



US-CHINA QUARTERLY MARKET REVIEW

SUMMER 2011



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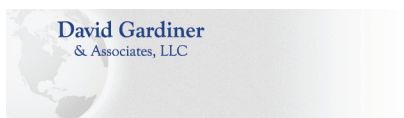
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US-CHINA PROGRAM

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 Summer 2011 US-China Quarterly Market Review (QMR).



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U.S. MARKET REVIEW

■ U.S. MARKET FOCUS: SOLAR LEASING CHANGING THE MARKET IN AMERICA

The stand-out development in the U.S. residential solar market in Q2 2011 was the rise of third party financed systems to the majority share of that segment. In other words, solar leases and residential Power Purchase Agreements (PPAs) now constitute as much as 50% of all home solar systems being sold and installed in the United States. It is hard to know exact numbers due to the lack of public data, but in California—which is still the largest market in the U.S. by a significant factor, and where the California Solar Statistics are transparent—third party financed solar is rapidly ramping to dominate the market.

In 2007, third party financed systems constituted 2% of sales in California; in 2010 they were 22%; and so far this year they are more than 33%, with Q2 showing 50% of sales. These sales are being made by a handful of companies offering third party ownership and financing options to residential customers. The prominent companies are Sungevity and SolarCity, which sell directly to customers in up to a dozen states, and SunRun, which finances the sales of over a dozen other sales and integration firms in nine states across the country. In fact, SunRun claims to finance a million dollars worth of installations each day.

Solar leasing and residential PPAs offer customers a convenient, no money down, “pay as you play” way to go solar. As the cost of hardware has plummeted and the economics of solar electricity become more attractive, third party financed solar is a very good move for many Americans. The cost of electricity coming out of these systems is competitive with the residential rates many Americans pay now, and the Department of Energy projects that by 2015 two-thirds of Americans will be better served by solar electricity through such payment plans than grid electricity supply.

BOOMING MARKET

Future energy historians might well write that the major development in solar energy in the first part of this century was not related to the technology at all, but rather to the financial innovations that have made it more accessible to the general public.

Of course, the growth of the solar leasing model comes in the context of a growing market that may soon be the world’s largest. According to new reports from IHS iSuppli, U.S. photovoltaic (PV) installations will jump 166% in 2011 to 2.4 GW, doubling the 80% growth seen in 2010. California is leading the way. The Golden State

will install just under 1 GW this year (967 MW), almost four times as much as the second solar state, New Jersey (260 MW). But the Northeast and Mid-Atlantic states are fast becoming a focus for solar development as the other big markets in the U.S.

In some ways, the rise of the third party financed system sales can be celebrated as a key success of the California Solar Initiative (CSI). Back in 2006–2007, when then Governor Schwarzenegger was putting billions into a rebate program, one of the goals, aside from one million solar roofs or 3 GW of installed solar, was “New Business Models” to promote the mass adoption of solar in our society. With some plucky financial engineering of the best kind, a capital structure was created that allows leasing of systems to end users even at the small end of the residential scale.

The financial product behind solar leases and PPAs is a complex beast that will not be explained here, but, suffice it to say, it monetizes the rebates or renewable energy credits (RECs) that states offer to meet their renewable portfolio standards (RPSs) and other clean energy goals, as well as the tax credit and depreciation values afforded by the Federal Government in an effort to support solar uptake. It is a similar process to forming project finance funds for larger systems—in this model, the aggregation of hundreds of smaller systems looks to the financier much like a megawatt installation. Taking the conceptual leap is what is needed.

This is unleashing a whole new market that will only continue to grow, as it is meeting a felt need of people all across the country. In a poll commissioned by Sungevity in July 2011, mainstream Americans expressed the need for this solution:

- ▶ Only about 1 in 4 U.S. adults (27%) are aware that homeowners can lease residential solar power instead of buying solar panels; in the Northeast it is higher (34%) but...

- ▶ More than 3 out of 4 U.S. adults (78%) believe their state should make more of a commitment to solar power; in the Northeast more than 4 out of 5 agreed (82%)
- ▶ About 3 out of 4 U.S. adults (74%) who do not already have solar power for their home say they would be more likely to install solar if they could take advantage of rebates; in the Northeast it is the same (76%)
- ▶ About 7 out of 10 U.S. adults who do not already have solar power for their home (71%) say they would be more likely to install solar if it saved 15% or more on their monthly energy bill; in the Northeast it is the same (76%)
- ▶ About 3 out of 4 U.S. adults (71%) who do not already have solar power for their home say they would be more likely to install solar if there was a hassle-free way to incorporate solar power into their home; in the Northeast it is the same (75%)
- ▶ Just over half of U.S. adults (52%) who do not already have solar power for their home say they would be more likely to install solar if they could make lease payments on solar power; the amount is slightly higher among Northeasterners (58%) who are more likely than Midwesterners (42%)

In brief, the solar lease allows the customer to take advantage of tax credits and rebates or local REC schemes without the pain of the paperwork, which is taken on by the third party owner of the system. In most cases, customers save money on their electricity bill over the life of a solar lease, and, with Sungevity, a significant majority even save money from the first month of their new solar electricity supply contract. The solar lease removes the hassle factor because a third party owns the system and is responsible for its performance; the third party is on the hook for production and will maintain the system as needed. In other words, the solar lease meets the customer’s need.

WHAT IT MEANS

Contrary to general sentiment regarding the U.S. economy, it is an exciting time to be delivering solar electricity to middle Americans. The numbers are growing in a way that exponential curves can develop, with a snowball of customers spreading the word that this is a great way to save money on electricity bills and do the right thing for the country and the planet. Solar leasing reduces the friction of capital cost upfront, which has been the biggest barrier to the adoption of solar as a residential solution, and so speeds the snowball downhill.

Political will to get behind this momentum is growing too, because companies like Sungevity are creating the jobs in marketing, selling, financing, installing and maintaining these solar homes. These jobs are many times greater per unit of electricity generated than fossil fuel power sources and even utility scale solar and wind

projects, and they are jobs that cannot be outsourced. It will be interesting to see how quickly financed solutions—monetizing feed-in tariffs but looking much like a lease to the customer—will grow in European markets in 2011-12.

Finally, the suppliers of component parts of these solutions should take heart that the sale of the *service* of solar electricity—which is what is sold with a solar lease, more than a bundle of hardware—is rapidly expanding the market for their products. To date fewer than 200,000 homes in the U.S. have gone solar, but the total addressable market is between 40 and 70 million homes (depending on credit score and other requirements), for whom it would be economically rational to buy solar electricity over their grid supply. The sky is the limit for simple, third party financed solar solutions for homeowners today.

■ U.S. POLICY: ELECTRIC TRANSMISSION POLICY

OVERVIEW

The renewable energy industry is poised for a major lift, from newly announced reforms to regulations governing how to plan and pay for expansions and upgrades to America's aging and fragmented electric grid. These regulations promise to rationalize and accelerate the process for building infrastructure to connect vast, yet remote and largely untapped renewable energy resources to customers. Insufficient transmission is one of the most onerous barriers to the development of new renewable electricity generation. The broken transmission planning process has kept renewables out of the market for too long, preventing customers from accessing cleaner and lower cost electricity. This costly and unfair roadblock has prompted the Federal Energy Regulatory Commission (FERC) and regional transmission planning authorities to adopt new rules that should be welcome news for both project developers and ratepayers.

This section offers an overview on how updated transmission regulations will accelerate the market integration of renewable energy resources, provides examples of recently approved renewable energy transmission lines, and includes a brief discussion on the progress and ongoing challenges in regulations enabling the construction of transmission lines to utilize the nation's renewable energy resources.

SHIFTING RENEWABLE ENERGY GROWTH TO THE NEXT GEAR

Renewable resources are the fastest growing sources of new electric generation in the country. In the first quarter of 2011, grid connected solar photovoltaic (PV) installations grew by 66% from 2010 (an additional

252 megawatts (MW)).¹ In addition, 31% of total new generation capacity in the United States will be for non-hydropower renewable energy—compared to 11% for coal and 3% for nuclear.²

Two main factors are driving this explosive growth: the falling costs of renewable energy technologies and expanding public policy requirements. Ernst & Young predicts the price of solar PV panels will drop to \$1 per watt by 2013.³ In addition, over half the states have already enacted some form of a Renewable Portfolio Standard, many with ambitious targets and timetables over the next decade.

Unlike fossil fuels, renewable energy depends on transmission lines to reach customers. Just as orange growers in Florida and potato farmers in Idaho rely on the interstate highway system to get their products to customers, wind, solar and other renewable energy developers need high voltage transmission lines to enter the electricity market. Some of America's best renewable resources—wind in the Great Plains and solar in the Southwest—are far from population centers where electricity is consumed. New high voltage transmission lines are essential to integrating the renewables needed to meet the growing demands of consumers and public policies.

Unfortunately, the system for planning, paying for, and building high voltage transmission lines is broken and still reflects the power demands of 50 years ago. The grid was not built to accommodate distant sources of renewable energy, and the balkanized and burdensome processes for building transmission have severely limited development of these resources:

1 www.seia.org/cs/news_detail?pressrelease.id=1418

2 Energy Information Administration, "Annual Energy Outlook 2011", p. 74, <http://www.eia.gov/forecasts/aeo/pdf/0383%282011%29.pdf>

3 <http://www.guardian.co.uk/environment/2011/jun/20/solar-panel-price-drop>

- ▶ At the end of 2009, 300,000 MW of domestic wind energy potential was available, roughly 9 times the amount of actual installed wind capacity at the end of 2009.⁴
- ▶ In the beginning of 2009, California alone had 13,000 MW of wind and 30,000 MW of solar waiting to connect to the grid.⁵

FERC has recognized the need to modernize the grid to meet state regulations, utility goals, corporate renewable energy targets, and changing consumer preferences. On July 21, 2011, FERC issued Order 1000 to create a new framework that will help electricity providers, regulators, customers, and other interested stakeholders to plan and pay for transmission upgrades that will expand renewable energy development across the country.

ORDER 1000—WHAT THIS MEANS FOR THE RENEWABLE ENERGY INDUSTRY AND RATEPAYERS

By addressing longstanding barriers to transmission infrastructure, FERC Order 1000 will provide renewable energy investors and project developers with greater regulatory certainty and ratepayers with greater access to affordable renewable energy. At 600 pages, Order 1000 is not concise, but its most important provisions are easy to summarize:

PLANNING⁶

- ▶ All public utility transmission providers must participate in a large scale regional transmission planning process—including inter-regional coordination—ensuring that renewable energy infrastructure needs are addressed in a timely fashion in every region of the country.
- ▶ Planners *must* consider transmission needs driven by public policy goals, like Renewable Portfolio Standards (RPS).

- ▶ Planning must be open to stakeholders, be transparent, and consider cost-effective alternatives to meeting regional needs.

COST ALLOCATION⁷

- ▶ Regions must develop a cost allocation formula for facilities selected in the regional plan. Linking planning to cost allocation gives planning real meaning for investors and developers—planning will no longer be a “paper exercise.”
- ▶ Only ratepayers who benefit from transmission projects have to pay for them—those who do not benefit do not have to pay. Transmission developers get protection from “free riders”; ratepayers won’t finance facilities that do not help them.
- ▶ Regional cost allocation formulas cannot require that regional projects be paid for by the requestor—a.k.a. participant funding—ensuring that renewable energy developers will not bear the full costs of new transmission.

Order 1000 will protect ratepayers from inflated costs by ensuring that states and utilities with renewable energy mandates are able to access the most cost effective and economically competitive renewable resources. As such, FERC is upholding its statutory duty under the Federal Power Act to protect ratepayers from unjust or unreasonable electric rates.

SUCCESSFUL REGIONAL TRANSMISSION PLANNING—OPENING MARKETS TO RENEWABLE ENERGY

FERC’s rule builds on recent efforts by Regional Transmission Organizations (RTOs) to expand and strengthen transmission planning in response to state and federal policies. These actions helped lay the groundwork for FERC’s rule.

4 AWEA Wind Power Outlook 2010, pages 3-4

5 AWEA—SEIA, “Green Power Superhighways: Building a Path to America’s Cleaner Future”, February 2009, p. 6

6 <http://www.ferc.gov/media/news-releases/2011/2011-3/07-21-11-E-6-factsheet.pdf>

7 Ibid. at

MIDWEST INDEPENDENT TRANSMISSION SYSTEM OPERATOR (MIDWEST ISO)

This past fall, the Midwest ISO (a regional transmission organization covering portions of twelve states in the Midwest), filed a regional transmission cost allocation plan with FERC, which was later approved. The plan, called the Midwest ISO “Multi Value Project” (MVP) plan, establishes a set of transmission priority projects to address reliability and renewable energy needs. Projects deemed MVPs have their costs spread throughout the Midwest ISO footprint for each state proportionate to that state’s energy demands. The approval of MISO MVP has already benefited major renewable energy transmission projects reflecting unique regional and individual state needs, such as:

- ▶ **Michigan’s “Thumb Loop Project”:** The project connects Michigan’s best wind resources to high demand areas, reducing costs of complying with the state RPS. The line also relieves congestion that costs ratepayers millions every year.
- ▶ **South Dakota-Minnesota “Brookings Line”:** The line will connect wind from South Dakota and Western Minnesota to the Minneapolis-St. Paul metropolitan area.

SOUTHWEST POWER POOL

Last summer, FERC approved the regional cost allocation plan submitted by the Southwest Power Pool (SPP), which covers the wind rich Great Plains and Texas Panhandle. SPP’s so-called “Highway-Byway” plan allocates costs based on voltage. For the largest lines generating the broadest benefits—those over 300 kV—costs are allocated across the entire region; costs of smaller lines are shared among smaller groups of ratepayers.

- ▶ **Kansas Electric Transmission Authority Project:** A new high voltage transmission line that will free up almost 3,000 MW of wind generation between Kansas and Nebraska.⁸
- ▶ **Kansas V-Plan, Oklahoma-Kansas-Texas:** A new high voltage transmission project that will deliver 2,500 MW of wind resources from these states to the grid.

BEYOND RULE 1000: HURDLES REMAIN FOR TRANSMISSION INFRASTRUCTURE SITING

Despite major breakthroughs at the federal and regional levels regarding planning and cost allocation, siting remains a serious source of cost and delay. Each state has veto power over the construction of transmission lines, magnifying risks for multi-state lines to reach renewable energy. At the federal level, agencies like the Department of the Interior (DOI) and the Bureau of Land Management (BLM) are taking steps to improve coordination and expedite approvals for siting renewable energy projects and transmission lines on federal lands.⁹ These reforms are especially important in the solar and geothermal rich remote areas of the West.

DOI and BLM will continue to use their regulatory authority over public lands to expedite the siting transmission needed for renewables on appropriate public lands. By July 2011, DOI and BLM had already designated 19 priority renewable energy projects, including:

- ▶ Abengoa Mojave Solar, California, which will develop 250 MW of accessible new solar generation capacity and 17 miles of transmission on public lands.¹⁰
- ▶ Devers-Palo Verde No. 2 Transmission Line project, Nevada-California, a 500 kV line that will enable the integration of up to 3,600 MW for numerous solar energy facilities in California and Nevada.¹¹

8 http://www.eei.org/ourissues/ElectricityTransmission/Documents/TransprojRenew_E-M.pdf

9 http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/priority_projects.html

10 <http://www.renewableenergyworld.com/rea/news/article/2011/07/4-major-u-s-projects-get-federal-approval>

11 *ibid.* at

LEGISLATIVE AND LEGAL CHALLENGES

Despite progress on the regulatory front to accelerate renewable energy transmission development, recent legislation introduced by Senators Corker (R-TN) and Wyden (D-OR) would strip regions of their ability to address regional transmission needs for renewable energy development by imposing a new and unprecedented cost-benefit test on regional cost allocation.

State barriers also exist. Earlier this year the Wyoming state legislature enacted a moratorium on the use of eminent domain for low voltage interconnection lines for wind energy. In Nevada, the Governor vetoed legislation that would have allowed for an expedited process for renewable energy developers to export power to high demand markets in Arizona and California.

Finally, FERC Order 1000 itself faces legal and implementation challenges. Some incumbent utilities will likely file legal motions to stop or curtail implementation of the rule. Ratepayers and stakeholder will need to be educated about the benefits of transmission to ensure they do not oppose cost-effective investments in renewable energy infrastructure during regional planning processes.

Order 1000 is great news for the renewable energy industry and for ratepayers—as overdue transmission investments increase supply, improve reliability, and reduce prices. But even a dramatic reduction in the decade-plus timeframe for building new high voltage lines today will take several years to bear fruit. Supporters of renewable energy who can stay engaged in FERC’s new regional transmission planning processes will be rewarded for their perseverance.

■ U.S. FINANCE: RECENT TRENDS IN RENEWABLE ENERGY FINANCE

Renewable energy finance is going through one of its most exciting years. Federal incentives are in place and functioning, including the 1703/1705 loan guarantees, 1603 cash grant, Production Tax Credit (PTC), Investment Tax Credit (ITC), 100% bonus depreciation on solar energy projects, accelerated depreciation on all renewable energy equipment, and stimulus funding of research, development and deployment (RD&D).

However, there are dangers just ahead. The biofuels blender's tax credit and the import duty on Brazilian ethanol are on the chopping block. The 1705 loan guarantee program ends on September 30, 2011. The 1603 cash grant is set to end on December 31, 2011. The PTC for wind power is scheduled to sunset on December 31, 2012, and the PTC for geothermal, hydro, biomass and other renewable power plants will sunset a year later at the end of 2013.

The renewable energy finance sector is thus experiencing a boom today, but faces potential downdraft in 2012-14 if federal incentives are not extended. However, it is predicted that Congress will extend and renew some of these incentives, as there are now renewable energy projects and companies in nearly every Congressional district.

DEBT

One of the noteworthy positive trends in the U.S. market is the availability of debt capital for renewable energy projects. Interest rates are at a historic low, and loan terms are quite good, averaging 15 years in many cases.

Institutional investors are providing debt capital at interest rates in the range of 5-7%, maturing at 15-30 year terms. But this is not universally available to every project—quality and experience are still king when lining up debt capital. Also, not every investor has the necessary technical expertise to evaluate renewable energy projects.

EQUITY MARKETS

Sourcing equity capital for renewable energy projects continues to be the most challenging part of the equation. There are two types of equity capital in the U.S. market. The first is tax equity, which operates like debt. The investor supplies capital for the project, and receives a return via the PTC or ITC, a fixed return kind of capital. There are approximately 16-18 companies in the U.S. investing in tax equity today, and the total national capacity for tax equity is estimated by the U.S. Partnership for Renewable Energy Finance to be \$3-\$4 billion per year.

The second is cash equity, which is injected into the project in return for a cash return resulting from the profits of the project. In the period 2009-11, this has included a portion of the 1603 cash grant. Typically, if there is debt in a project, the lender will want some of the cash grant to pay down the debt. Also, equity returns depend greatly on the structure of the deal and the investor's role.

OVERALL PROJECT FINANCING

Project financing in the U.S. is becoming very sophisticated because many institutions, professional service firms, and individual bankers have amassed a great deal of experience and methods in order to create the most economically efficient project. The task is to deliver the lowest cost of capital to the project, while assuring repayment of debt and an attractive rate of return to equity. The federal and state incentives that have made this possible are expiring, and so too may the methods of project finance also change in years ahead.

WIND POWER FINANCING

According to Bloomberg New Energy Finance (BNEF), \$3.7 billion in new asset financings occurred last quarter, which is a direct result of the extension of the 1603 grant.

Citigroup has arranged the financing of some of the largest wind farms in the U.S., including Shepherd's Flat in Oregon and the Alta Vista units in Southern California, each over \$1 billion. These large projects utilized a multiple flip structure that optimized every conceivable incentive over time. This type of intricate structure is arranged so that various equity investors are able to most efficiently absorb the tax benefits, cash flow, and/or reported earnings of the project over its life.

SOLAR THERMAL ELECTRIC FINANCING

Large solar thermal electric generation (STEG) projects have received federal loan guarantees to create the right investing environment. The returns on equity were made quite attractive because risk mitigation, provided by the guarantee, reduced the cost of debt to 4-5%. This is compared to an industry standard of 7-9% normally provided under commercial financing terms. The guarantees created a 4:1 debt-equity environment with favorable financing terms, which drove down the cost of capital.

SOLAR PV FINANCING

The financing of solar PV projects continues to differ by sector. The exciting development this year has been in the financing of residential rooftop PV. Citigroup has just completed two investments of \$100 million each to two solar installers that will use the funds for lease financing of the installations. Others such as PG&E, U.S. Bank and Union Bank, among others, have likewise advanced blocks of capital to these markets.

Commercial PV financings have become quite sophisticated under two available financing structures: leasing and Power Purchase Agreements (PPA). An example of this sophistication is present in an emerging financing structure: the securitization of residential solar leases. Under this structure, a special-purpose entity issues securities backed by payments on the underlying leases, potentially by the residual value of the leased solar assets. Securities would be made available

to institutional investors at scale in order to reduce financing costs and increase capacity for residential solar firms. Utility-scale PV projects are now becoming prevalent in the market. Large scale projects like these are driven primarily by tax equity and allocation of the depreciation benefits.

GEOHERMAL POWER FINANCING

The financing of geothermal projects continues to be challenging. The exploratory drilling process must leverage high interest rate debt that mirrors this high risk section of the industry. Subsequently, power plant financing is arranged after the project numbers have been realized and vetted. The obstacles are being overcome by firms like U.S. Renewables Group and others, who are developing the expertise necessary for efficient geothermal power financing.

BIOMASS POWER AND GAS FINANCING

It is well known that biomass projects are not always "bankable" because of the feedstock supply risks. An exciting development this year is the U.S. Department of Agriculture's loan guarantee program for biomass power, biogas and biofuels projects. This is a good public policy, addressing a key market issue with an effective program.

CAPITAL MARKETS

The renewable energy industry gets equity capital from the stock markets and, on occasion, taps the debt capital markets for further funding.

The equity markets are experiencing an exciting amount of Initial Public Offerings (IPOs) and secondary raises of capital for companies that are already public. This has especially been a hot trend in the advanced biofuels and biochemical industry, which has seen multiple companies going public.

The renewable energy industry still faces several challenges in continuing this growth. Investor concern has been focused around thinning margins in both the

wind and solar sectors. Manufacturers in both sectors are being presented with overcapacity that is creating a downward price trend cascading down the value chains.

In regard to the solar sector, cell and wafer manufacturers are continuing to take the brunt of margin pressure, which could entice further vertical integration within the sector. With the economic recovery taking hold, and the continued growth of renewable energy markets around the world, vertically integrated players are poised to increase their market share by capitalizing on a few of the pure-play cell and wafer manufacturers, despite improved sector activity.

GLOBAL PERSPECTIVE

Renewable energy project financing, which has always focused on local financial conditions and incentives, has become increasingly global. Through the transfer of project finance techniques between markets, banks and deal attorneys, players are taking advantage of opportunities that exist around the world. Market risk continues to be the underlying variable, where the credit worthiness of the off-taker and the stability of the political environment are at the forefront of deal conversations. Successful public policies, like the German feed-in tariff, have proven to be powerful magnets for growing renewable energy markets and are beacons to achieve scale in the renewable energy industry.

CHINA MARKET REVIEW

■ CHINA MARKET FOCUS: NUCLEAR AND RENEWABLE ENERGY ACTIVITY POST FUKUSHIMA

China's 12th Five Year Plan (12FYP), adopted in March 2011 for 2011–2015, seeks to restructure the Chinese economy by encouraging domestic consumption, shifting to higher value-added manufacturing, conserving energy, cleaning the environment, and more aggressively developing the country's service sector. Three key aspects are: (1) a focus on scientific development, (2) building transportation and energy infrastructure, and (3) investing in seven "strategic emerging industries," which are energy savings and environmental protection; new energy (nuclear, solar, wind, and biomass); electric vehicles; biotechnology; information technology; new materials; and high value-added manufacturing.

AGGRESSIVE CLEAN ENERGY AND CARBON REDUCTION GOALS

In light of the elements within the seven strategic emerging industries, it is no surprise that the 12FYP devotes considerable attention to specific goals in the energy, climate change and environmental areas.

The plan's highlight is a "restricted" (i.e., mandatory) target to increase use of non-fossil fuels to 11.4 % of total energy use by 2015, with a goal of 15% non-fossil generation by 2020. In 2010, non-fossil energy was 8.4% of total energy. Non-fossil energy in the plan includes nuclear, hydro, wind, solar, and biomass. Among the

specific targets is a requirement to install 70 gigawatts (GW) of additional wind capacity by 2015, which is even higher than a 2020 target discussed just a few years ago. A cap has also been placed on total electricity generation from coal. As noted further below, China attempts to rely heavily on the continued development of hydropower and the massive increase of its nuclear program as sub-strategies to achieve the 2020 goal.

The decadal non-fossil energy target is an ambitious goal. To meet it by 2020, as Trevor Houser of Rhodium LLC points out, China will have to add 320 to 480 GW of "new energy" capacity, likely to be one-third to one-half of all such new capacity installed in the world. "Even if they get half-way there," Houser says, "this will transform, fundamentally, the global market for clean energy technology," changing price points and the relative economics of low-carbon vs. higher-carbon energy throughout the world.

Another goal of the 12FYP is to improve energy efficiency (consumption per unit of GDP) by 16% by 2015. The last FYP targeted a 20% improvement in energy efficiency and was substantially achieved (19.1% between 2006 and the end of 2010). However, some drastic measures were required in 2010 to approach that goal, including rolling brown-outs and last-minute closure of numerous coal plants. A great deal has undoubtedly been learned in the last five years about

improving efficiency, but much of the “low-hanging fruit” has probably already been picked by the closing of the largest and least efficient generators. One technique for meeting the 2010 goal was the use of the “Top 1,000 Program,” which focuses attention on the biggest energy users (33% of the country’s total), and the 12FYP will also institute a “Top 10,000 Plan.”

The 12FYP also targets a 17% reduction in carbon intensity and the “gradual establish[ment] of a carbon trade market.” This could be accomplished by focusing on several cities and/or provinces and one or more sectors (and could include only state-owned enterprises initially). The Tianjin Climate Exchange (owned by the Chicago Climate Exchange) is poised to trade these carbon credits.

All told, resource and environmental/energy goals account for 33.3% of the total goals in 12FYP compared to 22% in the 11th Five Year Plan.

HOW WILL CHINA ACHIEVE ITS GOALS?—FINDING A WAY TO BALANCE SAFETY, SECURITY AND SPEED

While the 12FYP establishes ambitious targets, China has a history of achieving or coming close to meeting its FYP objectives. For a city, provincial, or major industrial official, career advancement is tied to meeting plan goals—good performance merits advancement to higher-ranking party posts, while disappointing results lead to a side-tracked career.

Despite recent acknowledgement of errors (or at least serious issues) in China’s hydropower growth, including public acknowledgement of problems with the Three Gorges Dam, the country needs and plans to continue to develop hydropower quite aggressively. This is even more true of nuclear power. Although China’s ambitious plans for the expansion of the nuclear power sector are currently on pause, with an announced freeze on approval of new plant permits, senior officials have put out the word that the overall program will proceed more or less as planned, although perhaps at a slightly more cautious pace. Currently, China has at least 28 plants

under construction or permitted. With approximately 17 GW of capacity operating or under construction, China’s original pre-Fukushima targets were to achieve 40 GW of installed capacity by 2015 (producing at least 25–28 GW of production), and recent targets included 70 GW by as early as 2020. This is by far the most ambitious program of any country in the world, and it is on par with what the U.S. was doing in the 1960s and 1970s prior to Three Mile Island.

Under the 12FYP, by 2015, China could be constructing more than 50 nuclear plants. Planned designs range from indigenous versions of Generation II reactors, not too advanced from old U.S. operating reactors; Generation III and III plus reactors, such as the Toshiba-Westinghouse AP 1000; and at least one advanced Generation IV plant, a 220 MW gas cooled high temperature pebble bed reactor. This passively-safe design is about to begin construction at Tsinghua University in a partnership with the Huaneng Power and China National Nuclear Corporation (CNNC), which has traditionally been the biggest force in the country’s nuclear program. China’s other leading nuclear developer, China Guangdong Nuclear Corporation, built the first reactors at Daya Bay that supply power to Hong Kong.

After an internal dispute several years ago, a decision was made to pursue indigenous designs and to purchase foreign designs concurrently. Accordingly, the Chinese are buying plants from France, Russia, and Japan. China’s ultimate goals are to move toward a program that exclusively uses indigenous designs and to become a major exporter of nuclear technology to other countries. For example, one reason Westinghouse (Toshiba) won a competition to sell four AP-1000 reactors to China is because it promised, at the end of the bidding process, to effectively turn over its intellectual property and operating know-how to the Chinese owner-operator.

China has no nuclear safety law. Drafting such a law began in 1984, but the law was never completed. Near the end of 2010, another effort began and was endorsed by the State Council in early 2011. The target date for completion is the Fall of 2011. However, as the

commercial nuclear program has moved out from under the umbrella of military/national security ministries, significant power centers within the government (represented by different competing ministries) are vying for a lead role in administering, and therefore regulating safety of, the nuclear program. The Ministry of Industry and Information Technology (MIIT), a powerful agency that houses the China Atomic Energy Authority, has traditionally played an important role in the entire nuclear program. The Ministry of Environmental Protection (MEPA) is a newer and less powerful ministry, but its clout is growing. MEPA contains the National Nuclear Safety Agency (NNSA), which is the closest thing China has to the U.S. Nuclear Regulatory Commission, but NNSA has fewer than 1,000 employees and traditionally has exercised little comprehensive oversight. Of greatest importance, the National Development and Reform Commission (NDRC), the most powerful government entity that directs overall Chinese economic strategy, currently makes most of the final decisions on whether a reactor can be built, where, by whom, and what design—and it is not clear that the NDRC's Nuclear Energy Agency will easily surrender these authorities.

Thus, it seems unlikely that China will soon have a nuclear safety law or a single independent nuclear safety agency. Moreover, the same problems of allocating authority have prevented promulgation of an Energy Law governing overall energy regulation in China. When and if such a law is passed, it could supersede or alter the Nuclear Energy Law.

Looking ahead, China has placed a heavy emphasis on developing an indigenous design for a “fast breeder” reactor and sharply increasing the number of such reactors built after 2020 or 2025. The motivation appears to be nuclear fuel security—China has little uranium, and the fast breeder produces additional useable fuel, including plutonium. An experimental 20 MWe fast neutron reactor is being planned with Russian help at the China Institute of Atomic Energy near Beijing. Design work for two commercial 800

MWe sodium-cooled fast neutron reactors began in 2009 and construction was expected to begin August 2011. The U.S. and other countries largely backed away from fast-breeder reactors for two reasons: operational difficulties and non-proliferation concerns about the risks of producing large amounts of weapons-grade plutonium. It is conceivable that China may reconsider its fast-breeder strategy if it is able to purchase long-term uranium supplies (as it is currently attempting to do) from sources such as Russian, Australia, and Botswana, and to improve its reprocessing technology.

A two-day workshop in late June held in Beijing was co-sponsored by the Natural Resources Defense Council (NRDC), Stanford and Peking Universities, several Chinese nuclear associations, Covington & Burling LLP, and Exelon. The workshop heard strong support from Chinese and western participants for development of a “safety culture” in the Chinese program, that is not likely to be erected by governmental regulation alone. A first step in this direction would be the formation of a Chinese version of the Institute of Nuclear Power Operations (INPO), formed in the U.S. after Three Mile Island by owner-operators to formulate best practices, self-police, and peer-audit each others' facilities. This step has greatly increased safety and operational efficiency in the U.S. nuclear program, arguably contributing more than NRC regulation. A second step is closer cooperation between China's operating companies and two important international agencies: the International Atomic Energy Agency (IAEA) and the World Association of Nuclear Operators (WANO). WANO, an international version of INPO, was formed after Chernobyl, and every nuclear plant operator in the world is a member.

Even if China realizes its 70 GW 2020 goal, nuclear will still only be producing less than 6% of China's total power output. The most ambitious expansion of the program envisioned up to 2030 would not likely increase that figure to more than 8%. Nonetheless, China continues to view nuclear as a critical part of its low-carbon energy future.

■ CHINA POLICY: DEVELOPMENTS IN FOREIGN INVESTMENT POLICY-MAKING BENEFITING CLEAN ENERGY COMPANIES BACKED BY FOREIGN INVESTORS

China's foreign investment policy-makers are in the process of updating the "*Foreign Investment Industrial Guidance Catalogue*" (the "Catalogue"), a catalogue of China's industrial sectors categorized by different foreign participation restrictions. The National Development and Reform Commission ("NDRC") publicized a draft of the Catalogue (the "2011 Catalogue") in April 2011 to solicit public comments. The 2011 Catalogue is expected to facilitate further opening-up of the new energy industry¹ to foreign investment. In this article, we provide some background about such developments, with a view to provide a context for the recent policy-making shift in the new energy sector that we anticipate to impact the business models of foreign-participated industry players.

BACKGROUND OF THE 2011 CATALOGUE

The updating of the Catalogue is believed to be driven by two policy considerations:

As the first and foremost policy consideration, Chinese authorities have accelerated opening the high- and new-technology sectors across the board. In early 2010, China's State Council issued *Several Opinions on Optimizing the Utilization of Foreign Investment* (the "State Council Opinions") to set in motion a chain of policy adjustments to encourage more foreign investments in the new energy and energy conservation sectors. In the meantime, the heyday of the "Two Highs and One Resource"² enterprises, i.e. the resource-dependent sectors, will become history because of

various levels of policy modifications geared toward discouraging foreign investment in these sectors.

The Catalogue is a set of guidelines issued by NDRC and China's Ministry of Commerce ("MOFCOM") used in assessing the advisability of granting market entry of foreign investment to companies in various sectors. It breaks up industrial sectors into three general categories: Encouraged; Restricted and Prohibited.³ The sectors not identified in the Catalogue are considered as "Permitted". The current version was updated in 2007. The 2011 Catalogue evidences the attempt to conform the existing intricate system restricting foreign investment into the market to the dynamically changing macro policy-making climates to permit or even promote foreign investment in some sectors.

To date, the updating of the Catalogue has consisted of responses to the phased opening of an increasing number of sectors to foreign investment.

Vertically, the Catalogue would be amended to "upgrade" certain industrial sectors from the prohibited/restricted category to the restricted/encouraged/permitted categories. For example, the 2007 Catalogue upgraded the power grids operators from the Prohibited to the Restricted Category, and the 2011 Catalogue upgraded the distribution and importation of books, newspapers and journals from the Restricted to the Permitted Category. Such upgrading processes tended to be in sync with China's implementation of its

1 There is no official definition of "new energy" in the government publications. China's "Twelfth Five-Year Plan" covers under this concept all clean energy and alternative energy sectors covered under China's Energy Law (Draft).

2 "Two Highs" refers to high-pollution and high-energy-consumption and "One Resource" stands for resource-dependency.

3 The Catalogue provides categorical guidelines to the approval authorities to make detailed policies about the foreign investment limits, approval procedures and other market entry thresholds as the different treatments between the Categories. In general, the Restricted Category is the one where foreign investors may expect to encounter more market entry restrictions, such as the requirement of setting up a joint venture with Chinese investors, a foreign investment percentage limit, the central versus provincial level of approval requirement, higher investment requirements, etc. In the enterprise income tax regime prior to 2008, companies in the Encouraged Category also enjoyed certain tax holidays not available to companies in other categories. There are also tariffs and import VAT tax holidays on imported equipment available to companies in the Encouraged Category.

WTO commitments. *Horizontally*, certain restrictions applicable to a restricted category would be relaxed quantitatively and/or qualitatively. Typically, this would be achieved through decentralization of the approval authority from the central authority to its local level counterparts or the lowering of the total investment threshold applicable to the sector. In the new energy area, the 2011 Catalogue in effect created a new updating model by creating certain subcategories under the Encouraged Category that had previously not been identified in the Catalogue. Examples of such new subcategories are: lightweight and environmental-protective aerospace and aviation materials, water reclamation plant, heavy metal wastewater treatment equipment, specialized equipment for car batteries, “critical” parts and components of new energy cars, renewable water plants, vehicle charging stations, car battery replacement stations and new generation IPv6 internet system equipment and applications.

As a direct response to the State Council Opinions, in February 2011, MOFCOM, the China regulator having primary authority for approval of foreign-invested enterprises (“FIEs”), decentralized the authority to approve FIEs to MOFCOM’s provincial offices if the total investment of an FIE does not exceed U.S.\$300 million (previously, U.S.\$100 million). Usually, a decentralization of approval authority would bring about a faster, more flexible and more streamlined approval process. Hence, in the new energy projects which are included in the Encouraged Category, a less clogged approval channel is to be expected.

AN EXCEPTION TO THE DEREGULATION TREND?

As a less pronounced but definitely not secondary policy consideration, the authorities also strive to enhance the competitiveness of certain domestic sectors. As a result, the 2011 Catalogue establishes a foreign participation limit with respect to the subcategory of “critical parts and components of

new energy cars” where foreign investors would be preempted from holding more than 50% of equity in any project. The foreign participation limit would be in place notwithstanding that this particular subcategory is a “high- and new-technology” sector. The policies underlying the seeming protectionism present in this subcategory would be perceived as discordant with the general trend of deregulating foreign investments in the new energy sector.

The “critical auto parts and components of new energy cars” sector would be a stand-alone subcategory in the 2011 Catalogue, under the “Encouraged Category—Transportation Equipment Manufacturing.” Although the qualifier “critical” is used, this subcategory literally runs the gamut of almost all the auto parts and components sectors that would make new energy cars technologically viable.

In addition to including some sectors which were not previously identified in the Catalogue, this subcategory integrated certain sectors previously found elsewhere in the 2007 Catalogue—Encouraged Category. As a result of their inclusion, certain encouraged subcategories would now be regrouped and subject to the restrictive 50% limit for the first time. Examples are certain types of traction batteries (previously only subject to the requirement of forming joint ventures with a Chinese party, i.e. up to 99% foreign investment permitted), anode battery materials (previously no limit), and automobile hydrogen storage system (previously no limit).

The foreign participation limit of 50%, if implemented retroactively, would lead to the reshuffling of the ownership structures across FIEs in the new energy car industry.

In the past 10 years, to the restricted-sector categorization, an alternative investment structure known as the “VIE” structure (also known as the “Sina model” or “captive structure”) seemed to be a response. “VIE”, or variable interest entity, refers to the use of a China-established special purpose vehicle,

usually organized as a wholly-foreign-owned enterprise (“WFOE”), to contractually control the portion of equity that cannot be directly owned by the foreign investor. Two issues that the VIE structure were intended to solve are inflow of foreign capital to the operating company and repatriation of operation proceeds overseas. Such cash flow must be backed by certain legally viable and arm’s length transactions. Auto companies are immensely capital-intensive, which would likely pose additional logistical and legal questions to the traditional solutions to the aforementioned issues.

NEW AMBIGUITY ON AUTO INDUSTRY

The 2007 Catalogue set forth in the Encouraged Category a subcategory of “final assembly of automobiles” while imposing a 50% foreign participation limit. The 2011 Catalogue removed this sector entirely, raising questions about whether this subcategory would now be treated as a “Permitted” Category.⁴ Thus, there is a question about whether the 50% foreign participation limit would be sustained, and whether this sector may benefit from the decentralization of approval authority of MOFCOM as now being enjoyed by the Encouraged Sector.

Lastly, below we would like to elaborate on some other significant areas, i.e., tax and exits. First, the policy-making for **industry-specific income tax incentives** has yet to see any momentum. In terms of creating more domestic **exits for foreign investors** from their new energy projects, there have been tangible developments.

STATE OF AFFAIRS WITH OTHER INDUSTRY-SPECIFIC INCENTIVES

Enterprise Income Tax Holidays: China phased out the dual tracks on enterprise income taxes (EIT) beginning in 2008 when the new Enterprise Income Tax Law

was issued. Since January 1, 2008, a unified enterprise income tax bracket of 25% became applicable to corporations across the board. Prior to 2008, foreign-invested “manufacturing enterprise” in the energy and transportation infrastructure sectors enjoyed a deducted enterprise income tax rate of 15%. Since January 1, 2008, such enterprises qualified for a transitional period where the 15% lower bracket would be phased out year by year, rather than immediately on January 1, 2008. Pursuant to the transitioning schedule, the tax bracket would become 24% in 2011 and 25% in 2012. Thus, starting in 2012, there would not be particular national-level industry-specific EIT tax holidays.⁵

Exits on China Stock Exchanges: China Securities Regulatory Commission (“CSRC”) issued *Guidelines on Optimizing the Sponsoring of Companies for IPOs on ChiNext* in March 2010. Pursuant to the Guidelines, the sponsors of listing companies should sponsor “with emphasis” the listing companies in the new energy, new materials, energy conservation, environmental protection and certain other high-tech sectors. The guidelines also provide that China domestic IPOs by qualified foreign invested enterprises should be supported.⁶ In fact, since ChiNext was launched in October 2009, we are aware of an increasing number of IPOs by FIEs backed by non-Chinese private equity firms or corporate investors. The industrial sectors of the listing companies seemed to have made a difference in how their IPO applications are received by CSRC.

CONCLUSIONS

The new EIT Law phased out the FIE tax holidays since 2008. In the meantime, since 2007 with the publication of the 2007 Catalogue, policy-makers have tightened approvals of resource-dependent companies. Thus, we

4 As a general rule, any categories that are not explicitly included in either “Encouraged”, “Restricted” or “Prohibited” Category are considered to fall under the “Permitted” Category.

5 At the province- and municipal-levels, there may be EIT tax holidays provided by the local authorities to incentivize solar companies to be established in the local industrial development zones. Such tax holidays do not have the effect of amending the EIT Law which does not provide for such incentives, but are usually granted through EIT refunds or fiscal stipends by the local governments.

6 Currently, there are uncertainties about the China domestic IPOs by FIEs that are majority-owned by foreign investors, due to the lack of clear guidance in the laws.

expect to see a reduction of FIEs which were driven primarily by these strategies.

In the meantime, international private equity investors who are looking at China more as a source of deal flow and diversified way of exits (ChiNext) may enjoy the multiplication of investment opportunities brought about by the additions to the Encouraged-Category sectors. To them, an “Encouraged” categorization of the sectors they are interested in means there will be fewer impediments in their flexible investment structuring. Some investors may still consider what is known as the “offshore” structure

to invest in China, which would allow them to set up an offshore holding company and convert the Chinese target to a wholly-foreign-owned enterprise.⁷ This structure would be viable with the Encouraged sectors where there is no foreign investment limit.

The 2011 Catalogue indicates the deepening of the policies in favor of the new energy sectors. In these sectors, we expect to see more private equity investment activity and opportunities with increased participation of international firms.

7 We note that there may be other regulatory impediments against such flexible investment structure, such as MOFCOM’s Regulation on Foreign Acquisition of Domestic Enterprises, issued in late 2006. However, for a sector to be included in an encouraged category would still mean there is greater flexibility to structure the investments.

■ CHINA FINANCE: VENTURE CAPITAL AND PRIVATE EQUITY CLEANTECH FUND STRUCTURES FOR CHINA INVESTMENTS

China’s economy is a rare silver lining in the world today, and policies to promote China as a world leader in the cleantech and renewable energy industry are attracting even more foreign investment in China.

Venture capital/private equity (VC/PE) firms are riding this new wave of foreign investment by establishing funds that are specifically dedicated to cleantech and renewable energy investments in China. This section will discuss some of the fund structures generally used and/or considered by VC/PE funds investing in Chinese cleantech and renewable energy companies.

OFFSHORE FUNDS

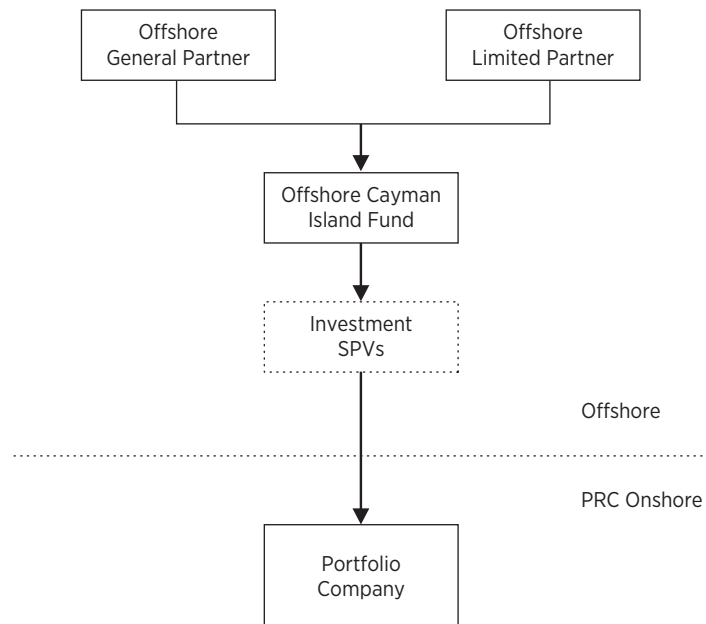
All foreign investments in China, including investments by foreign VC/PEs, are subject to approval according to investment policies set out in the *Catalogue for the Guidance of Foreign Investment Industries* (“Catalogue”). As described in the previous section, the Catalogue categorizes industries as either encouraged, permitted,

restricted or prohibited to foreign investment. Encouraged industries are industries in which the Chinese government would like to attract more foreign capital, technology and experience.

Cleantech and renewable energy have, in general, been encouraged under the Catalogue, and this policy has recently been reinforced by the “Catalogue of Guidance for Industrial Restructuring,” promulgated and put under effect on June 1st, 2011 by the Chinese National Development and Reform Commission (NDRC). The “Catalogue of Guidance for Industrial Restructuring” states that “new energy” investments are “encouraged.” Therefore, the door is currently wide open for foreign VC/PE investments in the cleantech/renewable energy in China.

Foreign VC/PEs have historically invested in Chinese companies through an offshore foreign currency denominated fund using offshore structures. A simple example of an offshore fund’s direct investment into a Chinese company is illustrated in Chart 1.

Chart 1: INVESTMENT BY OFFSHORE FUND



“the door is currently wide open to foreign VC/PE investments in cleantech/renewable energy in China.”

A foreign fund investing in China is typically established in a foreign jurisdiction like the Cayman Islands in the form of a limited partnership. This fund may invest in the Chinese target company through various offshore single purpose investment vehicles (SPVs). In recent years, the offshore investment structure for an investment usually includes a few SPVs established in favorable offshore jurisdictions, with a Hong Kong holding company for the Chinese target company. Such a structure allows the investor to take advantage of, among other things, favorable tax treatment and easier offshore exits for the investment by either IPO or sale.

RMB FUNDS

Recently, new legislation has opened a crack in the door for foreign VC/PE firms and investors to establish onshore Renminbi (RMB) funds. The framework for RMB funds in China has developed piecemeal based on various regulations issued at different times, which has resulted in structures and practices that lack logical consistency. Given the variety and complexity of different RMB fund structures, we will only review two RMB Fund structures that are more applicable to the cleantech/renewable energy industry.

1. FOREIGN INVESTED VENTURE CAPITAL INVESTMENT ENTERPRISE (FIVCIE)

FIVCIEs are regulated by the Administrative Measures on Foreign Invested Venture Capital Investment Enterprise (effective March 1, 2003) and can take the form of either pure RMB funds or sino-foreign RMB funds under a corporate or partnership structure (for FIVCIEs, the regulation establishes a quasi-limited-partnership structure). Under the FIVCIE Measures, fund managers can raise funds from both offshore and onshore investors and establish onshore RMB-denominated funds. The management of FIVCIEs may be delegated to a Chinese domestic management company, a foreign invested

enterprise or an offshore entity. Foreign fund managers appreciate this flexibility because it allows them to manage the funds from an offshore entity without incurring the additional time and cost to set up an onshore entity in China. Some qualified FIVCIEs can also enjoy certain incentive policies including tax benefits.

“Quam Ventures Ltd. is a FIVCIE fund recently launched in China using a limited partnership structure to invest in... Greentech / Cleantech and life science companies.”

FIVCIEs are limited in that the legal structures of these funds are very inflexible and FIVCIEs can, in principle, only invest in high-tech or new-tech companies. This investment restriction sometimes precludes funds that invest in companies outside this scope from using this structure. However, this limitation may not affect cleantech/renewable energy investors since certain cleantech/renewable energy investments may qualify as high-tech or new-tech companies and fit within a fund’s investment strategy. For example, Quam Ventures Ltd. is a FIVCIE fund recently set up in China by Quam Ventures (the private equity arm of Quam Limited, an HK listed financial services company), using a limited partnership structure to invest in, among other things, greentech/cleantech and life science companies.

2. SHANGHAI PILOT PROGRAM FOR FOREIGN VC/PE FIRMS

To promote foreign VC/PE investments, the Shanghai Municipal Government issued the Implementation Measures on the Pilot Program for Foreign-invested Equity Investment Enterprises in Shanghai (the “Shanghai PE Measures”), which became effective on February 1st, 2011. Shanghai is the first city in China to create such a pilot program, but it is anticipated that Beijing and Tianjin will issue similar measures in the near future. Shanghai has taken the lead on this pilot program because Shanghai is envisioned to be the financial center of China.

The Shanghai PE Measures allow foreign VC/PE firms to create VC/PE funds and manage investments in

China through the establishment of a foreign owned management company called a foreign-invested equity investment management enterprise (FEIMC). The FEIMC can be wholly owned by the foreign VC/PE and founded as a WFOE.

The fund established under the Shanghai PE Measures must have a minimum capital commitment of U.S.\$15 million and can be established as a foreign invested partnership (FIP), which includes general partnerships and limited partnerships (a form typically used and desired by offshore VC/PEs). If the fund is established as an FIP, then the fund would only need to be registered with the local branch of the State Administration of Industry and Commerce (SAIC), and the longer and more complicated approval of the Ministry of Commerce (MOC) is not required.

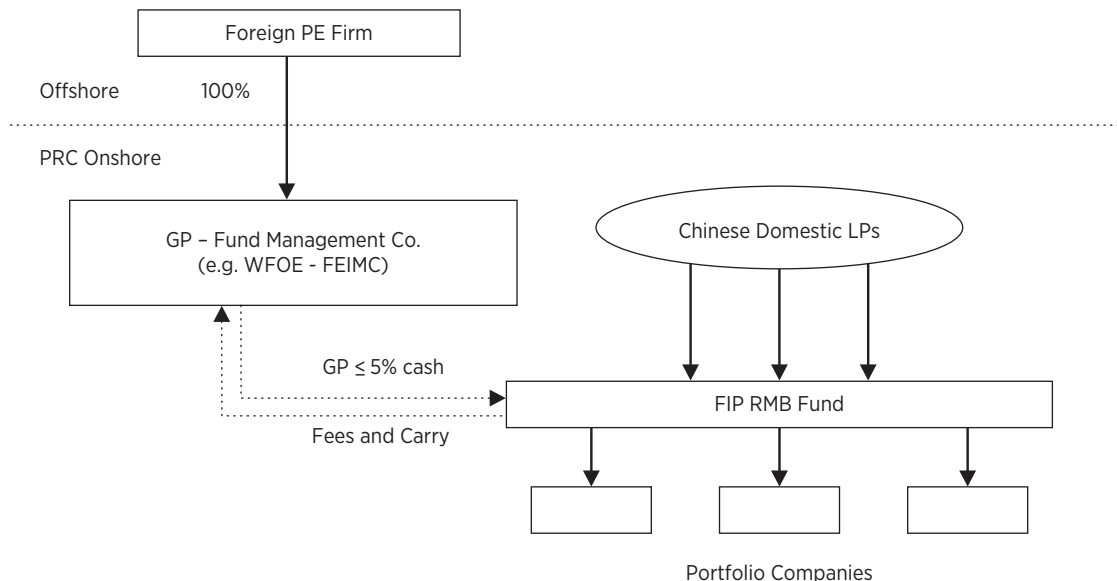
Moreover, the fund established under the Shanghai PE Measures can either be: (1) a fund with only local Chinese investors or limited partners (other than the FEIMC which is foreign owned); or (2) a fund with both local Chinese and non-Chinese investors or limited partners. Thus, VC/PE firms can establish funds in China to raise both foreign and local capital for investments. However, to

be qualified under the pilot program—to bring in foreign limited partners into the onshore RMB fund—may be challenging given that the requirements as to asset size and relevant investment experience and the Shanghai PE Measures are designed to attract qualified foreign institutional investors such as sovereign wealth funds, pension funds, endowment funds, charitable funds, funds of funds (FOFs), insurance companies, and banks.

“a qualified FEIMC may invest into [a fund with only Chinese investors] which will not require MOC approval.”

With respect to a fund with only Chinese investors, a qualified FEIMC may invest into the fund and may convert foreign currency of up to 5% of the committed capital of the fund. More significantly, the fund will still be treated as a “pure” domestic RMB fund, which means that the fund’s investments will not be subject to the foreign investment Catalogue, and will be treated like a Chinese domestic RMB fund, therefore not requiring MOC approval. The basic fund structure with only Chinese investors under the Shanghai PE Measures is illustrated in Chart 2.

Chart 2: BASIC SHANGHAI RMB FUND STRUCTURE



If a fund is established with both Chinese and non-Chinese investors, the fund will be subject to the Catalogue and require MOC approval and other applicable approvals for each investment, like an offshore fund.

PARALLEL FUNDS

Some VC/PE firms have considered and used the “parallel fund” structure to make investments in China. Unlike a U.S. parallel fund structure, which typically involves two funds that invest side by side on a pro rata basis, the China parallel fund structure involves two funds that invest together or in companies that are not available to the other fund. In general, one fund is formed outside China for foreign investors and one fund is formed in China for local Chinese investors, and these two funds in essence are managed by one foreign management company.

The China parallel fund structure is designed to offer foreign investors access to investments in China, which as a regulatory and/or practical matter are not accessible to foreign investors. For example, certain

investments in China require greater speed to compete with Chinese funds. Investing through the RMB fund side of the parallel fund will provide the foreign investor with the needed speed by avoiding government approval and foreign exchange. Although this structure has been implemented in the past, this structure is complex and not without its problems. For one, inherent in this structure are the conflict of interest issues between the investors of the two funds that potentially cannot be resolved. Thus, VC/PE firms should seek the advice of counsel and carefully weigh the pros and cons of this structure before choosing this path.

CONCLUSION

Under China’s current policies, foreign VC/PE investors are encouraged and welcomed to invest in China’s cleantech/renewable energy industry. However, this may not always be the case. China’s doors to foreign investment in various industries have been opened and then closed depending on political, economic and social factors. With this in mind, many VC/PE firms have already made and continue to make investments in Chinese cleantech/renewable companies.

US-CHINA COLLABORATION UPDATE

■ GOVERNMENT COLLABORATION: CONTINUING PROGRESS



Zhao Hongzhu (R), secretary of Zhejiang Provincial Committee of the Communist Party of China and Jack Markell, governor of the U.S. State of Delaware signing a MOU during first China-U.S. Governors Forum in Salt Lake City (July 14, 2011)

Source: Xinhua News

COOPERATION AT THE LOCAL LEVEL

After President Hu Jintao's visit to the U.S. in the spring, there have been strides towards greater cooperation between the two nations over renewable energy. On May 10th at the third annual U.S.-China Strategic Economic Dialogue, six Eco-Partnerships were signed. These agreements establish a framework for private-public

partnerships at the sub-national level for energy and climate goals. Of the notable partnerships fostered at the conference, Case Western Reserve University and the China National Off-shore Oil Corp (CNOOC) will study and test energy and environmental solutions, and Duke Energy and ENN Solar Energy Group will work together to exchange policy practices and carry out joint demonstration projects.

Another momentous Eco-Partnership was finalized during the first ever China-U.S. Governor's Forum held at Salt Lake City, Utah in July. The partnership was signed by the state of Utah and Province of Qinghai. The partnership will focus on fundamental common interests between the two sub-national governments, focusing on renewable energy, sustainable development, and job creation. During the forum, the State of Delaware and Zhejiang Province also signed a Memorandum of Understanding to establish a framework for future cooperation at the provincial and state level. The forum also marks a historic opportunity and important benchmark in sub-national cooperation that fits the U.S. and China's strategic green development goals. President Hu Jintao and President Obama sent letters of congratulations after the forum.

Table 1: ECO-PARTNERSHIPS

U.S. FIRM	CHINESE FIRM	COLLABORATION
Case Western Reserve University	China National Off-shore Oil Corp	Study, test, and implement energy and environmental solutions
Duke Energy and City of Charlotte, NC	ENN Solar Energy Group and City of Langfang, China	Exchange policy practices, carry out joint demonstration projects, and conduct trials for innovative clean energy technologies
State of Utah	Qinghai Province	Exchange scholars, construct pilot waste digester facility, test biogas to diesel fuel, and construct demonstration Carbon Capture and Sequestration (CCS) plant, and foster cultural and political exchanges
Center for Climate Strategies	Global Environmental Institute	Research on CCS
United States Business Council for Sustainable Development	China Business Council for Sustainable Development	Develop projects on water, energy, climate and ecosystem services
Purdue University, the University of Tennessee, Knoxville, and Oak Ridge National Laboratory	Chinese Academy of Sciences, Institute of Geographic Sciences and Natural Resources Research, Research Center for Eco-Environmental Sciences, and Institute of Applied Ecology	Research collaboration among partnering institutions for student exchange, education, and technology training for climate change, the environment and sustainability

Note: Information in the table above is derived exclusively from generally available public information and does not purport to be a comprehensive listing of partnerships between U.S. and China in 2011.

■ PRIVATE SECTOR: BURGEONING SUB-NATIONAL PARTNERSHIPS



Workers at A-Power's Shenyang, China, turbine plant

Source: A-Power Energy

More sub-state level collaborations are taking place in technology development, financing, and project development. Meanwhile, a new form of partnership is also being formed between Chinese local government and the U.S. companies and investors.

JOINT VENTURES

Provincial and state-level partnerships continue to grow. In teaming up with the Chinese Municipal Government of Yangzhou, Hudson Clean Energy Partners will establish a RMB-based fund to invest in the Chinese clean energy market. The establishment of the collaboration will pave the way for Hudson in China's private equity market.

TECHNOLOGY DEVELOPMENT

DuPont Apollo, a subsidiary of DuPont, has developed amorphous silicon solar panels at its factory in Shenzhen, China. Although amorphous silicon production costs are higher than more common technologies, the cost is predicted to fall as soon as mass production begins.

LICENSE PURCHASE

Jiangsu Zongyi will buy the construction licenses and related rights to build a 19 MW New Jersey-based solar power plant currently owned by Canadian developer Effisolar Energy Corporation for \$3.23 million. Zongyi Solar Energy Company Limited, a wholly owned subsidiary of Jiangsu Zongyi, will invest \$80 million in the construction, and the New Jersey state government will provide an investment subsidy equivalent to 30% of total construction expenses upon its completion.

CHINESE COLLABORATION IN THE U.S.

China Machinery Engineering Corporation will construct a major portion of Shenyang Power Group's 615 MW wind farm in Texas according to a recent agreement. The two firms will jointly raise \$260 million in debt for the project.

Goldwind has collaborated with several U.S. companies, including LM Wind Power in North Dakota, Broadwind Energy in Wisconsin, the Timken Company in Ohio and many others (see Table 2). Goldwind will be utilizing local construction help with each of its U.S.-based projects, specifically creating between 50–70 U.S. construction jobs for its Shady Oaks project in Lee County, Illinois. The Shady Oaks project will also create or retain between 100–140 U.S. manufacturing jobs combined at LM's facility in North Dakota and Broadwind's facility in Wisconsin.

FUTURE TRENDS

After a long period of high profitability, Chinese PV companies are likely to enter a price war due to the oversupply of modules and a worldwide subsidy cuts. Meanwhile, U.S. renewable energy industry expansion is threatened by expiring financial incentives that may not be extended, which could lead companies to scale back investments. Nevertheless, despite the hardships ahead, the sub-state collaboration in the two private sectors will continue.

Table 2: RECENT U.S.-CHINA PRIVATE SECTOR COLLABORATIONS

U.S. FIRM	CHINESE FIRM	COLLABORATION
Choice Solar Solutions	CNPV	Under a strategic agreement, Choice Solar Solutions will purchase 30 MW of CNPV premium range solar modules over a three year period.
First Solar	CPINE	First Solar will partner with China Power International New Energy to explore their solar presence in both markets.
GE Energy	Harbin Electric	GE Energy has signed an agreement to provide four gas turbines to Harbin Electric by 2013.
Gilbane Building & V.H. Cooper	Goldwind	Goldwind was offered two deals to provide five turbines for projects in Rhode Island and Ohio.
GT Solar	Unnamed Chinese Company	GT Solar received a \$460.5 million order from an unnamed customer from China.
Hoko	Tianwei Group	The polysilicon production plant acquired by Tianwei in Idaho from Hoko will begin operating late 2011, and it has received more than \$200 million funding from Chinese banks.
LM Windpower	Goldwind	LM will be manufacturing blades for Goldwind USA's 109.5 MW project in Lee County, Illinois at its Grand Forks manufacturing facility as well as several other projects throughout the United States.
Revolution Energy	Guodian United Power	Guodian United Power has shipped a batch of wind turbines to the U.S., marking the fast-growing Chinese company's first export deal.
The Timken Company	Goldwind	In May 2011, Timken and Goldwind signed a memorandum of long-term strategic collaboration in the U.S. to cooperate on a range of technical services, products and aftermarket support for the development, supply and maintenance of advanced wind turbine components and systems. Prior to this announcement, Timken had already been manufacturing bearings for many of Goldwind's turbine platforms.

Note: Information in the table above is derived exclusively from generally available public information and does not purport to be a comprehensive listing of partnerships between U.S. and Chinese firms in 2011.



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