



# **US-CHINA** QUARTERLY MARKET REVIEW

FALL 2011

## **EXECUTIVE SUMMARY**



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## A COLLABORATIVE REPORT BY:



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(ACORE)**

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## US-CHINA PROGRAM

The US-China Program (USCP) of the American Council On Renewable Energy (ACORE) is dedicated to increasing understanding of the U.S. and Chinese renewable energy markets and fostering public and private sector partnerships between our two countries.

ACORE members who are leading voices in the U.S. and Chinese renewable energy industries are invited to join USCP as partners. Our partners actively shape program direction through consultation with other partners, the USCP strategic advisors, and ACORE staff.

We thank the USCP partners for their special effort toward this Fall 2011 US-China Quarterly Market Review (QMR).



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# EXECUTIVE SUMMARY

## U.S. REVIEW

### U.S. POLICY

#### FEDERAL AND STATE POLICY: INVESTMENT OPPORTUNITIES FOR CHINESE COMPANIES

Unlike many countries, the United States has failed to adopt a comprehensive federal renewable energy policy. To be sure, the U.S. Department of Energy has taken the lead in promulgating renewable energy programs and incentives, as have other administrative departments such as the Departments of Agriculture and Treasury. However, most of the federally organized programs and incentives are authorized only for short periods of time and must be periodically re-authorized or re-funded, which has resulted in certain “peaks” and “valleys” in the development, construction and financing of renewable energy projects in the United States. More significantly, many of these incentives are an outgrowth of special policy initiatives, such as the economic stimulus legislation of 2009 and specific tax-driven initiatives, rather than natural outgrowths from a uniform federal policy on renewable energy as part of a comprehensive national energy policy.

Today, most of the installed renewable energy projects in the United States are the result of state-passed initiatives and programs rather than federal programs. Twenty-nine states plus the District of Columbia and Puerto Rico have established mandatory renewable portfolio standards (“RPS”), and nine states have set

voluntary renewables goals. The RPS has been the single most effective program for encouraging the development and installation of renewable energy projects. The Union of Concerned Scientists projects that state RPS programs will support 6,750 MW of new renewable power by 2025—an increase of 570% over total 1997 U.S. levels (excluding hydro). The RPS programs currently promulgated by California, Illinois, Minnesota, New Jersey and Texas create the five largest markets for renewable energy growth in the country. It is estimated that new renewable energy production as a result of these state standards will result in the reduction of annual carbon dioxide emissions in the U.S. by more than 183 million metric tons by 2025. Another tangible measure of success of these state-run programs is the degree to which such programs have spurred the development of wind energy. Nearly one-half of all U.S. wind development since 2001 can be traced directly to these state programs.

*View the full Fall 2011 U.S. China Quarterly Market Review for further information on the currently available renewable energy programs and incentives at both the federal and state levels. The article provides a summary of the existing programs and highlights several that may be of significance to Chinese investors. The U.S. Policy section is authored by Baker & McKenzie.*

## **U.S. FINANCE** **ASIAN OEM MARKET ENTRANTS AND U.S. FINANCE**

The increasingly competitive U.S. wind market saw approximately \$5.9 billion in new wind asset financings in the first three quarters of 2011, according to Bloomberg New Energy Finance. As expected, U.S. wind project asset financings rebounded in the second quarter of 2011 from the record lows in the first quarter, although first-half 2011 asset financing figures still remain low compared to the same period in 2010. Still, the U.S. market remains one of the highest wind-growth markets in absolute terms. Record-breaking growth in China has forced the Chinese wind industry to pause and reassess its plan for sustainable long-term growth. Market saturation and the challenging political mechanisms of Europe have left once high-growth European turbine manufacturers idle in their domestic markets.

The global slowdown has forced original equipment manufacturers (“OEMs”) to employ internationalization strategies, bringing an influx of Asian OEM market entrants, working to buoy global order books, to the U.S. wind market. The door to sophisticated western financing, already ajar, will be widened as Asian OEMs establish localized procurement strategies, scale after-sale-service capabilities and accumulate an operational track-record in the U.S. Product quality will continue to reign supreme, while corporate transparency and cultures of social responsibility will continue to afford new entrants heightened levels of credibility in the demanding U.S. market.

*View the full Fall 2011 U.S. China Quarterly Market Review for a description of what is required of OEM market entrants to both obtain and deploy financing in the U.S. market. The U.S. Finance section is authored by Goldwind.*

## **U.S. MARKET FOCUS** **INFORMATION TECHNOLOGY AS A KEY** **ENABLER OF RENEWABLE ENERGY**

Following the trend seen in many other countries around the world, electricity generation from renewable sources in the United States is projected to grow

significantly—from 462 billion kWh in 2010 to 649 billion kWh in 2015. This growth is driven by a complex set of factors, including state government policies and a dramatic reduction in the total system cost for wind and solar electric power generation. While policy and economics are spurring industry growth, the variable and weather-dependent nature of renewable energy places operational pressures on regions in the U.S. with high penetration of renewable generation.

Current systems are not able to accommodate these new operational pressures, and thus significant upgrades in the capabilities of grid systems are needed. To integrate and manage the growing range of renewable generation resources and meet renewable energy goals, grid system operators must employ sophisticated information technology to enable a more dynamic and flexible grid (a “smart grid”).

The particularly rapid growth in renewable generation projects experienced in some areas of the United States is providing regional systems operators with “real-world” experience in integrating significant variable power generation. One conclusion to be drawn from this experience is that new information technology capabilities are needed for forecasting, load balancing, and optimization in order to successfully integrate large-scale renewable energy into the U.S. power grid.

This article explores examples in two U.S. states where systems operators are currently deploying information technology to economically and reliably integrate variable renewable generation into the grid. These states provide examples for systems operators and industry stakeholders in other regions around the world to consider as they work to improve the economics of integrating renewable energy into their regional power grids.

*View the full Fall 2011 U.S. China Quarterly Market Review for a description of how systems operators are adjusting to greater penetrations of renewable energy by using information technology. The U.S. Market Focus section is authored by IBM.*

# EXECUTIVE SUMMARY

## CHINA REVIEW

### CHINA POLICY SHEDDING LIGHT ON THE RECENTLY ENACTED SOLAR FEED-IN-TARIFF

China's energy regulator, the National Development and Reform Commission, announced in July of this year its first nationwide feed-in tariff ("FiT") for solar photovoltaic development in an effort to boost China's domestic solar industry and to increase the share of solar power in China's energy portfolio. The FiT has been warmly received by project developers and project lenders, and is expected to significantly incentivize the healthy development of China's solar power industry.

Before the first nationwide FiT for solar projects was announced, the Chinese government had sponsored two rounds of public tender for solar powered projects since 2009. The bid price of the auctions was much lower than some solar industry participants had expected, and energy power companies and private solar equipment suppliers were discouraged from investing in China's solar market. With a dampened financial incentive, project developers in China could barely break even, let alone get a decent investment return. Likewise, Chinese manufacturers have been putting pressure on Chinese government policy makers for better incentives since Italy and other European countries—which until recently had been the largest customers of Chinese solar panels—drastically cut subsidies for solar power and capped

future increases. With the adoption of an attractive pricing structure, the new FiT system will go a long way to spur investment at home in the solar sector and improve the outlook for Chinese PV manufacturers, which already dominate the global market for solar equipment.

*View the full Fall 2011 U.S. China Quarterly Market Review for a detailed analysis on the design of China's solar feed-in tariff policy and its implications for the solar industry in China. The China Policy section is authored by Milbank.*

### CHINA FINANCE WIND POWER IN CHINA: SIGNS OF INDUSTRY MATURATION

In 2010, with approximately 42 GW of installed capacity, China overtook the U.S. to become the global leader in the "wind race." The momentous growth of the Chinese wind industry has been underpinned by substantial government support, low-cost financing and a favorable policy environment. However, as China's wind industry matures, it faces a number of developments and challenges, such as interest rate hikes, uncertainty over the Clean Development Mechanism income, and grid bottlenecks. While these difficulties may temper the growth rate of wind power capacity, both Chinese wind developers and the Chinese government are taking steps to overcome them. Industry trends indicate an outlook

of sustained industry growth, and China is expected to continue to maintain its global market dominance in the wind industry.

*View the full Fall 2011 U.S. China Quarterly Market Review for an analysis of how the finance and development of China's wind industry is being affected by uncertainty over CDM income, interest rate hikes, and grid bottlenecks. The China Finance section is authored by Taylor-DeJongh.*

### **CHINA MARKET FOCUS OPPORTUNITIES IN THE BIOFUELS AND SOLAR PV SUPPLY CHAINS**

In this political season, the scrutiny of Chinese and American collaboration and competition in the still embryonic but rapidly changing renewable energy industry has been distorted by sound bites and glib assertions.

The global solar industry is likely to show a 35% growth for 2011 with 19 GW of installations projected. In addition, the pipeline of planned installations is 17 GW, providing a significant cushion into any potential economic disruptions in 2012.

The sharply declining cost of solar cells and panels is hurting manufacturers while creating a significant profit improvement for developers.

The missing piece for developers is finance: federal and state funding slowed down in 2011 although tax credits

were preserved to offset project costs. A convenient marriage of American labor for installation, operations and maintenance with Chinese goods and finance will allow for a temporary boost in solar installations in the U.S. To retain their market share, Chinese manufacturers will be required to move manufacturing to the U.S. to maintain supply chain management, creating attendant jobs in the industry.

The biofuels sector presents a different set of challenges. The sector is even more embryonic, requiring development capital and additional capital investments due to the likelihood of a multi-year commercialization process.

The need to invest over \$3 trillion in foreign exchange reserves provides significant incentive to Chinese planners to provide project finance and development funds to a sector that is perceived as equally strategic to both the U.S. and China.

The massive development effort being undertaken in both countries to achieve "gasoline parity" and to create scale entails a quartet of technology approaches. The industry must use a combination of American innovation and Chinese capital to create development test beds for biofuels in both countries and to achieve scale.

*View the full Fall 2011 U.S. China Quarterly Market Review for more information on solar PV and biofuels supply and value chains. The China Market Focus section is authored by Oryx Investments.*

# EXECUTIVE SUMMARY

## US-CHINA COLLABORATION UPDATE

Although the anti-dumping petition filed by U.S. solar manufacturers could potentially be an iceberg for future collaboration between the U.S. and Chinese solar industries, the third quarter of 2011 saw marked progress in project development, financing, technology advancement, and government and private sector partnerships between the U.S. and Chinese renewable energy sectors.

*View the full Fall 2011 U.S. China Quarterly Market Review for further detail on private sector and government collaboration between the U.S. and China and a listing of significant collaborations between U.S. and Chinese companies that are driving forward renewable energy development.*



*Increasing understanding of the U.S. and Chinese renewable energy markets and fostering public and private sector partnerships.*

QUARTERLY MARKET REVIEWS

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