.25/kWh depending on project location. Java has been allocated the highest capacity of 150MW but the lowest tariff, with individual project sizes capped at 20MW.

At a wider level, Kuang said that if the developers in the far eastern part of Indonesia can keep project capex at around US\$1.3 million/MW, they will be able to generate returns of more than 10%. However some project

developers believe they will not be able to achieve such returns due to the quality of infrastructure in Indonesia at present.

Figure 1: Comparison between solar LCOEs and FiTs in Indonesia – 2017 capex, (\$/kWh - nominal)



Solar LCOEs and FiTs in Indonesia. Credit: BNEF

Developers will need to complete <10MW projects within 12 months and >10MW plants within 24 months to avoid triggering penalties of between 3-8% in the first year of delay.

To qualify for the FiT, developers will also need to have 43.85% of their solar project content sourced from domestic manufacturers and service providers based on the current Industry Ministry regulation.

However, it is not clear how local content will be precisely measured and to what extent it will prevent developers from using imported solar modules and inverters. After further clarification, if the local content rule will suppress imports, domestic capacity will need to be ramped up over the coming year as there are just 90MW of domestic manufacturing capacity at present, equal to just 36% of the FiT capacity quota.

Nevertheless, the time leading up to construction is expected to be at least 16 months from the day that registration opens, so there is time to generate this capacity, according to BNEF.

Kuang says that the FiT rates will be proportional to the amount of local content in the project. For example, if a project had half the required percentage of local content, then its FiT would also be reduced by half.

BNEF also calculates the levelised cost of energy (LCOE) for PV in Indonesia to range from US\$0.89/kWh to US\$0.229/kWh. “In terms of future capacity forecasts, it is very hard to say at this stage because the policy is not implemented yet,” adds Kuang. “Assuming the policy implementation starts from end-2016 or early-2017, around 200MW in Java, Bali and Sumatra are likely to be built over the following three years as the project economics in those regions support.”

Following the interview, Indonesia’s energy and mining minister Arcandra Tahar was dismissed after reports that he had dual citizenship for the US and Indonesia.

When asked to comment on the effect this might have on the solar ambitions on Indonesia, Kuang wrote: “It will have little impact on the direction that Indonesia is taking on developing renewables.”

In 2015, international downstream player Conergy said it would build Indonesia’s first utility-scale PV plants and closed deals for another 228MW of projects across Southeast Asia.

Returning for a fourth year, Solar & Off-Grid Renewables Southeast Asia 2016 is the distinguished, must-attend event for solar PV companies looking to secure profitable business across the booming Southeast Asian market.

Co-location with our established Solar Finance & Investment conference provides an additional day of bespoke content and offers a deeper dive into issues around clean energy financing and long term capital investments across the region.

印尼太阳能上网电价补贴使爪哇岛巴厘岛和苏门答腊对项目具有吸引力

根据彭博新能源财经(BNEF)的一份研究报告,印尼首个针对太阳能光伏项目的上网电价补贴,在爪哇岛巴厘岛和苏门答腊应该产生具有吸引力的项目回报。

BNEF 预计,这两个地区的回报率约为 14-18.8%,这两个地区比其他地区有着更好的电网基础设施和潜在项目用地。其他地区可能难以获得这样具有吸引力的回报率。

印尼对于太阳能的支持机制非常少,除了 2013 年针对 140MW 的不成熟的太阳能拍卖过程,其仅看到授予 14MW。截止 2015 年,印尼仅部署 84MW 的公共事业规模太阳能装机容量。然而,能源和矿产资源部今年七月对太阳能推出全国首个上网电价补贴,以帮助开启 250MW 光伏的发展。

BNEF 分析师 Maggie Kuang 在接受 PV-Tech 采访时表示,最初的拍卖在最高法院宣布违反宪法后于 2014 年停止。印尼太阳能组件制造商协会(APAMSI)对拍卖提起诉讼,认为太阳能开发商没有使用足够的本地生产配额,因此违背产业部的规定。Kuang 补充道,拍卖的标准也缺乏清晰度,并且吸引良好的项目开发商的效果不佳。

根据新法令,项目将有着二十年的购电协议,取决于项目位置,价格将为每千瓦时 0.145-0.25 美元。爪哇岛被分配最高的装机容量,达 150MW,但是补贴最低,单个项目的规模上限为 20MW。

在更广泛的层面, Kung 表示,如果在印尼东部地区的开发商可以保持项目资本支出为每兆瓦一百三十万美左右,他们将能够产生超过 10%的回报率。然而,一些项目开发商认为,由于印尼目前基础设施的质量,他们将无法达到这样的回报。

开发商将需要在十二个月内完成<10MW 项目,在二十四个月内完成>10MW 项目,以避免第一年的延迟触发 3-8%的惩罚。

为了享有上网电价补贴,基于目前产业部的规定,开发商还将需要 43.85%的太阳能项目内容来自国内制造商及服务供应商。

然而,尚不清楚本地生产配额将如何精确测量,以及其将阻止开发商使用进口太阳能组件和逆变器到什么程度。在进一步澄清后,如果本地生产配额要求将抑制进口,未来几年国内产量将需要提高,目前国内制造能力仅有 90MW,仅相当于上网电价补贴产能配额的 36%。

然而,根据 BNEF,预计从登记日开始,建设之前至少有十六个月,因此有时间产生这一能力。

Kuang 表示,上网电价补贴费率将与项目的本地生产配额量成正比。例如,如果一个项目减半所需的本地生产配额的百分比,那么其上网电价补贴也将减半。

BNEF 还计算,印尼的光伏平准化发电成本(LCOE)为每千瓦时 0.89 美元至 0.229 美元。Kuang 补充道:“关于未来装机容量预测,由于该政策尚未实施,现阶段很难说。假设该政策从 2016 年底或 2017 年初开始实施,那么未来三年爪哇岛、巴厘岛和苏门答腊由于支持项目经济,可能建设约 200MW。”

在采访后,印尼的能源和矿产部长 Arcandra Tahar 离职,此前有报道称他有着美国和印尼双重国籍。

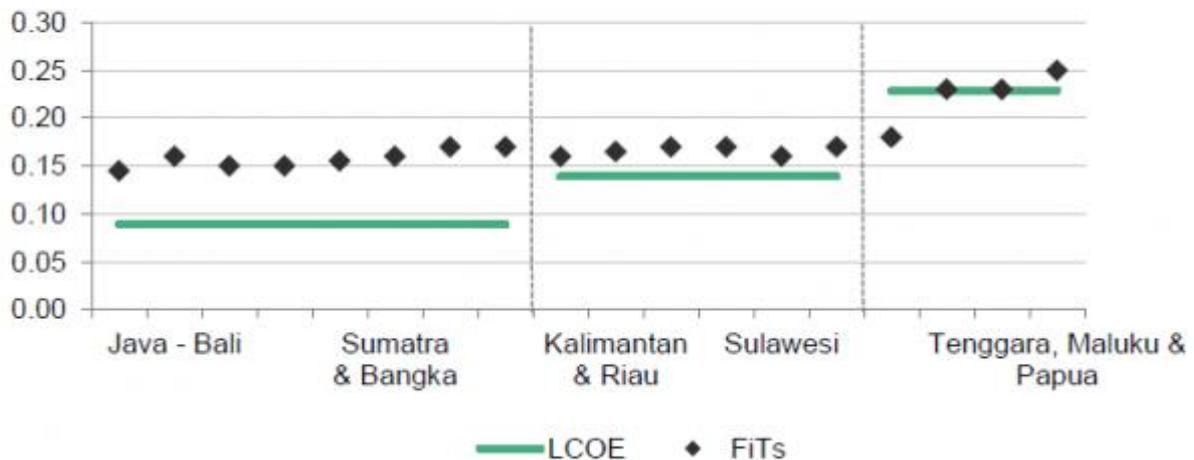
当问及这可能对印尼太阳能雄心产生的影响时, Kuang 写道:“这对方向的影响微乎其微,印尼正致力于开发可再生能源。”

2015 年,国际下游参与者 Conergy 表示,将建设印尼首批公共事业规模光伏电站,并且已经就整个东南亚地区另外 228MW 项目达成交易。

第四届 Solar & Off-Grid Renewables Southeast Asia 2016 对于寻求在整个蓬勃发展的东南亚市场获得有利可图的业务的太阳能光伏公司而言,是最杰出的、必须参与的盛会。与我们既定的 Solar Finance &

Investment 会议位于同一地点，提供额外一天的定制内容，并且围绕该地区清洁能源融资和长期资本投资的问题，提供深入探讨。

Figure 1: Comparison between solar LCOEs and FiTs in Indonesia – 2017 capex, (\$/kWh - nominal)



印尼太阳能平准化发电成本和上网电价补贴。图片来源：BNEF

Energy prices in Chile reportedly set to drop following major auction

Energy costs in Chile are expected to drop in the next decade after a major auction has reeled in more bids than previously expected, according to Reuters.

The winners of the auction — which was held in order to provide about a third of the country's energy needs — are expected to be announced Wednesday. Chosen participants are expected to supply 12,430GWh annually for 20 years — split between five separate blocks.

Chile's Energy Minister Maximo Pacheco told Reuters that the current offers in the auction will ensure that energy prices in the country will fall below US\$60 per MWh — less than half the cost that it was two and a half years ago.

The auction — which stands as the biggest in Chile's history — tallied 84 total bids, including offers from companies such as Gas Natural, Iberolica, Acciona Energia, AustrianSolar and Solairedirect. Most of the bids were from both solar and wind power firms.

Energy demand has become a major issue in Chile, as the country holds one of the highest power prices in Latin America — while also boasting a mining sector that accounts for around a third of the world's supply of copper.

据报道智利能源价格有望下降

据路透社(Reuters)报道，在一项主要的拍卖收到比此前预期更多的出价后，预计智利的能源成本未来十年将下降。

拍卖的赢家——举办拍卖旨在提供该国能源需求的三分之一左右——预计将于周三宣布。预计获选的

参与者将每年提供 12,430GWh，为期二十年——分为五个独立部分。

智利的能源部长 Maximo Pacheco 在接受路透社采访时表示，拍卖中目前的出价将确保该国的能源价格跌破每兆瓦时六十美元——不到两年半前成本的一半。

此次拍卖——作为智利历史上最大的——总计收到八十四个出价，其中包括 Gas Natural、Ibereolica、Acciona Energia、AustrianSolar 和 Solairedirect 等公司的出价。多数出价来自太阳能和风能发电公司。

能源需求已经成为智利的一个主要问题，该国的电价是拉丁美洲最高的——然而还表示采矿业，占世界铜供应的三分之一左右。

Canadian Solar revises capacity expansion plans for third time in 2016

‘Silicon Module Super League’ (SMSL) member Canadian Solar has made its third major revision to its planned manufacturing capacity expansion plans for 2016, while reiterating previously guided PV module shipments and revenue for the year.

Canadian Solar said in reporting second quarter financial results and subsequent earnings call that it was revising its cell manufacturing nameplate capacity expectations for the end of the year, primarily due to the impact of tornado damage at its JV solar cell factory in Funing County, Jiangsu Province on June 23, 2016.

Cell capacity update

The Funing facility would be out of action until the first quarter of 2017, with volume production back online in the second quarter. The Funing plant would have added a further 500MW of capacity by July, 2016 to reach a nameplate capacity of 1GW.

As a result, Canadian Solar expects in-house cell capacity to reach around 3.05GW by the end of 2016, compared to the last revision expectation of 3.9GW.

Cell expansions of 850MW are going ahead via a new cell manufacturing plant located in South Eastern Asia, which the company said would be commissioned in September of 2016.

Interestingly, the nameplate capacity at the South Eastern Asia cell plant has been increased twice. Initially, Canadian Solar said that plant would have a nameplate capacity of 500MW, yet that was later raised to 700MW.

Module assembly capacity update

However, Canadian Solar also noted that it would be curtailing PV module capacity expansions due to the threat of overcapacity, increased ASP declines and an overall industry downturn. Management noted that keeping strong control of module inventory would be a key strategy during this period.

Canadian Solar said that it expected in-house module capacity to reach 5.8GW by the end of year, instead of previous guidance of 6.43GW.

However, based on PV Tech’s previous analysis of Canadian Solar’s expansion plans, module assembly capacity would have reached 6.4GW to 6.6GW at year-end.

Capacity expansions that would continue included its new 650MW module assembly plant in South Eastern Asia, which was said to have been commissioned in early August, 2016. Again, this would seem to be a capacity increase of around 50MW, based on previous management commentary and PV Tech’s analysis.

A new JV assembly plant on Brazil with an initial 360MW of nameplate capacity was also expected to be commissioned in September of 2016, providing the remaining majority of expansions. Again, this would seem to be a capacity increase of around 60MW than previously guided.

Only around 460MW of module assembly capacity would seem to be added at its facilities in Suzhou, Jiangsu Province, and Luoyang, Henan Province.

Ingot/Wafer capacity update

In contrast to the curtailment of capacity expansions in solar cell and module assembly segments, Canadian Solar highlighted that its multicrystalline wafer manufacturing capacity was expected to reach 1.3GW by the end of 2016, up from previous guidance of reaching 1GW by year end.

The company noted that at least 900MW of ingot/wafer capacity would utilize diamond wire-saws by year-end, the first major PV manufacturer to use the technology for multicrystalline wafer production. Diamond wire technology has been adopted for monocrystalline wafer production as it significantly increases cutting speed, boosting throughput and lowering manufacturing costs with the elimination of slurry and recycling.

The adoption of diamond wire-saw technology was said to be compatible with Canadian Solar's proprietary Onyx black silicon multicrystalline solar cell technology, significantly increasing solar cell efficiency while reducing silicon usage.

Various module assembly expansion plans previously announced, such as in Vietnam (300MW) and Indonesia (30MW) were not discussed in the call or mentioned in Canadian Solar's second quarter financial results.

Efforts previously highlighted by management to restore a better in-house balance between cell and module capacity, which had seen the cell to module ratio fall below 50% in 2015, would seem to have been impacted by the tornado and overcapacity fears.

阿特斯阳光电力第三次修订其 2016 年产能扩张计划

“硅基组件超级联盟”(SMSL)成员阿特斯阳光电力(NASDAQ:CSIQ)日前第三次大幅修改其为 2016 年规划的产能扩张计划, 同时重申此前的该年光伏组件出货量和收入目标。

阿特斯阳光电力在报告第二季度财务业绩以及随后的收入电话会议中表示, 其正在修订其年底电池制造额定产能预期, 主要是由于 2016 年六月二十三日其江苏省阜宁的合资太阳能电池厂遭遇龙卷风灾害的影响。

电池产能最新消息

该阜宁工厂将直至 2017 年第一季度才恢复运转, 第二季度恢复批量生产。该阜宁工厂本应到 2016 年七月增加另外 500MW 产能, 以达到 1GW 的额定产能。

因此, 阿特斯阳光电力预计, 到 2016 年底内部电池产能将达到 3.05GW 左右, 而上次修订后的预期为 3.9GW。

该公司将通过位于东南亚的一家新的电池制造厂推进 850MW 电池产能扩张, 该公司表示, 该工厂将于 2016 年九月投产。

有趣的是, 该东南亚电池厂的额定产量已经提高两次。阿特斯阳光电力表示, 该工厂最初的额定产量为 500MW, 后来提升至 700MW。

组件装配产能最新消息

然而, 阿特斯阳光电力还指出, 由于产能过剩、平均销售价格进一步下降以及整个行业不景气的威胁, 其将缩减光伏组件产能扩张。管理层指出, 持续强有力地控制组件库存将成为这一阶段的一项关键战略。

阿特斯阳光电力表示, 其预计到年底内部组件产量将达到 5.8GW, 而此前目标为 6.43GW。

然而, 基于 PV-Tech 此前对于阿特斯阳光电力的扩张计划的分析, 年底组件装配产能本将达到 6.4GW 至 6.6GW。

产能扩张将继续, 包括其位于东南亚的新 650MW 组件装配厂, 据说该工厂已经于 2016 年八月初投产。基于此前管理层的评论以及 PV-Tech 的分析, 似乎产量将提高约 50MW。

还预计巴西一家初始额定产量为 360MW 的新合资装配厂，将于 2016 年九月投产，占扩张的余下大部分。似乎比此前目标将产量提高约 60MW。

似乎在其江苏省苏州及河南省洛阳的工厂，仅增加约 460MW 的组件装配产能。

硅锭/硅片产能最新消息

与太阳能电池和组件装配部分产能扩张的缩减形成对比，阿特斯阳光电力强调，其预计多晶硅片制造产能到 2016 年底将达到 1.3GW，较此前目标到年底达到 1GW 有所提高。

该公司指出，到年底至少 900MW 的硅锭/硅片产能将采用金刚石线锯，是使用该技术进行多晶硅片生产的第一大光伏制造商。金刚石线技术由于能够大幅提高切割速度、提高产量并且降低制造成本，同时具有可回收利用的特点，已被采纳用于单晶硅片生产。

据说金刚石线锯技术的采纳与阿特斯阳光电力专利 Onyx 黑硅多晶硅太阳能电池技术相匹配，大幅提高太阳能电池效率，同时减少硅的使用。

此前宣布的多个组件装配扩张计划，如在越南(300MW)和印尼(30MW)的计划，在电话会议中没有讨论，在阿特斯阳光电力第二季度财务业绩中也没有提及。

管理层此前强调的工作重点是恢复电池和组件产能之间更好的内部平衡，2015 年看到了电池到组件的比例跌破 50%，似乎是受到了龙卷风和产能过剩担忧的影响。